REPUBLIC OF TURKEY
MINISTRY OF TRANSPORT
AND INFRASTRUCTURE

AYGM
Altyapı Yatırımları Genel Müdürlüğü

ÇINAR®
ENGINEERING
CONSULTANCY INC.

FİLYOS PORT AND INDUSTRIAL ZONE RAILWAY CONNECTION PROJECT

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

CNR-ZNG-ESMP-002
Final

Official Use Only

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ABBREVIATIONS & DEFINITIONS

AFAD	Ministry of Interior Disaster and Emergency Management
AMP	Aggregate Management Plan
AoI	Area of Influence
BMP	Biodiversity Management Plan
CCTV	Closed-Circuit Security Cameras and Monitoring Systems
CHA	Critical Habitat Assessment
CHA-BMP	Critical Habitat Assessment and Biodiversity Management Plan
CHMP	Cultural Heritage Management Plan
CHSMP	Community Health and Safety Management Plan
CIMER	Presidency's Communication Center
CIMP	Construction Impacts Management Plan
CLO	Community Liaison Officer
CRF	Complaint register form
CRMP	Community Relations Management Plan
ÇINAR	Çınar Engineering Consultancy Inc.
DGII	Directorate General of Infrastructure Investments
DNP	Defect Notification Period
DSM	Deep Soil Mixing
E&S	Environmental and Social
EHS	Environment, Health and Safety
EHSG	Environmental Health and Safety Guidelines
EIA	Environmental Impact Assessment
ENCR	Environmental Noise Control Regulation
EPRP	Emergency Preparedness and Response Plan
ESCP	Environmental and Social Commitment Plan
ESIA	Environmental and Social Impact Assessment
ESIA Consultant	Çınar Engineering Consultancy Inc.
ESIRT	Environment and Social Incidence Response Toolkit
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESS	Environmental and Social Standards
ETP	Employment and Training Plan
GBVH	Gender-Based Violence and Harassment
GM	Grievance Mechanism
ILO	International Labour Organization
IPF	Investment Project Financing
LM Plan	Labor Management Plan
LMC	Last-Mile Infrastructure Connectivity
LMP	Labor Management Procedures
MCP	Management of Change Process

MoEUCC	Ministry of Environment, Urbanization and Climate Change
MoTI	Ministry of Transport and Infrastructure
OHS	Occupational Health and Safety
OHSMP	Occupational Health and Safety Management Plan
PAH	Project Affected Household
PAP	Project Affected Parties
PIU	Project Implementation Unit
PPP	Pollution Prevention Plan
PTC	Positive Train Control
PTC	Positive Train Control
RP	Resettlement Plan
RCA	Root Cause Analysis
RLIP	Rail Logistics Improvement Project
SEA	Sexual Exploitation and Abuse
SEA / SH	Sexual Exploitation and Abuse / Sexual Harassment
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
SPT	Standard Penetration Test
TCDD	Republic of Türkiye State Railways
The Project	Filyos Port and Industrial Zone Railway Connection Project
ToR	Terms of reference
TPAO	Turkish Petroleum Corporation
TTMP	Traffic (Transportation) Management Plan
USD	United States Dollar
WB	World Bank
WBG	World Bank Group
WMP	Waste Management Plan

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1 INTRODUCTION

The World Bank's Board of Executive Directors approved a loan for the Türkiye Rail Logistics Improvement Project (RLIP) on 30.06.2020. The project, implemented by the Ministry of Transport and Infrastructure (MoTI) through its Directorate General of Infrastructure Investments (DGII), aims to increase rail freight efficiency in Türkiye by improving last-mile infrastructure connectivity (LMC), enhance the operational efficiency of rail-enabled logistics centers, and strengthen institutional capacity in the rail intermodal and freight logistics sector.

The project development object is to reduce transport costs in selected rail freight corridors and to strengthen institutional capacity at the MoTI to deliver rail freight connectivity and manage rail-enables logistic centers.

The project is developed around three main components:

- Component 1: Construction of Railway Branch Lines and Multimodal Connections at Priority Network Nodes,
- Component 2: Feasibility studies, detailed engineering designs, environmental and social documentation, and construction supervision for rail last-mile infrastructure connectivity at additional freight nodes,
- Component 3: Phase 2 Covid-19 response support, institutional strengthening, capacity building, and project implementation support.

Within the scope of the 1st Component of the Project for Improving Railway Connections, it is planned to construct a railway connection line to the industrial facilities by Filyos Port and Industrial Zone Railway Connection Project ("the Project" or "Filyos Sub-project"). The main purpose of the Project is to carry out the transportation and distribution of goods arriving at Filyos Port in a safe and cost-effective way within the scope of Filyos Valley Project, which is planned to be built in Çaycuma District of Zonguldak province.

The risk classification of the project is assessed as "Substantial" according to the World Bank Environmental and Social Framework (ESF). As a result, although the sub-projects have an exemption on Environmental Impact Assessment (EIA) according to the national legislation; Environmental and Social Impact Assessment (ESIA), Resettlement Plan (RP), Stakeholder Engagement Plan (SEP), and Environmental and Social Management Plan (ESMP) have been prepared in compliance with the World Bank Environmental and Social Framework (ESF), and Environmental and Social Standards (ESSs) for the Project. Also, Labor Management Procedures (LMP) have been prepared for the RLIP, and the Contractor will prepare a Labor Management Plan (LM Plan) in compliance with this procedure.

The World Bank Group (WBG) General Environmental, Health, and Safety (EHS) Guidelines and Industry Sector EHS Guidelines for Railways, Toll Roads, and Electric Power Transmission and Distribution have been applied for the identification of measures to address the Environmental and Social (E&S) risks. Furthermore, additional 12 sub-management plans were prepared for the project as a part of the ESMP:

- Construction Impacts Management Plan (CIMP),
- Community Health and Safety Management Plan (CHSMP),
- Community Relations Management Plan (CRMP),
- Employment and Training Plan (ETP),
- Aggregate Management Plan (AMP),
- Traffic (Transportation) Management Plan (TTMP),
- Cultural Heritage Management Plan (CHMP),
- Pollution Prevention Plan (PPP),
- Waste Management Plan (WMP),
- Emergency Preparedness and Response Plan (EPRP),

- Occupational Health and Safety Management Plan (OHSMP), and
- Critical Habitat Assessment and Biodiversity Management Plan (CHA-BMP).

A contract was signed between DGII and ÇINAR Engineering Consultancy Inc. (ÇINAR) in December 2019, for preparing the Environmental and Social Impact Assessment Report together with ESMP and sub-management plans listed above for the Project according to the World Bank standards. The ESIA site studies were completed by ÇINAR in January and February 2020, and the ESIA Reports were disclosed in May 2020. The above-mentioned activities are defined as Phase-1 of the Project. During Phase-1 studies, environmental, social, and culturally sensitive areas in the project impact area were specified in the ESIA reports, and mitigation measures were proposed.

Within the scope of the Project, there is an Environmental and Social Commitment Plan[1] (ESCP) which sets out material measures and actions, any specific documents or plans as well as timing for each of these. DGII is responsible for compliance with all ESCP requirements, even when implementation of specific measures and actions is conducted by third parties involved in the Project.

During Phase-2, Çınar Engineering Consultancy Inc. (ÇINAR) has been awarded the contract as a consultant to carry out the revision studies of environmental and social instruments prepared during Phase-1 period. The contract was signed between DGII (the Client) and ÇINAR on August 4, 2022. The main purpose of the Phase-2 is to ensure compliance with the items specified in the ESCP.

Within the framework of the Environmental and Social Commitment Plan (ESCP), the whole ESIA package has been revised and updated in line with the World Bank standards, where necessary, and this process is mentioned as Phase-2 of the Project. Therefore, the railway route was revised considering the issues specified in ESCP, and the studies and measurements that could not be performed due to the seasonal restrictions were carried out at Phase-2.

In Phase-2, the anticipated environmental and social risks and impacts associated with the Project have been assessed, and appropriate measures have been proposed to manage these impacts in compliance with national legislation, the WB ESF, international standards, and guidance documents. Additionally, good international industry practices have been adopted. The ESIA Report comprises the following key components, each detailed extensively:

- Description of the project
- Institutional and legal framework
- Environmental and social baseline
- Environmental and social impact assessment
- Analysis of alternatives
- Stakeholder engagement

Environmental and Social Management Plan (ESMP), which is one of the documents submitted within the scope of the ESIA package, describes the measures and controls developed in line with the mitigation hierarchy for the management of the impacts identified in the impact assessment, determines the implementation schedule, roles, and responsibilities, reporting and monitoring requirements. Each of the management plans included in the annexes of the ESMP defines in detail the environmental and social mitigation measures and management controls to be implemented to ensure compliance with the Project Standards presented under ESIA Report on relevant environmental and social issues.

[1] https://aygm.uab.gov.tr/uploads/pages/dunya-bankasi-turkiye-de-demiryolu-lojistigini-gel/environmental-and-social-commitment-plan-escp.pdf

ESMP is a live document, open to regular review and update in case of changes in environmental and social conditions as the project progresses. DGII and all contractors / sub-contractors are responsible for the implementation of the ESMP, and the general principles presented within the scope of the ESMP, as well as for the implementation of more detailed plans and procedures.

1.1 Purpose and Scope

The primary objective of the ESMP is to establish a comprehensive instrument that details the mitigation measures/actions to be taken during the pre-construction, construction and operation phases of the Project to eliminate or offset adverse E&S impacts, identified in the ESIA of the project, or to reduce them to acceptable levels by identifying the actions required to implement these measures. Additionally, it serves as a means to equip project management with the essential tools required to ensure adherence to the Project's standards while striving to attain the environmental and social goals outlined within the ESIA. Furthermore, in addition to fulfilling the legal and institutional prerequisites necessary for the effective execution of pertinent management strategies, the ESMP also delineates the respective roles and responsibilities of DGII, and the contractor/sub-contractors involved in the project. The main objectives of ESMP are as follows:

- To provide an overview of the environment, health and safety (EHS), socio-economic and cultural heritage policies, standards and legal legislation that the Project is obliged to comply with,
- To provide guidance on how to manage EHS, environmental and social risks and adverse impacts in the pre-construction, construction and operation phases of the Project by identifying mitigation, monitoring and institutional measures to eliminate adverse E&S risk and impacts, offset them, or reduce them to acceptable levels in compliance with WB ESF, national EHS policies, standards, and legal regulations and to ensure that Project commitments are fulfilled,
- To determine the roles and responsibilities of DGII and contractors to ensure compliance with the above EHS requirements during the construction phase of the project,
- To assess existing E&S capacity of implementing agencies and to establish a framework for capacity building and training to ensure effective implementation of the EHS requirements throughout the lifecycle of the sub-project,
- To ensure that construction activities are properly checked to ensure that the Project is in compliance with WB ESF and national EHS policies, standards and legal regulations,
- To identify monitoring objectives and specification of the monitoring measures and threshold values, monitoring and reporting procedures, ensure reporting systems are developed and streamlined to deliver EHS compliance performance,
- Enabling ongoing development and EHS compliance coverage.

ESMP sets out the approach planned by the Project, i.e. DGII and its consultants and contractors, to prevent or reduce the identified environmental and social impacts. Sub-management plans within the ESMP, covering the construction and commissioning phases, have been prepared and will be updated in line with the changing conditions as the Project progresses and the outputs regarding the stakeholder engagement process. In the operational phase of the Project, if the conditions determined in the ESIA process differ, the risks and impacts arising from the Project will be re-evaluated. At this stage, a new ESMP may be prepared to manage the activities, adapted to the new conditions.

1.2 Environmental and Social Management Plan Structure

Subjects covered within the scope of the ESMP are presented in Table 1.

Table 1. Subjects Covered within the Scope of ESMP

1. Introduction
Definition the process that forms the basis of the preparation of the ESMP, the purpose, scope and objectives of the Plan.
2. Project Definition
Summary information about project activities and duration of the project.
3. Management Plans
The framework and scope of environmental and social management plans presented in the Appendices section of the ESMP.
4. Implementation of the Environmental and Social Management Plan
Roles and responsibilities for the implementation of the plan, stakeholder engagement process, grievance mechanism and monitoring and reporting requirements.
5. Implementation Schedule and Cost Estimates
Identifications of the mitigation measures to be taken for the environmental and social risks identified during the ESIA process of the Project; the general framework of the environmental and social monitoring plan, which was set out to monitor the effectiveness of management controls and which will be detailed in the pre-construction period; capacity development and training requirements

2 PROJECT DEFINITION

The last mile of railway connecting Filyos Port and the Filyos Industrial Zone holds significant strategic and logistical importance. A design speed of 50 km/h has been targeted for the railway, determined by considering both its suitability for freight transport and the region's topographical conditions.

This project not only supports regional economic development but also plays a critical role in expanding and strengthening national logistics networks. In designing the route, careful attention has been paid to preserving the natural environment and creating infrastructure that aligns with the region. Additionally, integrating with existing railway networks has been prioritized to optimize transportation capacities in the area.

The project route is planned in an area within the boundaries of Filyos Town, located in the Çaycuma District of Zonguldak Province. The route begins northwest of Derecikören Village and follows the surrounding natural geographical features, passing to the northeast of Gökçeler Village. Along the route, there are various natural and artificial obstacles, the most significant of which is the Filyos River, to be crossed via a bridge. After crossing the Filyos River, the route continues through the Turkish Petroleum Corporation (TPAO) facilities, extending to the end of the eastern quay at Filyos Port, which is positioned west of Sazköy Village (see Figure 1).

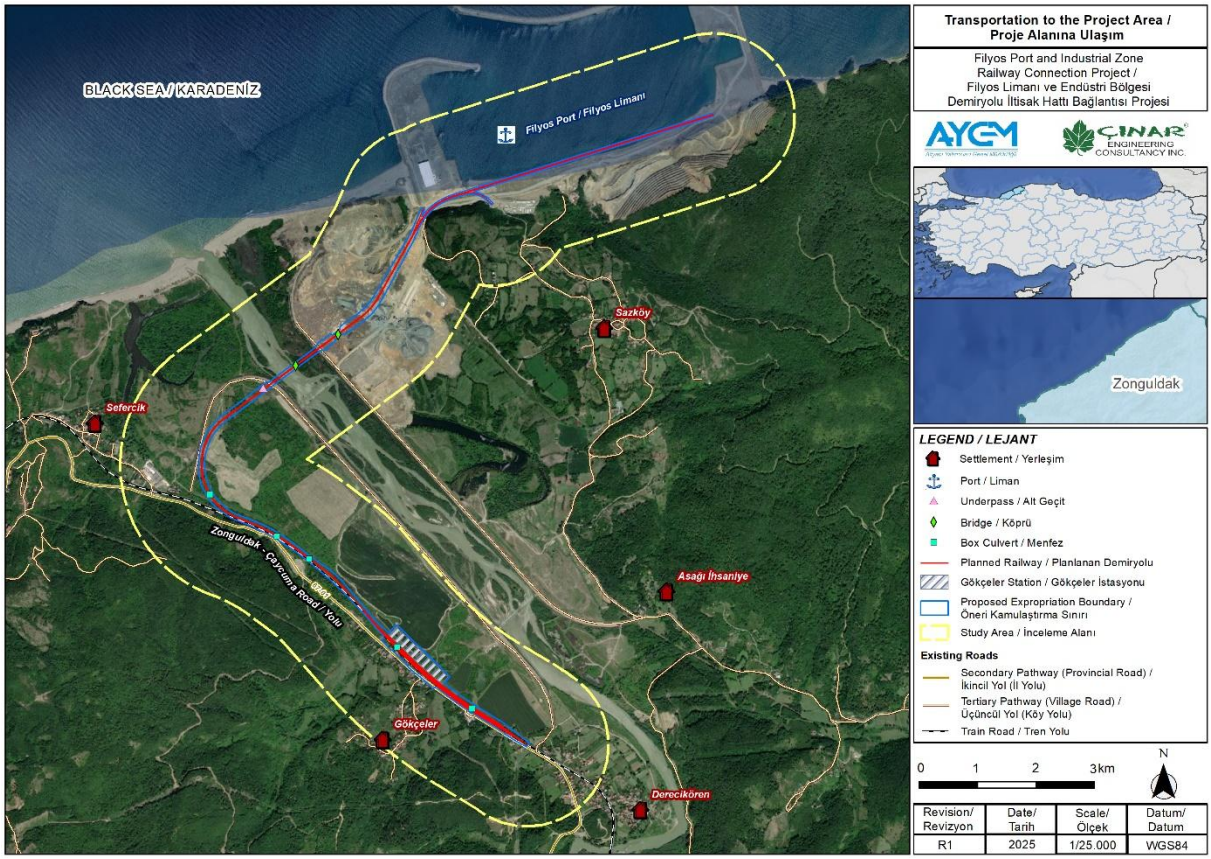

Figure 1. Filyos Sub-Project Route and Surrounding Settlements

The connection line within the project is designed as a double track with a total length of 6,685.5 meters. Of this, 1,735.5 meters will be constructed as slab track (concrete-based rail system). At Gökçeler Station, a total of 3,021 meters of additional track will be added, along

with a 393-meter-long track designed for planned future quay extensions, bringing the total rail length to 16,785 meters.

The main works to be carried out within the scope of the project are as follows:

- A station with a 300-meter-long loading platform and associated structures, with a total length of 1,280 meters.
- 17 units of 1/9 switches.
- 1,735.5 meters of slab track construction for the Filyos Port Area.
- 4 box culverts, each 2.00x2.00 meters, totaling 207.63 meters in length.
- 1 box culvert, 10.00x5.00 meters, with a total length of 16.65 meters.
- 1 underpass, 12.00x5.00 meters, with a total length of 30.77 meters.
- 1 Filyos River Railway Bridge, 387.50 meters long.
- 1 Pipe Crossing Railway Bridge, 74.00 meters long.

According to the land use/land cover data of the Ministry of Agriculture and Forestry, there are fallow-free dry land agricultural areas, residential areas, forests and river flood plains on the project route and construction site.

The consolidation and expropriation of the lands corresponding to the railway and highway route planned within the scope of the Project will be conducted in accordance with the applicable national laws and regulations as well as ESS 5 of the WB ESF. The land acquisition will be carried out in compliance with the procedures, plans and standards defined in the Resettlement Plan (RP) of the project.

The main activities that will be conducted within the scope of the Project's land preparation and construction phase are as following:

- Geodetic and topographic studies, mapping studies,
- Preparation of implementation projects and expropriation plans,
- Initial field works (root ball removal, chopping, off-site transfer etc.),
- Earthworks (excavation and fill works, soil leveling, soil compaction, soil stabilization, etc.),
- Rail compression, rail welding, rail stretching, rail lubrication, rail grinding, rail system switch assembly works,
- Construction of engineering structures,
- Construction of railway superstructure elements (ballast and lower ballast layers, ties and connections and railway lines),
- Construction of Gökçeler Station (all rough and fine construction works and electrical and mechanical installation works of the station),
- Electrification, signalization and telecommunication works.

The estimated signing date of the contract is June 2025. The construction phase of the project is 2 years and defect notification period (DNP) is 1 year. Therefore, the Project is planned to be completed approximately in mid-2028.

3 MANAGEMENT PLANS

The management sub-plans prepared for the purpose of successful implementation of the ESMP along with the management of the risks and impacts related to all environmental and social issues identified in the ESIA are presented in the Appendices section. Each sub-plan includes mitigation measures specific to the issues they are addressing and sets out the framework for other plans and procedures that may be developed later in the Project. As there might be some differences in the structure of the sub-plans depending on the environmental and social issues they cover, the general structure of the plans is as follows:

- Purpose and Scope
- Objectives
- Roles and Responsibilities
- Mitigation Measures and Management Controls
- Training, Reporting and Monitoring

The management sub-plans presented within the scope of ESMP, and their contents are given in Table 2. The construction contractors will develop and implement their own site-specific sub-management plans on the basis of these sub-plans. During the operation phase, TCDD will be responsible for the implementation of this ESMP.

Table 2. Sub-Management Plans

Document Code	Sub-Management Plan	Scope
CNR-ZNG-CIMP-002	Construction Impacts Management Plan	It includes general measures to be taken during the land preparation and construction phases to manage the impacts of the Project activities including permits to be taken, soil erosion etc. and special measures to be implemented in line with the environmental component or the needs of the local people.
CNR-ZNG-CHSMP-002	Community Health and Safety Management Plan	It determines the measures to be taken for the management of risks and impacts on the health and safety of the affected communities and the strategies to be applied to increase the awareness of the local people.
CNR-ZNG-CRMP-002	Community Relations Management Plan	It sets out the requirements for community relations activities that will be carried out in order to ensure the participation of local people, institutions and groups and other stakeholders that are likely to be affected by the project in the project processes.
CNR-ZNG-ETP-002	Employment and Training Plan	It sets out the principles to be applied to maximize local employment, to make recruitment processes transparent, open to public and non-discriminatory.
CNR-ZNG-AMP-002	Aggregate Management Plan	It includes the impacts and mitigation measures resulting from the activities of providing aggregate material to be used in the construction of different components of the project including quarry and borrow pit management.
CNR-ZNG-TTMP-002	Traffic (Transportation) Management Plan	It determines the framework of the management plans that the contractors will prepare to manage the risks associated with the increase in traffic load during the land preparation and construction stages.
CNR-ZNG-CHMP-002	Cultural Heritage Management Plan	It sets out effective plans and procedures to protect the archaeological and cultural heritage and to minimize Project impacts by including Chance Find Procedure and relevant forms.
CNR-ZNG-PPP-002	Pollution Prevention Plan	It outlines the actions taken to prevent or minimize air, water, noise and soil pollution during the implementation of the project.
CNR-ZNG-WMP-002	Waste Management Plan	It includes identification of waste and waste management activities, including minimizing, recycling, collection, storage, treatment and disposal of waste that will occur during the land preparation, construction and operation phases of the project.
CNR-ZNG-EPRP-002	Emergency Preparedness and Response Plan	It defines the activities and procedures to be implemented for planned intervention in order to prevent emergencies during the construction and operation phases of the project or to minimize potential damage that may arise due to emergencies.

Document Code	Sub-Management Plan	Scope
CNR-ZNG-CHA-BMP-002	Critical Habitat Assessment/Biodiversity Management Plan	It aims to explicitly introduce the necessary measures and methods to manage possible impacts on biodiversity.
CNR-ZNG-OHSMP-002	Occupational Health and Safety Management Plan	It determines requirements for an adequate workplace environment by setting out necessities of occupational health and safety in terms of risk assessment methodology, hazard prevention and site security.

It is important to mention that the Resettlement Plan, Stakeholder Engagement Plan and Labor Management Procedures have been prepared as separate plans within the scope of the Project.

Since the work plan, roadmap, and technical details will become clear after the contractor is appointed under the sub-project, the environmental and social impacts of different facility types will be addressed through appropriate processes. For auxiliary facilities such as substations, electricity transmission lines, and construction camp sites, as well as for associated facilities, assessments will be carried out through separate processes similar to the project itself. Under the Environmental and Social Framework (ESF), the potential risks and impacts of associated facilities must also be assessed and managed in accordance with applicable standards. For this reason, associated facilities will require separate Environmental and Social (E&S) assessments, and stand-alone Environmental and Social Management Plans (ESMPs) will be prepared by PIU and approved by the WB to define mitigation measures, monitoring requirements and compliance obligations. On the other hand, impacts of smaller-scale facilities such as quarries, borrow sites, material storage areas, and access roads will be analyzed and addressed within the supplementary site-specific Environmental and Social Management Plan (ESMP) to be prepared by the contractor. All documents will be submitted to DGII and WB for approval.

4 IMPLEMENTATION OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The EMSP will be implemented with an adaptive management approach to respond to changes occurring at different stages of the Project and, as a living document, will be updated to reflect the current status of the Project and site features and management requirements when necessary.

DGII is obliged to implement the ESMP with adequate and qualified personnel working under an appropriate organizational structure, in line with Project standards, in line with stakeholder participation and information sharing requirements, and to ensure that contractors / subcontractors adopt management controls.

4.1 Organizational Structure

DGII is a public institution affiliated to the MoTI with a special budget for finance. To prepare and approve the plans and projects of railways, logistic villages, centers or bases, ports, shelters, coastal structures, airports to be built by the state and to construct and / or have these transportation infrastructures handed over are among the roles and responsibilities of DGII. The Project will be handed over to General Directorate of Turkish State Railways (TCDD) after the completion of construction. TCDD will include the Project in its environmental and social management system (ESMS) within the scope of railway management.

With the Project Implementation Unit (PIU) established within DGII, the Construction Contractor, who will be responsible for the execution of the land preparation and construction works within the scope of the Project, will be able to manage environmental and social issues and natural resources within the scope of the ESMP, by taking consultancy both from within its organizational structures and by obtaining consultancy from outside.

DGII Expropriation Department will be the main authority in the preparation of the expropriation plans and the realization of the expropriation process.

In addition, the implementations within the scope of the RP, the implementation of the RP and ensuring the compliance of the project with the RP are the responsibility of DGII PIU and this entire process will be carried out under the management and monitoring of this unit. During the implementation process, the activities to be carried out within Project's Area of Influence (AoI) will be carried out by the construction main contractor, but the management of the entire process will again be coordinated by DGII PIU.

The Contractor undertakes to receive consultancy service from the experts on the following subjects regarding the implementation of the management controls determined within the scope of the ESMP, when necessary:

- Environmental Experts
- Cultural Heritage Specialists
- Ecological / Biological Experts
- Soil / Landscape Experts
- Social / Stakeholder Relations Specialists
- Environmental and Social Trainers

The Contractor will be responsible for all of its staff (including contractor and subcontractor staff) to have E&S responsibility awareness and to be sufficiently trained to ensure ESMP compliance during implementation, thereby facilitating the smooth application of E&S requirements on site. The Environmental and Social Management System (ESMS) structure to be executed by DGII is presented in Figure 2. The Construction Contractor will be managed with the organizational structure defined therein.

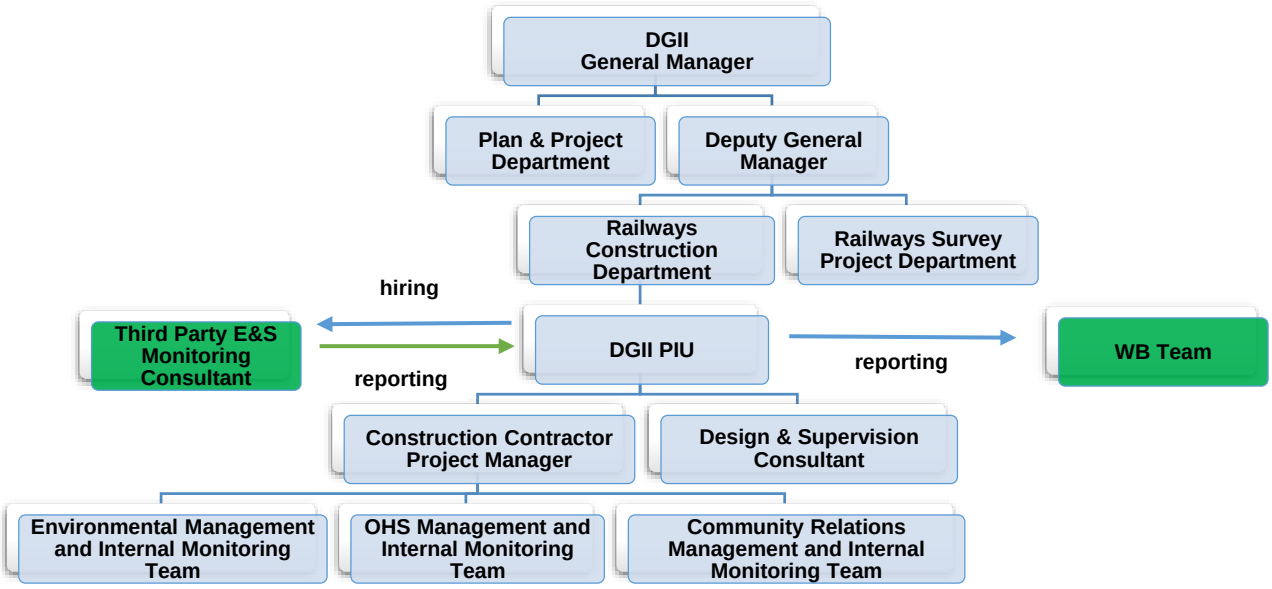

Figure 2. ESMS Organizational Structure

4.2 Roles and Responsibilities

As the project owner, it is the responsibility of DGII to manage the environmental and social issues of the project and to ensure that the necessary mechanisms are developed and implemented by the Contractor. A framework regarding the roles and responsibilities of DGII PIU and the Construction Contractor is presented in Table 3.

Table 3. Roles and Responsibilities Regarding the Implementation of the ESMP

Responsible Party	Roles and Responsibilities
DGII PIU	▪ Implementation of ESMP and related management plans and sub-plans and fulfillment of all commitments within the scope of ESCP. ▪ Sharing the ESMP and management sub-plans with the Contractor, guiding the Contractor in preparing the implementation plans, approving these plans. ▪ Updating the ESMP when necessary and sharing additional commitments with the Contractor. ▪ Quarterly reporting to the Bank regarding the implementation of the ESMP and the management sub-plans. ▪ Employment of competent Environmental, Social and OHS staff and external experts to work on the project. ▪ Providing training in ESMP and sub-plans to all Project staff. ▪ Social and environmental review, monitoring and audits related to ESMP practices, evaluation of results. ▪ Auditing contractor activities in line with ESMP requirements. ▪ Ensuring compliance with project standards, making necessary emergency corrections in case of non-compliance. ▪ Stopping work in any situation that threatens the environment and human health and safety.

Responsible Party	Roles and Responsibilities
	▪ Providing follow-up and analysis of environmental, social and occupational health and safety accidents. ▪ Ensuring stakeholder engagement, implementing the grievance mechanism, ensuring continuous information transfer through open communication. ▪ Promptly notify the Bank of any incident or accident related to the Project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers including but not limited to; incidents and accidents encountered during construction works, environmental spills, etc. ▪ Provide sufficient details regarding the incident or accident, findings of the Root Cause Analysis (RCA), indicating immediate measures or corrective actions taken or that are planned to be taken to address it, compensation paid, and any information provided by any contractor and supervision consultant, as appropriate. Ensure the incident report is in line with the WB's Environment and Social Incidence Response Toolkit (ESIRT). ▪ Subsequently, as per the Bank's request, prepare a report on the incident or accident and propose any measures to prevent its recurrence. ▪ Coordination of the actions and assessments if a change due to engineering/design changes, route/location changes, applicable legislation changes related to environmental and social issues, authority provision changes, any new environmental/social data is introduced, construction/operation strategy changes or stakeholders influence the project.
Construction Contractor	▪ Fulfillment of all requirements of the ESMP and management and management sub-plans. ▪ Implementation of additional commitments determined by DGII. ▪ Ensuring compliance with project standards, obtaining all relevant permits and licenses. ▪ Monitoring construction activities (including subcontractor activities) and taking measures within the scope of the ESMP. ▪ Development of implementation and monitoring plans / procedures in line with the ESMP structure, implementation after the approval of DGII. ▪ Employment of competent E&S and OHS staff within the scope of the project. ▪ Providing the necessary training to the contractor and sub-contractor staff on environmental and social (including occupational health and safety) issues. ▪ Providing follow-up and analysis of environmental, social, and occupational health and safety accidents. ▪ Environmental inspections, monitoring and audits related to ESMP practices, periodic reporting to DGII. ▪ Prompt notification of accidents and incidents and keeping an incident register at construction site throughout the Project life. ▪ Carrying out the management of change process via filling the Management of Change Process (MCP) Form (Appendix-13) and informing DGII and WB about the details and the results of the process including at the final design stage.

Responsible Party	Roles and Responsibilities
Design & Supervision Consultant	▪ Ensuring overall compliance of design and construction activities with ESMP requirements. ▪ Reviewing project design to confirm full integration of ESMP mitigation and monitoring measures. ▪ Verifying that design documents and technical specifications reflect environmental and social standards. ▪ Providing recommendations to optimize or modify designs to minimize potential E&S impacts. ▪ Confirming that flood risk management, soil protection and erosion control measures are adequately considered in the design. ▪ Reviewing proposed layouts of auxiliary facilities (e.g., camps, storage areas) for E&S compliance at design stage. ▪ Verifying that design addresses community safety, access routes, and traffic management requirements. ▪ Monitoring construction activities to ensure contractors comply with ESMP provisions. ▪ Reporting non-compliance and recommending corrective actions during design and supervision. ▪ Documenting and tracking all ESMP-related design reviews, approvals, and corrective actions. ▪ Supporting capacity building by advising contractors on best practices in design and supervision for E&S compliance. ▪ Verify that the contractor has obtained all required environmental and social permits and approvals. ▪ Conduct regular inspections of construction sites to ensure adherence to environmental and social safeguards. ▪ Prepare and submit regular environmental and social monitoring reports to the DGII.

4.3 Management of Change Process

The Project changes and the changes in key control documents which impact the conditions and commitments stated in ESIA are subject to the management of change process.

This management of change process is applied when:

- Engineering/Design changes,
- Route/location changes,
- Applicable legislation changes related to environmental and social issues,
- Authority provision changes,
- Any new environmental/social data is introduced,
- Construction/operation strategy changes,
- Stakeholders influence the project.

The Facilitator of the Change who is any person within the PIU at DGII, which shall be responsible for the coordination of the actions and assessments of a deviation from scope of works ensures that the ESIA Specialist in the PIU is informed of any change, as specified above, which could have potential environmental and social impacts.

4.3.1 The initial assessment of the Change

Prior to the implementation of the proposed change, the Facilitator of the Change, together with relevant technical experts, assesses the potential impacts of the proposed change.

The Management of Change Process Form (MCP Form) given in Appendix 13, is used to specifically describe potential environmental issues associated with the proposed change. If the potential environmental issues are identified from this process, the Project Director shall be notified by delivering the MCP data for evaluation.

4.3.2 Coordination of the Change

Subsequently, after receiving the MCP data from the Facilitator of Change, the Project Director coordinates with the ESIA Specialist, Community Liaison Officer (CLO), and Stakeholder Management Specialist. The CLO, responsible for implementing on-site community relations tasks, and the Stakeholder Management Specialist, responsible for monitoring the Grievance Mechanism (GM) and overseeing the stakeholder engagement program, review the MCP data together. The CLO's role complements the responsibilities of the Stakeholder Management Specialist as outlined in the Stakeholder Engagement Plan (SEP), ensuring effective engagement at the community level. The SEP outlines the broader stakeholder engagement strategy, while the Community Relations Management Plan (CRMP) works in tandem to provide additional focus on managing community relations in response to changes. Together, these instruments ensure coordinated efforts to engage stakeholders and implement necessary mitigation measures related to project changes.

The Project Director ensures that the feedback of ESIA Specialist, CLO and Stakeholder Management Specialist are reflected in MCP form and delivered to the Facilitator of the Change together with the evaluation results of ESIA Specialist, CLO and Stakeholder Management Specialist.

4.3.3 Evaluation of the Change

The Project Director ensures that any potential environmental and social impacts associated with the change which are not within the scope of ESIA studies are evaluated using the similar impact assessment methodology used in the ESIA. If a significant environmental or social impact is determined, the Project Director will:

- Identify whether the change requires an "EIA", or preparation of a "Project Description File" is required by Ministry of Environment, Urbanization and Climate Change,
- Identify the environmental standards and objectives to be attained,
- Outline the way that environmental and social impacts are managed and mitigated e.g., physical controls or the development of additional management systems i.e., environmental guidelines, procedures, or training requirements,
- Detail the required human and financial resources,
- Document and communicate the above in the MCP data form, for the evaluation of this data by the "Facilitator of the Change".

<u>The changes associated with Route and Facility Location</u>

If the change is associated with route or site facility changes, then the Facilitator of the Change subsequently notifies the Project Director (e.g. by MCP form in Annex 13). The Project Director ensures that environmental and social assessment studies as well as the formal process are initiated. The ESIA Specialist checks whether the change requires an additional environmental permit and/or approval.

<u>The changes associated with Design</u>

If the change is associated with the engineering or design development, the Facilitator of the Change identifies what type of new aspects such as new emission types, changes in noise, vibration levels, energy consumption etc. are expected due to such changes and reports in MCP data form. The MCP form in Appendix 13 will be used for such an evaluation. The findings then are forwarded to the Project Director. The Project Director starts environmental and social assessment studies if a new aspect is identified. The ESIA Specialist checks whether the change requires an additional environmental permit and/or approval.

The changes associated with Authority Provision and Legislation

If the change is due to a change in Construction/Operation Execution Strategy (e.g. need for blasting, intermittent operation) or a Management Strategy (e.g. change of organization, resources), then the Project Director ensures that the new strategy is evaluated and identifies if additional studies, assessments, or mitigations are required and, if required, starts the environmental and social assessment studies accordingly.

The changes associated with new environmental and social data

If the change is due to any new environmental and social data obtained through the implementation of SEP, the Project Director ensures that the new data is evaluated and identifies if the change impacts the outcomes of the completed studies and assessments. The Project Director ensures that additional environmental and social assessment studies are implemented if required.

4.3.4 Proceed Notification for the Change

The MCP data form evaluated and completed by ESIA Specialist (in coordination with Community Liaison Specialist and Stakeholder Management Specialist) will be reviewed by the Facilitator of the Change, and advice shall be given, if the change is feasible, to proceed with the defined actions. Upon receipt of proceed notification, these specialists shall act accordingly and start environmental and social assessment studies, public consultation, permitting processes or other actions required for implementation of the change.

4.3.5 Change Implementation

The Project Director reviews progress against implementation of the proposed change, as required, to verify that the environmental considerations have been fully addressed and environmental and social assessment studies, public consultation, permitting processes are completed as necessary and necessary revisions are performed in the ESMP and sub-management plans.

4.4 Stakeholder Engagement

The main goal of the Project-specific SEP is to establish a plan for involving stakeholders, which involves sharing public information and consulting with them throughout the project's duration. It details how the project team will interact with stakeholders and provides a means for individuals to voice concerns, give input, or lodge complaints about project-related activities.

The SEP's primary objective is to ensure the active engagement with all stakeholders and other relevant parties, including individuals, groups, and organizations interested in the project.

Details of the project's approach to stakeholder engagement, the methods applied, and the stakeholder engagement activities that have been done and planned to be carried out so far are included in the scope of the SEP. DGII will ensure coordination with all Project employees, including Contractor firm staff and external consultants responsible for the implementation of the SEP. The SEP will be updated regularly and outputs and corrective actions related to the process will be reflected in the updated versions of the ESMP.

The social Area of Influence (AoI) of the project includes the settlements of Derecikören, Gökçeler, and Sazköy within the Çaycuma District of Zonguldak Province, as well as the Sefercik settlement in the Filyos town of the same district.

The settlements of Öteyüz and Aşağıihsaniye, which were the subject of previous studies, have been included to social AoI.

As a summary;

- Derecikören, Gökçeler, Sazköy, Sefercik; Direct impacts of the Project: The settlements located in the expropriation corridor will be directly affected by the environmental and social impacts of the Project. One of the most important social impacts in this area is resettlement. This includes both physical and economic resettlement, due to the land needed for the Project. Disadvantaged groups are expected to experience these impacts more intensely in this area.
- Öteyüz and Aşağıihsaniye Indirect impacts of the Project. These settlements are located in the expropriation corridor during the Phase-1 period. However, they are not affected by physical and economic resettlement after the final route of the Project is determined. In these areas, the environmental and social effects of the Project may be observed indirectly.

The full list of stakeholders, and conducted interviews given both via ESIA, and SEP document.

4.5 Grievance Mechanism, Workers' Grievance Mechanism, and Gender-Based Violence and Harassment (GBVH)- Sexual Exploitation and Abuse / Sexual Harassment (SEA/SH)

SEP document, developed for the project, delineated the project stakeholders, and established methods and schedules for engaging with them.

The grievance mechanism is established to promptly receive, and address complaints and concerns expressed by all stakeholders.

All of the details about SEP and GM implementation are given within Project specific SEP document.

The primary responsibility of DGII is to record and monitor complaints. In addition to DGII, the social experts of the Contractor will also be present on-site, following the guidelines in the SEP. To enhance stakeholder awareness and facilitate transparent complaint submissions, project

contact information will be disseminated via information meetings, project brochures, and the project website.

Various official channels are available for stakeholders to voice their complaints;

DGII

- Phone Line: 03122031000
- E-Mail: aygm.ozelkalem@uab.gov.tr
- Grievance Registration Form

Republic of Türkiye Ministry of Transport and Infrastructure

UAB ALO123 Request Management System

The Republic of Türkiye Directorate of Communications

- Presidency's Communication Center

The Republic of Türkiye Ministry of Interior, Presidency of Migration Management

- Foreigners Communication Center

World Bank Grievance Redress Service

SEA/SH Issues

- ALO 183
- ALO 170

In the implementation of Workers' GM, multiple channels for submitting complaints will be established, including a grievance box and electronic means, with all grievances treated confidentially. Upon receiving grievances, the Complaint Committee conducts thorough investigations, allowing all parties to present their perspectives. Valid grievances prompt remedial action, documented progress, and outcomes, reported to relevant stakeholders to ensure accountability and effectiveness.

Detailed explanations are given under the Project-specific SEP.

4.6 The 3rd Party Environmental and Social Monitoring Activities

The ESMP of the Project includes a series of management sub-plans and mitigation measures to minimize the potential negative impacts before, during and after construction and operational period of the Project. DGII, Construction Contractor and Design and Supervision Consultant are responsible for ensuring that the relevant measures are implemented during pre-construction and construction phase.

The 3rd Party Environmental and Social Monitoring Consultant will provide DGII with an independent third party environmental and social monitoring services to ensure that all site construction activities are efficiently monitored, non-conformities with the ESMP obligations as well as the ESIA requirements, are detected and managerial decisions are developed adequately to mitigate these deficiencies and give recommendations to overcome the identified deficiencies.

Environmental and social monitoring studies are a key component of project management within the context of sustainable development. These studies not only identify potential environmental and social impacts and propose necessary mitigation measures to prevent environmental pollution, but also verify the compliance of project implementation with the mitigation measures defined in the Environmental and Social Management Plan (ESMP), the Resettlement Plan (RP), and the Stakeholder Engagement Plan (SEP).The documents given in the ESMP will be the main but not the only documents that will be used by 3rd Party Environmental and Social Monitoring Consultant during the monitoring studies.

The Context of the monitoring studies will cover all of the ESIA Report, Resettlement Plan, its appendices and any other additional documents that were referenced within the ESIA report. The construction works conducted by the Contractor, should comply with all mitigation measures stated in this ESMP.

As a result of that it could be stated that the DGII, Construction Contractor and Design and Supervision Consultant will fulfill all the obligations stated in this ESMP, finally 3rd Party Environmental and Social Monitoring Consultant will monitor the environmental and social activities of the Contractors in the light of ESMP. In any types of conflicts that might arise during the services conducted, ESMP will be the guide.

A terms of reference (ToR) will be prepared for the 3rd party monitoring consultant by DGII, which will be subject to the WB's review and consent. ToR will be prepared after the completion of final design studies.

4.7 Monitoring, Reporting and Evaluation

Regular internal audits, environmental and social monitoring and corresponding reporting (see Table 7, Table 8 and Table 9) will be carried out by DGII and the Contractor in order to monitor the implementation and effectiveness of the ESMP, as described in the ESIA Report, ESMP and related management sub-plans. In line with the general framework of audits and monitoring, the following issues should be controlled:

- Quality and effectiveness of implementation of environmental and social management plans and Contractor implementation plans by all personnel,
- Verifying compliance with the national legislation, the WB ESF and relevant WBG guidelines, which form the project standards,
- Identifying non-compliances with national legislation and international standards and ESMP through E&S monitoring studies and reporting, and outlining corrective measures to ensure compliance;
- Verifying that Project activities are carried out in a way that meets ESCP commitments and ESMP objectives.

DGII PIU (with the support of Design and Supervision Consultant) and the Contractor are obliged to carry out the relevant reporting by conducting the internal monitoring/audit activities required by the Project activities they perform. Weekly, monthly, and quarterly follow-up reports, which will be prepared following daily inspection and monitoring activities in all project areas during the construction phase, will be submitted to DGII. In addition, Environmental and Social Monitoring reports will be prepared quarterly regarding the work carried out by the 3rd Party Environmental and Social Monitoring Consultant and relevant experts, and the World Bank will be informed about the operation of the Project and the management of environmental and social issues (see Figure 3). The framework of the environmental and social monitoring program, which will be detailed with additional works before construction, is given in Chapter 6.

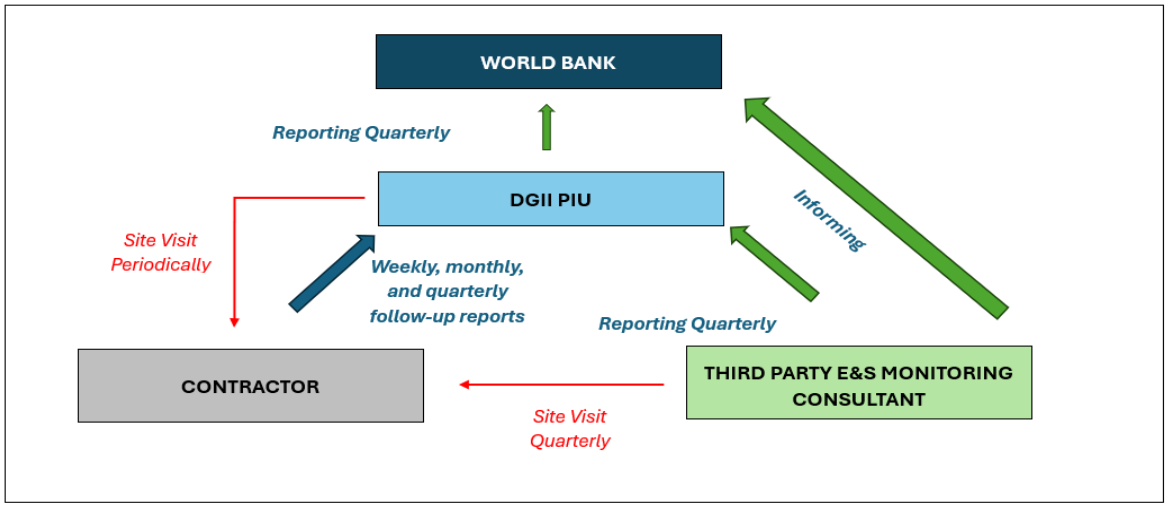

Figure 3. Reporting Process on the ESMP Implementation

5 IMPLEMENTATION SCHEDULE AND COST ESTIMATES

5.1 Environmental and Social Mitigation Plan

This section describes the relevant environmental and social risks identified during the ESIA process of the Project. Since ESMP needs to serve as an active tool, additional risks identified during project implementation will be included as defined.

Table 4. Environmental and Social Mitigation Plan – Pre-Construction

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
Land Use, Soils and Geology				
Impacts on agricultural lands	▪ The Resettlement Plan (RP) will be implemented. ▪ DGII, as the main land rights authority will implement the RP and compensate the affected land users in accordance with the RP. DGII will ensure that land access will not be granted to the contractor without completion of RP implementation and full compensation provided (either paid or booked under the name of the user) to project affected persons. ▪ A grievance mechanism will be established to ensure any complaints/comments regarding the Project will be received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate.	Resettlement Plan (RP) Stakeholder Engagement Plan (SEP)	DGII with support from the Design and Supervision Consultant	Included in RP budget Included in Stakeholder Engagement Plan Budget: United States Dollar (USD) 320,000
Seismicity	▪ All engineering structures and superstructures (fill, cut) in the project closure will be designed and constructed taking into account the earthquake resistant design parameters and criteria.	Emergency Preparedness and Response Plan (EPRP)	DGII with support from the Design and Supervision Consultant	Included in Design and Supervision Consultancy services: USD 500,000
Noise & Vibration				

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
Noise and vibration	▪ The grievance mechanism established will ensure any complaints/comments regarding the Project will be received and responded to in a timely manner, providing solutions, and taking corrective measures as appropriate.	SEP	DGII with support from Design and Supervision Consultant	Included in Stakeholder Engagement Plan Budget
Air Quality				
Air Quality	▪ The grievance mechanism established will ensure any complaints/comments regarding the Project will be received and responded to in a timely manner, providing solutions, and taking corrective measures as appropriate.	SEP	DGII with support from Design and Supervision Consultant	Included in Stakeholder Engagement Plan Budget
Cultural Heritage				
Cultural Heritage	▪ All additional project designs and project revisions for all types of construction activities intended to be carried out near the Öteyüz Neighborhood 1st and 3rd Degree Archaeological Site, the Sazköy 3rd Degree Archaeological Site, the Ancient City of Tios, and the Tios Necropolis Area will be submitted to the Karabük Regional Council for the Conservation of Cultural Property, in accordance with Law No. 2863. The opinion of the council will be sought, and final approval will be obtained before proceeding. All decisions made by the regional council will be adhered to at every stage of the project.	Cultural Heritage Management Plan (CHMP) including Chance Find Procedures	DGII with support from Design and Supervision Consultant	Included in Design and Supervision Consultancy services: USD 500,000
Socio-Economic Environment				
Physical and Economic Displacement	▪ The land acquisition of the project will be in accordance with RP and in compliance with national laws, and WB ESS5, ▪ When displacement cannot be avoided, appropriate compensation for income loss will be provided through project-specific measures to be	RP SEP	DGII will take full responsibility, with support from the Design and	Included in RP Budget

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	developed for displaced communities and individuals. These forms of compensation will be planned within the scope of RP. ▪ Permanent limitation of both the connections between the villages and the lands used and the possibilities of transition from one part of the divided land to another may result in additional costs. To prevent this, safe and appropriate crossing points should be determined in consultation with stakeholders. ▪ Consultations within the scope of the SEP and the sound operation of the grievance mechanism are also of great importance for the good management of the impacts on socio economic environment. ▪ Specific needs of Project Affected Household (PAH) in consultation process have been defined in RP document.	Community Relations Management Plan (CRMP)	Supervision Consultant	

Table 5. Environmental and Social Mitigation Plan – Land Preparation & Construction

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
Land Use, Soils and Geology				
Impacts on agricultural lands	▪ The resettlement Plan (RP) will be implemented by DGII. ▪ Land preparation and construction works will be conducted at designated sites that will be visibly and appropriately marked. ▪ Training will be provided to the construction personnel so that they maintain the pre-established construction boundaries by DGII PIU. ▪ A grievance mechanism will be developed and implemented to ensure that all complaints and comments regarding the project are received and addressed promptly by DGII. This mechanism will provide solutions and take corrective measures as necessary to resolve issues effectively. ▪ DGII will ensure that necessary corrective measures are taken by the Contractor from its own budget, in case of direct or indirect damage to adjacent properties that are state-owned or private property due to project-related activities. ▪ In order to mitigate fragmentation impacts, agricultural underpasses and culverts are either available or will be constructed throughout the entire Project route by Contractor. ▪ Training and timely and regular information sharing will be performed with community members who are using arable lands during land preparation before construction by DGII PIU.	RP SEP including GM CRMP	Contractor (for implementation) DGII PIU (for supervision, including all process monitoring)	Included in Stakeholder Engagement Plan Budget: USD 320,000 and RP Budget Additional Training Cost: USD 10,000
Topsoil stripping	▪ Regulation on the Control of Excavation Soil, Construction and Demolition Wastes (Amended with Regulation on the Landfill of Wastes published in Official Gazette No. 27533 dated 26.03.2010) provisions will be complied with. ▪ Stripped topsoil will be temporarily stored in designated areas within the scope of the project, ensuring a maximum slope of 5% and a height not exceeding 1.5 meters.	Construction Impacts Management Plan (CIMP) Waste Management Plan (WMP)	Contractor	Assignment of a Soil Expert at site: USD 85,000

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ Strip fertile topsoil along the Project area including the railway route, quarries/material borrow sites, storage sites at a sufficient depth suitable for local soil conditions prior to construction activities. ▪ Store topsoil separately from subsoil at designated topsoil storage areas along the route and other work sites at suitable conditions so as to preserve its vegetative properties. ▪ Do not carry out stripping when soil is wet, so that soil compaction is avoided. ▪ Provide drainage at topsoil storage areas by open channels. ▪ If storage of topsoil will last longer than three months, plant upper part of fertile soil temporarily so that the organic content is conserved. Select proper species and seed mixture ratios. ▪ Apply organic or inorganic materials on the topsoil to improve quality and avoid erosion, desiccation or invasion of wild species. ▪ Reuse topsoil stored at suitable conditions for the rehabilitation of temporary construction sites after the completion of construction activities, for the finalization of side slopes and in landscape activities. ▪ In addition, temporarily stored topsoil can also be used in the landscaping activities to be made around the project area by Zonguldak Municipality or other relevant public institutions if needed. ▪ Loosen topsoil to a depth of 15 cm before reinstatement (Increase depth of loosening up to 40-50 cm for compact heavy clay soils). ▪ Keep depth of topsoil for areas to be planted suitable for side slopes, shrub plantation areas, tree roots etc. ▪ Conduct grading operation in line with the natural slope and drainage conditions following the reinstatement of topsoil.			
Soil Erosion	▪ Before the onset of land preparation and construction works, erosion control measures like drainage channels, settling structures, etc. will be implemented.	CIMP WMP	Contractor	Included in soil expert assignment cost

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ In order to eliminate the risk of erosion in periods of excessive rainfall, the waters from the project surroundings and slopes will be separated from surface run-off by directing through temporary channels and soil embankments. ▪ Erosion control measures will be implemented following the completion of excavation works, also at the culvert outlets, and slopes will be improved. ▪ Around the excavated material stored at designated storage sites, dikes will be established to prevent loss of soil. ▪ All of the disturbed sites will be restored to the most possible extent in a timely manner following the completion of stripping and excavation works.			
Soil Contamination	▪ Discharge of materials into soil that would cause contamination will be prohibited. ▪ Accidental spills and leakages will be managed through implementation of the Emergency Preparedness and Response Plan. ▪ Solid wastes, hazardous wastes and wastewater to be generated as a result of land preparation and construction activities along the Project route will be further managed through implementation of the related management plans (Waste Management Plan, and Pollution Prevention Plan). ▪ Soil sampling will be conducted in the event of contamination or suspicion of contamination to assess the situation and determine necessary actions, or in case of a complaint.	CIMP PPP WMP EPRP	Contractor	Included in soil expert assignment cost
Geological and Geotechnical Risks (bearing capacity, liquidization, slope stability)	▪ Drainage measures will be implemented to effectively manage and remove both groundwater and surface water from the project area. ▪ In the sections to be backfilled on the project route, the top vegetative soil and weak soil will be filled with granular crushed stone backfill after stripping and the settlement and bearing capacity problems will be eliminated with the preloading to be applied afterwards.	EPRP	Contractor	Included in construction service

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ In the soils determined as clayey silt and silty clay along the route, except for the beginning section of the railway route, against the liquefaction problem caused by the low Standard Penetration Test (SPT) value and the groundwater level to the surface, the first 20 m will be improved with stone column/jet-grouting application considering the thickness of the liquefied layer. ▪ In the fill area before the Filyos River bridge, the first 20 m depth as per the specification, where liquefaction control and ground improvements are required, the Deep Soil Mixing (DSM) application has been deemed suitable as an improvement method in terms of both cost and ease of manufacture since the area has low clay and organic matter content and low plasticity. ▪ Use of geogrid application in areas with high fills will ensure equal load distribution and stability at slopes. ▪ Periodic control and maintenance activities will be conducted along the routes to ensure safety and functionality. When necessary, additional durability and structural measures will be developed and implemented in cut and fill areas to address potential issues such as cracks, breaks, slips, and deformations in engineering structures, particularly those that may occur after natural disasters.			
Seismicity	▪ All structures, including buildings, culverts, bridges, and others within the project, will be designed and constructed in accordance with the earthquake resistance parameters defined in the regulations currently in force. ▪ All the structures and buildings to be built within the scope of the project must be in accordance with the principles of the "Regulation on the Buildings to be Constructed in Disaster Areas" published in the Official Gazette dated 14/07/2007 and numbered 26582 of the Ministry of Public Works and Settlement, and the Disaster and Emergency Services published in the Official Gazette dated 18.03.2018 and numbered 30364	EPRP	Contractor	

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	and entered into force on 01.01.2019. Also, the provisions of the "Turkish Building Earthquake Regulation" of the Situation Management Presidency must be strictly followed.			
Landslide Risk	▪ According to the Landslide Inventory Map of Turkey Zonguldak Sheet, MTA, 2005 there are no active or passive landslide areas at and around the planned Filyos Port and Industrial Zone Railway Line. Almost all of the route passes over alluvial deposits with low slopes, and shotcrete, wiremesh and rock bolt applications should be made if necessary to prevent local small slides in the slopes close to the Yemişliçay formation consisting of clastic and volcanic rocks forming the sloping areas.	EPRP	Contractor	
Noise & Vibration				
Increase in noise and vibration levels	▪ All construction activities will be carried out in compliance with the provisions of Environmental Noise Control Regulation (ENCR) and noise/vibration limit values specified in the ENCR and WBG General EHS Guidelines. ▪ Project Grievance Mechanism will be implemented. If any comment related with noise and vibration is received through the Grievance Mechanism, evaluate the complaint and where necessary plan and implement corrective actions. ▪ Construction activities will be carried out during the daytime only. ▪ Machinery, equipment and vehicles with lower sound power levels and sound reduced models will be preferred, using newer and electrically driven models. ▪ Maintenance of construction vehicles will be conducted regularly by means of a regular vehicle maintenance and repair program which is also recommended by the manufacturer. ▪ Speed limitations for construction vehicles will be defined and obeyed. Relevant training will be conducted and instructions on the driving speed limits will be provided to drivers/operators of construction vehicles.	CIMP PPP Traffic (Transportation) Management Plan (TTMP) SEP including GM	Contractor	Included in Stakeholder Engagement Plan Budget. Assignment of personnel (1 Environmental Expert at site): USD 100,000 Additional training budget: USD 5,000

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ Driving of construction vehicles through settlements will be avoided where possible. ▪ Designated site access roads will be used. Construction of access roads will be evaluated where required to avoid traffic through residential areas. ▪ Keeping the construction vehicles running will be prohibited while waiting on the construction site. ▪ Noise monitoring will be carried out quarterly during the construction phase and also upon complaint by means of noise measurements in accordance with both national legislation and the WBG EHS Guidelines. Additional noise mitigation measures (such as use of noise barrier structures/panels, etc.) will be implemented if noise measurements conducted are above noise limit values. ▪ Site personnel will be provided with the necessary environmental training that aims at reducing noise caused by Project activities. ▪ When necessary, to protect the employees from the noise caused by machinery and equipment; work will be carried out in accordance with the provisions of the "Occupational Health and Safety Law No. 6331" and necessary measures (such as providing ear protection PPE) will be taken to protect workers from risks that may arise from health and safety, especially hearing risks, as a result of exposure to noise. ▪ Communities/settlements will be notified about the noise levels that may be created during construction phase due to heavy machinery use. ▪ The ESMP and Pollution Prevention Plan will be implemented. ▪ To mitigate noise impacts resulting from the potential operation of quarry and/or borrow sites by the Contractor, quieter drilling methods, such as downhole or hydraulic drilling, should be employed, and processing plants should be enclosed and clad. Sound barriers, enclosures, or curtains should be installed near noisy equipment, such as crushers and grinders, while soundproof materials like rubber linings can be applied to processing equipment and transfer points. Additionally, rubber-belt transport systems and conveyors should be utilized, and natural barriers like vegetation or			

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	soil berms should be created at facility boundaries. Optimizing internal traffic flow to reduce reversing alarms, using electrically powered machinery, enforcing truck speed limits, avoiding flame-jet cutting, and constructing berms for noise and visual screening are also recommended. ▪ To mitigate vibration related impacts resulting from the potential operation of quarry and/or borrow sites by the Contractor, specific blasting plans should be implemented, including proper charging procedures, optimal blasting ratios, and the use of delayed or electronic detonators. Blast designs should incorporate blasting-surface and drill-hole surveys to prevent over-confined charges and allow for recalculations. Ground vibration and overpressure can be controlled with appropriate drilling grids, charging processes, and stemming methods to minimize fly rock and air blasts. Hydraulic hammers or mechanical methods are preferred over secondary blasting to reduce risks, while mechanical ripping should be prioritized to limit the use of explosives. Additionally, vibrations from primary crushers and screening equipment can be minimized by constructing adequately designed foundations.			
Air Quality				
Decrease in Air Quality	▪ Maximize the use of excavation material in fill operations. ▪ Store excess or unsuitable excavated materials at designated storage sites within the construction corridor, ensuring sufficient capacity. ▪ Ensure that all excavation activities are implemented in line with the cut and fill program to minimize excavation waste. ▪ To minimize dust and potential impacts during soil stripping, cut and fill activities in the land preparation and construction phase, take measures such as watering at emission sources, conducting filling and unloading operations without tossing, covering vehicles with tarpaulin during material transportation, and maintaining the upper part of the material at 10% humidity.	CIMP PPP SEP including GM	Contractor	Included in Stakeholder Engagement Plan Budget and employment of environmental team. Additional training budget: USD 5,000

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ Regularly moisten the project site using water trucks throughout the entire activity. ▪ Comply with the "Exhaust Gas Emission Control and Gasoline and Diesel Quality Regulation," published in the Official Gazette No. 28837 dated 30.11.2013. Perform traffic inspections, exhaust gas emission measurements, and ensure vehicles needing maintenance undergo necessary repairs after routine checks. Other vehicles will be used only after completing maintenance. ▪ Ensure that employees adhere to the Traffic Law, with particular attention to proper loading according to loading standards. ▪ Establish procedures to limit the drop height of falling materials. ▪ Apply dust suppression methods such as watering with water trucks; applying non-toxic anti dust chemicals etc. at construction sites, service roads, and quarries/material borrow sites and material storage sites. ▪ Apply water suppression, pressurized distribution or spraying systems to minimize dust where and when necessary, on paved or unpaved road surfaces. ▪ Carry out loading and unloading materials without throwing and scattering. ▪ Cover excavated materials during transportation with nylon canvas or materials with grain sizes larger than 10 mm. ▪ Prefer local licensed quarries and material borrows sites for the reduction of transportation distance of materials. ▪ To control NO_2, CO, and NO emissions from quarries and borrow sites if operated by the construction contractor, an environmental impact assessment must first be conducted. Measures include exploring alternatives to blasting, such as hydraulic hammers or mechanical methods; carefully planning blasting operations, including the arrangement, dimensions, and direction of blast holes; and ensuring the proper combustion of explosives by minimizing excess water and ensuring the correct mixing of ammonium nitrate and fuel oil.			

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ Install wind shields or barriers around material storage sites as needed to prevent the spread of dust emissions. ▪ Upgrade and maintain access roads (to construction camp sites, construction sites, quarries/material borrow sites, and material storage areas) when necessary. ▪ Whenever possible, avoid driving construction vehicles through settlements. ▪ Implement Project Grievance Mechanism. Evaluate and address any comments related to dust and air quality received through the Grievance Mechanism, and implement corrective actions as required. ▪ Implement Traffic Management Plan and Pollution Prevention Plan. ▪ PM_{10}, $PM_{2.5}$ and settled dust will be monitored during the land preparation and construction phase quarterly or in case of a compliant.			
Greenhouse Gas Contribution	▪ Construction activities will be carried out in accordance with good industry practices. ▪ Alternative fuel and energy resources are not applicable to the construction machinery to be used for the Project. However, operators and drivers will receive necessary training on practices to reduce unnecessary equipment idling time and avoid behaviors that increase fuel consumption (e.g., unnecessarily shifting hydraulic levers or using excessive horsepower). The training will also cover energy efficiency and best practices. ▪ Fuel efficiency of construction vehicles will be optimized by means of applications such as speed restrictions and avoidance of uphill movements as much as possible. ▪ The Project Company will ensure proper maintenance of machinery/equipment including systematic equipment inspection, detection of potential failure and prompt correction to ensure fuel savings). ▪ Energy/fuel consumption of construction machinery, equipment and vehicles will be monitored.	CIMP PPP TTMP	Contractor	No additional cost

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
Water Resources and Wastewater Management				
Wastewater Generation	▪ Since there is no wastewater (sewage) system in the field of activity and its immediate surroundings, wastewater generated due to land preparation and construction activities will be deposited in septic tank that will be impervious, in accordance with “Regulation on Pit Opening Where Sewer System Construction is not Applicable” being published in Official Gazette No.13783 dated 19.03.1971. When the pits are filled, wastewater will be removed by sewage trucks, and disposal will be provided within the scope of the protocol to be made with the municipality that has a licensed wastewater infrastructure system with enough capacity.	CIMP PPP WMP	Contractor	Included in employment of environmental team. Opening and maintaining of the septic tanks USD 1,000
Impact on surface water quality, flow/hydrological regime of the rivers to be crossed	▪ Crossings of the project routes are with the Filyos Creek and influent streams of Filyos Creek with seasonal flow. Those surface waters will be crossed with properly designed engineering structures (bridge, culverts, box culverts) and techniques by also considering the principles of “Disaster Regulation on Highway Roadside Engineering Structures”. ▪ Within the scope of the project, a series of drainage measures will be taken to the right and left side of the routes, such as heel ditch, cut ditch and head ditch for the control of surface and groundwater, as well as the stability of the cut and fills to be constructed along the routes. ▪ All wastes that may arise from the project activities, excavation materials to be stored periodically / temporarily and accidental spill of fuel, oil, oil, cement etc. to the streams that are crossed by the project route will be taken under control immediately and surface waters will be protected against pollution. ▪ Personnel will be trained regarding waste disposal to the rivers and creeks. ▪ To monitor the quality of the surface waters in the project study area, periodically at least two times a year (rainy and dry periods), the water	CIMP PPP WMP EPRP	Contractor	Included in construction service and employment of environmental team.

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	sources will be evaluated at the points to be determined by taking into consideration the locations of the pollutant sources. ▪ Pollution Prevention Plan and Emergency Preparedness and Response Plan that covers management of hazardous and chemical substances will be implemented. ▪ Project Grievance Mechanism will be implemented. If any comment related to water quality is received through the Grievance Mechanism, evaluate the complaint and where necessary plan and implement corrective actions. ▪ Periodic checks will be maintained to monitor waste disposal to streams. ▪ It will be prohibited to store any type of chemical and hazardous material near 50 meters of any creek or river.			
Impacts on Groundwater	▪ Within the scope of the project, drainage measures (concrete underground drainage, head ditch) to be used for the control of surface waters and groundwater to ensure the stability of the cuts and fillings to be produced along the routes and to remove them from the fill body will be provided. ▪ At Filyos Bridge crossing during the deep soil mixing ground improvement method the interaction with groundwater will be prevented and minimized by applying the method locally and using a containment pipe. ▪ While determining the locations of temporary fuel or oil storage areas, the locations of water resources will be taken into consideration and dangerous material spills / leaks such as fuel, oil, oil, cement etc. will be taken under control immediately. ▪ In the event of contamination, suspicion of contamination, or any related complaints, the quality of groundwater resources and wells in the study area will be monitored. Groundwater samples will be collected and analyzed at locations determined based on the proximity to potential pollution sources. ▪ Pollution Prevention Plan and Emergency Preparedness and Response Plan that covers management of hazardous and chemical substances will be implemented.	CIMP PPP WMP EPRP	Contractor	Included in employment of environmental team.

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ It will be prohibited to store any type of chemical and hazardous material near 50 meters of any creek or river. ▪ Periodic checks will be maintained to monitor waste disposal to streams. ▪ Project Grievance Mechanism will be implemented. If any comment related to water quality is received through the Grievance Mechanism, evaluate the complaint and where necessary plan and implement corrective actions.			
Resource and Waste Management				
Possible impacts from storage of excavation material	▪ Maximize the amount of excavation use in fill works. ▪ Store excess/unsuitable excavated materials at designated storage sites located within the construction corridor and having sufficient capacity. ▪ Ensure that all excavation activities are implemented in line with the cut and fill program to minimize excavation waste.	CIMP PPP WMP	Contractor	Included in employment of soil expert Design and construction of storage area: USD 10,000
Potential impacts of wastes (municipal solid wastes, recyclables, hazardous and special wastes), if not managed properly	▪ Develop and implement the Project-specific Waste Management Plan. ▪ Submit official waste declarations for all waste generated to the online system of Ministry of Environment, Urbanization and Climate Change (MoEUCC). ▪ Ensure compliance with the requirements of applicable waste management regulations for the management of all wastes generated as a result of Project activities. ▪ Segregate wastes (i.e. hazardous/non-hazardous, recyclable/non-recyclable) and store them temporarily in designated storage areas. ▪ Ensure that the waste storage areas meet the standards specified by related legislation: ○ Provide adequate and appropriate storage areas. ○ Ensure container types, labelling, classifying, etc., within the storage areas are in in line with Project standards.	CIMP PPP WMP Aggregate Management Plan (AMP)	Contractor	Included in employment of environmental team Additional cost on design and construction of waste storage area: USD 10,000

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	○ Use reinforced concrete or similar impermeable materials such as epoxy on the floors of storage areas to prevent potentials soils and groundwater contamination. ○ The top and four sides of the storage area will be covered to prevent the entrance of precipitation into the area. ○ Provide adequate ventilation in case storage of volatile wastes is required. ○ Establish effective drainage systems to collect any potential leaks. ○ Apply physical access restrictions at waste storage areas through use of gates and fences; allow only authorized persons in storage areas. ○ Put cautionary signage and boards with the name and contact number of authorized personnel in the storage areas. ○ Keep absorbents, firefighting equipment, etc. ready at a close location for immediate response in case of an emergency such as spills and fires. ▪ Ensure by means of trainings and stipulations that wastes are not dumped at locations other than areas specifically designated for this purpose. ▪ Provide basic waste management trainings (e.g. waste reduction, general waste management and housekeeping) to all personnel and repeat periodically. ▪ Under no circumstances, dispose of or bury waste on site. ▪ Mark waste explosives and used explosive canisters as explosive waste and store separately in storage areas designated for this purpose, where only authorized personnel will be allowed to conduct works; these wastes will also be transported by firms with relevant licenses. ▪ Ensure contractors' and their subcontractors' full compliance with Project Standards and implementation of the Waste Management Plan and the measures identified by the ESIA.			
Additional load on the waste management facilities of the region	▪ Construct and utilize excavated material storage sites with an adequate number and capacity, storing all excavated materials at designated storage sites located within the construction corridor and having sufficient capacity.	CIMP PPP WMP	Contractor	Included in employment of environmental team Additional cost on having a licensed

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ Execute waste recycling, recovery, and disposal agreements with the authorized municipality or licensed recovery and disposal firms to ensure the proper management of both hazardous and non-hazardous wastes.			firm for waste management: USD 25,000
Material Use	▪ It will be ensured that the borrow areas and quarries are licensed and possess 'EIA Positive' or 'EIA Not Required' decisions, along with the necessary environmental permits. ▪ The Contractor will identify potential borrow areas and quarries with indication of capacities, while providing measures for site reinstatement within the site-specific Aggregate Management Plan to be prepared, and supervise the implementation of the plan. ▪	AMP	Contractor	Included in construction service
Biodiversity				
Habitat loss / fragmentation	▪ Critical Habitat Assessment and Biodiversity Management Plan will be implemented. ▪ The Project personnel will be informed on the sensitivity of the habitats and the Directorate General of Infrastructure Investments (DGII) will train internal staff to be able to provide advice to contractors with input and advice, if required, and enable an informed overview of the biodiversity input from the contractors. Workers will be made aware of the ecological sensitivities of the areas and will be trained in mitigation for unforeseen events, including the presence of uncommon habitats and species. Health and safety recommendations regarding poisonous or otherwise dangerous plants or animals will also be provided by Biodiversity Specialists through toolbox talks and trainings. Emergency numbers will be provided in case of attacks or injuries that may occur by wildlife. ▪ ssNo project related activities will be performed in the defined Critical Habitat and necessary precautions (such as marking the critical habitat, fencing or any other as appropriate) will be taken in this respect. Storage	CHA-BMP (Critical Habitat Assessment and Biodiversity Management Plan) SEP including GM	Contractor	Assignment of personnel (1 Biodiversity Specialist): USD 85,000

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	of any project related waste and/or machinery in Critical Habitat will be avoided. ▪ Statuses of habitats and associated species populations will be monitored throughout land preparation and construction. Where necessary, habitat and species specific measures will be developed and implemented with an adaptable management approach. ▪ Whether or not the habitat will be impacted by the works to be done will be monitored through observation and reported once completed by an Ornithologist. In this context, if any habitat impact is observed as a result of construction, appropriate precautions will be taken (Twice a year (in spring and autumn for 15 days/period) until the construction is completed). ▪ Land preparation and construction activities will be limited to designated work areas. ▪ Impacts on natural habitats outside the Project route will be prevented. ▪ Vegetation clearance at riparian habitats will be minimized. ▪ There will be no tree cutting/vegetation clearance other than in areas required for the Project. ▪ Project-related impacts on water quality and water flow will be avoided. ▪ Mitigation measures related to land use and soil quality will be taken in line with the related management plans ensuring conservation of natural habitats. ▪ The project personnel will be informed on the sensitivity of critical and natural habitats and species, and conservation priorities. Any direct impact on plant and animal species will be prevented. ▪ In setting up a schedule for land preparation activities, breeding seasons of animals will be considered to prevent direct mortality and also conserve the next generation of their populations in the area. ▪ Project-related impacts on air, soil and water in natural habitats will be avoided. ▪ In order to minimize animal mortality, locations along the route where animal passage will be prevented and methods that will be used to prevent			

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	passage of target species (fencing, sound signals, chemical repellents, lights and reflectors, etc.) will also be identified. ▪ In line with the characteristics of the target species, it will be decided in consultation with experts whether passages planned within the scope of the Project would be sufficient for wildlife. ▪ Where necessary, in order to ensure no net loss in populations of fauna species new structures will also be considered in areas that are identified to be significant for animal passages. Passages that will also enable human and cattle passage and provide access to grazelands will be identified through consultations within the scope of SEP. ▪ To reduce the impacts on reptile species, especially *Testudo graeca,* fencing and turtle stuck will be installed. ▪ Nesting areas for fauna species will be identified before the construction works commence, and experts will be consulted if nests are to be displaced. If any bird nest is encountered during the work, the work in that area will be restricted and after the chicks fly out of the nest, the nest will be moved to a suitable place and the work will continue. ▪ Bird migration monitoring will be performed.			
Use of machinery and equipment	▪ Trainings will be organized for the Project personnel to inform them about the on-site speed limits and of importance of animal passages. ▪ Machinery and equipment that arrive in work areas will be checked for the presence of invasive alien species. ▪ All machinery and equipment will be subject to regular maintenance and will not be used out of purpose. ▪ Use of machinery and equipment will be limited to designated work areas. Impacts related to noise and vibration will be controlled in line with the Project standards.	CHA-BMP TTMP	Contractor	

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
Invasive alien species	▪ Natural vegetation will be conserved to the best possible extent during land preparation, and native species will be used in restoration after completion of the construction phase. ▪ Vehicles and equipment entering the site will be checked for invasive alien species. If identified, necessary measures will be taken in line with the Project standards to eradicate the species. ▪ Instead of using herbicides, which would destroy the natural vegetation and enable introduction of invasive alien species, different vegetation management methods will be considered as appropriate spatially and temporally. ▪ During the land preparation and construction phase biodiversity monitoring studies, potential for presence of invasive alien species in the area will also be monitored. ▪ The separately prepared Invasive Alien Species Procedure will be implemented (see Appendix-11).	CHA-BMP	Contractor	
Indirect impacts (dust, air emissions, noise, waste, and impacts on water and soil quality)	▪ In order to control dust emissions, vegetation clearance will only be undertaken in pre-determined activity areas, and habitats will be rehabilitated upon completion of construction activities. All related dust suppression measures will be taken to ensure prevention of indirect impacts on biodiversity features. ▪ On-site speed limits will be enforced to avoid direct mortality of animals. ▪ There will be no direct discharge into water resources. ▪ Project-related wastes will be collected at designated waste storage areas and periodically removed from work areas. ▪ Hunting of fauna species will be prohibited. In case of illegal hunting activities, authorities will be notified. ▪ Solid wastes and wastewater that will result from land preparation and construction activities of the Project will be managed through implementation of the related management plans.	CHA-BMP PPP WMP	Contractor	

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
Cultural Heritage				
Impacts on Cultural Heritage	▪ All decisions made by the Karabük Regional Council for the Conservation of Cultural Property must be strictly followed throughout all phases of the project, in compliance with Law No. 2863. ▪ Contractor shall conduct the works in the area of influence defined in the ESIA during the construction phase of the project. At least one archaeologist (Cultural Heritage / Archaeological Monitoring Expert) shall be present at the site during any construction activities that require physical intervention to the soil. All activities that require physical intervention to the soil shall be monitored and reported by these experts. Especially all construction works to be carried out near the Sazköy 3rd Degree Archaeological Site, the Öteyüz Neighborhood 1st and 3rd Degree Archaeological Site, and Ancient City of Tios and Tios Necropolis Area and their surroundings will be implemented under the supervision of an archaeologist. ▪ In case a cultural heritage is encountered during any works on the site, the works shall be immediately stopped as per the 4th Article of Law no. 2863 and the closest Local Authority or Museum Directorate shall be informed. Following the reviews of the relevant Museum Directorate, necessary arrangements will be implemented, such as determining the boundaries of the archaeological / cultural heritage / area, measures to be taken for its protection, and informing the employees to prevent any physical intervention. ▪ In case any remains/finds are revealed during the works, all works on the site shall be stopped and the Chance Find Procedure presented in the Cultural Heritage Management Plan shall be implemented. ▪ Information on cultural heritage protection measures will be shared with the local communities. ▪ During the construction phase of the project, all personnel on duty especially in excavation/filling works (including heavy construction	CHMP including Chance Find Procedure SEP	Contractor	Assignment of personnel (1 Archeologist at site): USD 75,000

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	equipment operators and assistant teams) shall receive training by cultural heritage/archaeological monitoring expert(s) about protection of Cultural Heritage and alternative works shall be conducted to raise awareness before the initiation of site works. These works will be recorded and archived. Works will be repeated periodically in line with a time schedule. ▪ For all additional project designs and project revisions planned to be conducted near the Sazköy 3rd Degree Archaeological Site, the Öteyüz Neighborhood 1st and 3rd Degree Archaeological Site, and Ancient City of Tios and Tios Necropolis Area and their surroundings, the opinion of the Karabük Regional Council for the Conservation of Cultural Property shall be requested as per the Law no. 2863 and the planned works shall be conducted in line with the related decisions of the Conservation Board.			
Socio-Economic Environment				
Temporary Labor influx	▪ PIU will implement Project Grievance Mechanism, ▪ PIU will provide timely and prior information to the local community and local authorities about temporary labor influx, ▪ Contractor will include temporary workforce in the labour camp sites for employees, ▪ The PIU will monitor the utilization of local employment opportunities through engagement with contractors to reduce the need for external workers, ▪ The LMP and the Contractor's Labour Management Plan shall include the relevant labour management provisions set out in this document, including measures to prevent child labor, informal employment, and other inappropriate employment conditions, and all project workforce are covered by these policies, ▪ PIU will inform local communities about the project's temporary labor needs,	Stakeholder Engagement Plan Grievance Mechanism Community Relations Plan	PIU Contractor	Included in SEP Budget

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ PIU and Contractor will collaborate with local authorities in the selection of temporary and permanent labour camps sites and camp site plans, and ▪ PIU and Contractor will Consult with local authorities about the project's temporary labor needs to prioritize local employment.			
Income loss agricultural, and husbandry activities	▪ PIU will implement Project Grievance Mechanism, ▪ PIU will ensure prioritizing local employment among Project Affected People (PAP)s in project employment opportunities, ▪ PIU will ensure implementation of Livelihood Restoration measures as defined in RP. ▪ PIU will consider vulnerable groups identified in line with RP. ▪ n	Stakeholder Engagement Plan Grievance Mechanism Resettlement Plan Community Relations Plan	PIU	Included RP Budget
Local employment opportunities	▪ PIU will provide timely and prior information to the local community and local authorities about employment opportunities in the project, ▪ Prioritize PAPs in local employment opportunities, ▪ PIU will inform local communities about the project's local employment opportunities, ▪ PIU will involve local women leaders or civil society organizations in the process of promoting women's participation in the workforce ▪ PIU will organize employment and vocational training programs, ▪ PIU will ensure that issues such as location, timing, and accessibility are addressed to facilitate the participation of DVIGs among PAPs in the local training programs to be organized within the scope of the Project Scheduling training and information sessions	Community Relations Plan	PIU	No additional cost
Purchase of goods and services	▪ PIU will provide timely and prior information to the local community and local authorities about the project's needs in line with services, procurement, and goods, ▪ PIU will inform local businesses about the project needs of procurement of services, materials, and goods,	Community Relations Plan	PIU Contractor	No additional cost

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ PIU and Contractor will consult with local authorities about the project's needs in line with services, procurement, and goods, ▪ Contractor will prioritize sourcing goods and services from local producers and service providers, ▪ PIU will encourage and support small local businesses, cooperatives and match them with project needs to enable them to deliver goods and services, ▪ PIU and Contractor will give priority to businesses owned by women in procurement processes, and ▪ PIU and Contractor will establish dedicated support to include businesses owned by people with disabilities in project supply chains			
Training programs	▪ Prioritizing PAPs in local training programs to be organized within the scope of the Project, ▪ Ensuring that issues such as location, timing, and accessibility are addressed to facilitate the participation of DVIGs among PAPs in the local training programs to be organized within the scope of the Project	Community Relations Plan	PIU	No additional cost
Access problems	▪ Implement Project Grievance Mechanism, ▪ Designated site access roads will be used. It will be assessed where construction of access roads will be required to avoid traffic through residential areas, ▪ Upgrade and maintain access roads (to construction camp sites, construction sites, quarries/material borrow sites, and material storage areas) when necessary, and ▪ Investigate all construction areas and construction access routes for potential community interaction (with a particular attention to schools, children parks, etc.) with Project construction phase traffic. Based on results, develop and implement site specific measures (i.e. improve signage, visibility) and driver/operator trainings prior to initiation of any construction work.	Stakeholder Engagement Plan Grievance Mechanism Traffic Management Plan	Contractor	Included in Stakeholder Engagement Plan Budget.

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
Problems of access for vulnerable groups Low participation of vulnerable groups in consultations	▪ PIU and Contractor will organize information sessions specifically for women, disabled individuals, and elderlies, ▪ PIU and Contractor will organize meetings and events in a way that accommodates the physical condition of elderly individuals, ▪ PIU and Contractor will schedule meetings at times that are convenient for women's participation, ▪ PIU will implement flexible scheduling to accommodate health conditions, ▪ PIU will make informational materials more readable and understandable (e.g., larger fonts, simplified language) for illiterates ▪ PIU and Contractor will create safe spaces where women can freely express their opinions	Stakeholder Engagement Plan Grievance Mechanism	PIU Contractor	Included in SEP Budget
Labor and Working Conditions				
Adverse Labor Relations	▪ All workers should be issued with written contracts with the following information: job description and working conditions, working hours, wages, rights and duties, and Code of Conduct ▪ PIU will ensure construction phase personnel's employment is conducted in compliance with all applicable legal requirements and WB ESS2. ▪ PIU will ensure contractual requirements are fulfilled during the process. ▪ Contractor will ensure the personnel are aware of the process and dates (through appropriate and transparent information dissemination). ▪ PIU /Contractor will make reasonable efforts to ascertain that third parties who engaged contracted workers are legitimate and reliable entities and have in place labour management procedures applicable to the project that will allow them to operate in accordance with the LMP of the project and ESS2	Employment and Training Plan Labour Management Procedures & contractor's Labour Management Plan	PIU Contractor	Assignment of personnel (CLO at site): USD 85,000
Unsatisfactory accommodation of external workforce	▪ Ensure compliance with Workers' accommodation: processes and standards for onsite facilities (canteen, sanitary facilities, adequate amenities for socialization and resting, etc.).	Employment and Training Plan	Contractor	Assignment of personnel (CLO at site):

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ Survey accommodation facilities to be provided off-site (if any) and ensure they are also in compliance with Project standards. ▪ Ensure drinking and utility water to be supplied meet the requirements of the Turkish Regulation on Water Intended for Human Consumption and WHO Guidelines for Drinking Water Quality. ▪ Provide all accommodation sites with sufficient emergency response equipment such as first aid kits and fire-fighting equipment and conduct periodic checks to ensure they are in working condition. ▪ Provide trainings to personnel on general waste management, housekeeping, first aid practices and communicable diseases. ▪ Conduct visual checks on site to ensure proper housekeeping. ▪ Ensure proper first aid equipment is kept on site, at various related locations. ▪ Conduct periodic medical checks for personnel and provide vaccination and/or other mitigating measures when required. ▪ Establish adequate medical rooms at the camp sites, provide sufficient human resources and keep a suitable patient transport vehicle on site.	Labour Management Procedures & contractor's Labour Management Plan		USD 85,000
OHS	▪ The Contractor shall development a site specific OHS risk assessment and management plan. The Contractor shall prepare and maintain OHS manuals, procedures, and work instructions, ensuring they are updated periodically and accessible to all workers. ▪ Implementation of OHS Management Plan. ▪ Emergency response plans shall be tested regularly through periodic drills (fire, evacuation, chemical spill, traffic accident scenarios, etc.), and lessons learned shall be documented. ▪ Contractor shall organize at least annual emergency exercises involving both site workers and relevant external agencies (e.g., fire brigade, health services). Results of drills shall be evaluated and corrective actions shall be implemented immediately.	Occupational Health and Safety Management Plan (OHSMP)	Contractor	Assignment of personnel (HS Expert at site): USD 100,000

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ Risk assessment study within the scope of every activity to be conducted for the project will be conducted before commencing the works. ▪ Employees will be aware of any possible OHS risks and will be properly trained to prevent them. All project personnel shall receive regular OHS trainings, including induction training before mobilization and refresher trainings at least annually. ▪ Specific trainings shall cover first aid, fire safety, working at height, electrical works, handling of hazardous materials, traffic safety, and ergonomics. ▪ Training records shall be maintained systematically, and workers shall not be allowed to work without documented participation in relevant OHS training. ▪ Toolbox talks shall be held daily/weekly to remind workers of task-specific hazards and safe practices. ▪ The Contractor must ensure immediate response to and timely reporting, analysis and communication of all incidents to DGII. ▪ An incident reporting and recording system shall be established; all accidents, near-misses, and occupational illnesses shall be documented, investigated, and reported. All incidents shall be recorded in the approved incident reporting system and be analyzed to a level commensurate with the actual consequence or potential risk rating, whichever is higher. ▪ Root cause analysis shall be conducted for all significant incidents, and corrective measures shall be tracked to closure. ▪ Records of OHS inspections, risk assessments, permits-to-work, and monitoring results shall be archived and made available for audits. ▪ The Contractor is committed to return workers to meaningful and productive employment at the earliest possible time. ▪ The Contractor employees will undergo a medical assessment to ensure they are medically fit to perform their role before commencing the works and these controls will be repeated annually.			

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ The Contractor must ensure that health assessments are carried out in respect of all personnel who engage in specific tasks with the potential for occupational exposure. ▪ The Contractor recognizes that fatigue may arise from hours and patterns of work and activities, and travel/commute time. ▪ The Contractor acknowledges the risk associated with project area operations and provides for the reporting and rectification of hazards. ▪ Where personnel are required to work alone, the activities and conditions shall be risk assessed, and a safe system of work developed. ▪ Where a manual handling task is required a risk assessment shall be completed to identify the hazards. The risk of injury should be assessed for each hazard, and appropriate controls implemented, including manual handling training as appropriate. ▪ The Contractor must supply suitable facilities for personnel. ▪ The Contractor must ensure commitment to monitoring and reporting of occupational health hazards and hazardous occupational environments and implement controls to reduce risk in accordance with all applicable regulations and, wherever practicable, with regard to accepted best practices. ▪ The Contractor must ensure the safe control of hazardous substances and reduce the level of exposure to personnel, property and the environment in accordance with the ESIA Requirements. ▪ The Contractor must ensure that all personnel and visitors wear or use personal protective equipment provided if it is necessary to protect them from harm. ▪ The Contractor must ensure that sufficient safety signs are posted in workplaces and travel ways to prevent incidents, identify hazards. ▪ The Contractor must ensure that all personnel undertaking activities where there is a risk of a person falling from one level to another do so in a controlled manner to reduce the risk of personal injury. ▪ Task specific hazard identification will be done for each activity.			

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ Access to the project area will be restricted by the Contractor and necessary precautions will be taken such as fencing the area and placing relevant signs etc. ▪ Site inductions will be carried out by the contractor. ▪ Inspections of the project site should be carried out weekly. Contractor will undertake weekly inspections of the whole work site. ▪ The Contractor is obliged to provide adequate personal protective equipment free of charge to workers, including community workers (if any). ▪ Workers' GM will be implemented to resolve any complaints related to OHS issues.			
Community Health and Safety				
Risk on traffic and pedestrian safety due to construction traffic	▪ Implement the Traffic Management Plan, ▪ Implement the Stakeholder Engagement Plan, ▪ Investigate all construction areas and construction access routes for potential community interaction (with particular attention to schools, children parks, etc.) with Project construction phase traffic. Based on results, develop and implement site specific measures (i.e. improve signage, visibility) and driver/operator trainings prior to initiation of any construction work, ▪ Implement access restrictions at construction areas and access routes, by specifying restricted zones, (i.e. dangerous routes), fencing, barriers, etc., ▪ Install signs, signals, markings and other appropriate traffic regulation devices, including reflective and flashing signage for nighttime traffic safety, at all required sites, ▪ Avoid passage of construction traffic through the settlements, whenever alternative roads are present, ▪ Where passage through existing settlements is unavoidable, take all necessary measures (i.e. speed limits, traffic signs, driver trainings) to prevent safety risks on local communities, engage with community	TTMP SEP EPRP CHSMP OHSMP CRMP	Contractor	Assignment of personnel (HS Expert at site): USD 100,000 Assignment of personnel (CLO at site): USD 85,000

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	representatives to plan the traffic by taking the daily life of the communities into account (i.e. selection of routes, school transportation hours, market days, etc.) and inform the communities about the construction schedule, activities to be conducted and safety measures taken, through appropriate means such as meetings and leaflets, notices, signs, etc., ▪ Allow only drivers/operators with valid licenses specific to each construction phase vehicle to drive/operate vehicles, ▪ Provide driving skills improvement trainings in consideration of the requirements of specific vehicles, machinery, etc., ▪ Implement speed limits at all construction sites, ▪ Conduct periodic medical checks for drivers/operators, ▪ Conduct periodic vehicle maintenance, ▪ Initiate construction only after relevant permits are obtained and all required measures such as signage, barriers, fencing, lighting, etc. are taken, ▪ Prioritize selection of material borrow sites and quarries in areas that do not interact with public, ▪ Use only licensed firms for explosives delivery to ensure safety along the existing roads to be used for transport of explosives. ▪ Provide information and awareness raising activities with stakeholders, communities including women, children and also disabled.			
Emergency Preparedness and Response	▪ Develop and implement a project-specific Emergency Preparedness and Response Plan for the construction phase covering the risks on local communities, ▪ Develop measures/systems for collaboration with the local communities and other external parties including local governmental agencies, media, etc. where necessary, ▪ Notify local communities by using appropriate tools (e.g. telephone call lists, vehicle mounted speakers) in case of emergencies arising from the Project work/construction sites may pose risk on them,	EPRP	Contractor DGII	

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ Where necessary, communicate the details of the nature of the emergency, protection options, etc. through trained community liaison officer(s), ▪ The Project Company will cooperate with related authorities both for the prevention of emergencies and during emergency situations, where necessary, ▪ Communication with the media will be handled by qualified and trained personnel and/or through appropriate tools, such as press releases, when necessary.			
Security Personnel	▪ Contractor will ensure that the security personnel to be employed are screened that they have not been involved in past abuses and will train the security personnel in terms of applicable law, code of conduct, gender-based harassment and violence, cultural sensitivities of the region, stakeholder engagement procedure in accordance with the ESS4. ▪ Contractor will conduct legal inquiries during the hiring process of security personnel (or the company the security service is procured from) to check competency and existence of any former abuse incidents. ▪ Contractor will ensure, in accordance with the ESS4, that Security Personnel are adequately trained (or determine that they are properly trained) in the use of force (and where applicable, firearms) and appropriate conduct toward workers and affected communities; and (iii) will require them to act within the applicable law and any requirements. ▪ Contractor will provide training on code of conduct, gender sensitivities and local cultural sensitivities to security personnel or ensure that the company the security service is procured from provides its personnel with similar training. The training will ensure force is used only for preventive and defensive purposes and in proportion to the threat. ▪ Contractor will provide necessary identification, communications devices, and any other equipment required for the job to the security personnel to	Employment and Training Plan (ETP)	PIU	Included in Security Personnel assignment

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	ensure maximum efficiency. The security personnel will not be allowed to carry firearms. ▪ Contractor will investigate any grievance from local communities regarding inappropriate conduct of security forces immediately. ▪ Contractor will ensure appropriate conduct of security personnel through document and incident report reviews, as well as review of grievances received. ▪ Contractor will ensure all measures are included in contractual agreements. ▪ PIU will ensure that when security personnel is used, the Borrower is guided by the principles of proportionality and Good International Industry Practice, and by applicable law (in accordance with the Law No. 5188 on Private Security Services, Regulation on the Implementation of the Law on Private Security Services, ESS2 and relevant International Labour Organization (ILO) conventions), in relation to hiring, rules of conduct, training, equipping, and monitoring of such security workers.			
Community exposure to health problems	▪ Ensure compliance with Workers' accommodation: processes and standards for accommodation; including clean and safe areas that ensure the minimum space requirements, air-conditioning and ventilation that is appropriate for the existing climatic conditions to avoid spread of disease among the Project workforce, ▪ Provide training on healthcare and general hygiene cleanliness to all personnel, ▪ Conduct periodic medical checks for personnel, provide vaccination and/or develop other mitigating measures when required, ▪ Develop and implement appropriate waste and wastewater management plans, ▪ Implement health related awareness raising activities covering local communities.	Community Health and Safety Management Plan (CHSMP)	Contractor	No additional cost

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost
	▪ Implement dust suppression measures such as regular water spraying on roads, material stockpiles and excavation areas to minimize dust dispersion affecting nearby communities. ▪ Ensure proper covering and management of transported materials (e.g. trucks with tarpaulins) to avoid dust emissions and material spillover on local roads. ▪ Establish noise and vibration control measures (e.g. using low-noise equipment, maintaining machinery, installing temporary barriers where necessary) to reduce exposure of nearby communities. ▪ Plan and schedule construction activities to minimize night-time works and avoid unnecessary disturbance to sensitive receptors such as residences, schools, and hospitals. ▪ Implement traffic management plan to ensure safe circulation, reduce congestion, and minimize accident risks for local communities.			

Table 6. Environmental and Social Mitigation Plan – Operation

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
Land Use, Soils and Geology				
Seismicity Landslide Risk Geological and Geotechnical Risks	▪ Periodic control and maintenance activities will be carried out along the routes to ensure ongoing safety and performance. When necessary, additional durability and structural measures will be developed and implemented in cut and fill areas to address potential issues such as cracks, breaks, slips, and deformations in engineering structures, especially those that may occur after natural disasters.	EPRP	TCDD	Yearly maintenance cost: USD 100,000
Noise & Vibration				
Increase in noise and vibration levels	▪ Noise monitoring will be conducted quarterly during the first year of operation. After the first year, monitoring will be carried out every two years. Additionally, noise and vibration monitoring will be conducted promptly in response to any complaints. ▪ Physical barriers, such as sound walls or acoustic fencing along the railway corridor should be installed by TCDD to block or absorb sound waves if deems required according to the noise monitoring results and/or noise-related complaints. ▪ The use of natural barriers like earth berms or vegetation should be considered by TCDD to help reduce noise transmission. ▪ The average speed of trains should be optimized by 50 km/h.	PPP	TCDD	Included in annual maintenance cost

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
	▪ Continuous welded rail should be used to reduce the noise generated by train wheels passing over joints in the track. ▪ Tracks should be maintained regularly to minimize irregularities that can contribute to increased noise levels. ▪ The use of noise-reducing track materials, such as noise-dampening rail pads, should be explored to mitigate vibrations and sound propagation. ▪ Measures should be implemented to reduce wheel and rail friction, such as applying friction modifiers or using lubricated track. ▪ It should be ensured that wheels and rails are regularly inspected and maintained to prevent excessive noise due to wear and tear. ▪ High-quality, well-compacted ballast, optimized subgrade materials, and vibration-absorbing rail coatings or track materials should be used, where possible, to reduce vibration transmission. ▪ Implementing speed restrictions should be considered in sensitive areas to reduce the noise generated by trains, particularly during nighttime hours when noise impacts can be more pronounced. ▪ Project Grievance Mechanism will be implemented. If any comment related with noise and vibration is received through the Grievance Mechanism, evaluate the complaint and where necessary plan and implement corrective actions. ▪ Regular and timely engagement with local communities, in compliance with the SEP of the Project, will be performed to understand their			

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
	concerns and gather feedback on noise and vibration related issues.			
Water Resources and Wastewater Management				
Wastewater Generation	▪ Wastewater generated due to the operational activities will be deposited in septic tank that will be impervious, in accordance with "Regulation on Pit Opening Where Sewer System Construction is not Applicable" being published in Official Gazette No.13783 dated 19.03.1971. When the pits are filled, wastewater will be removed by sewage trucks, and disposal will be provided within the scope of the protocol to be made with the municipality that has a licensed wastewater infrastructure system with enough capacity. ▪ In addition to the domestic wastewater to be generated during the operation phase, there will be industrial effluents due to rail car maintenance and refurbishment activities. To prevent, minimize, or control the industrial effluents generated in the rail car maintenance areas; ▪ Ultrafiltration will be used to extend the life of washing solutions for aqueous parts or alternatives to water cleaning (e.g. dry cleaning by wire brush or bake oven) will be used; ▪ Discharge of industrial wastes to septic systems, drain fields, dry wells, cesspools, pits, or separate storm drains or sewers will be prevented;	PPP WMP	TCDD	Included in annual maintenance cost

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
	▪ The wastewater from the service bays and the floor drains in maintenance areas will be kept out of the storm drains and will be collected separately; ▪ The effluents from the service bays and the floor drains in maintenance areas will be pretreated to reduce contaminant concentrations before collection in septic tanks. Pretreatment systems typically consist of oil / water separators, biological and chemical treatment, and activated carbon systems.			
Impacts on Surface Water and Groundwater	▪ Pollution Prevention Plan and Emergency Preparedness and Response Plan that covers management of hazardous and chemical substances will be implemented. ▪ It will be prohibited to store any type of chemical and hazardous material near 50 meters of any creek or river. ▪ Personnel will be trained regarding waste disposal to the rivers and creeks. ▪ Periodic checks will be maintained to monitor waste disposal to streams. ▪ Project Grievance Mechanism will be implemented. If any comment related to water quality is received through the Grievance Mechanism, evaluate the complaint and where necessary plan and implement corrective actions. ▪ While determining the locations of temporary fuel or oil storage areas, the locations of water resources will be taken into consideration and dangerous material spills / leaks such as fuel, oil, oil, cement etc. will be taken under control immediately.	PPP WMP	TCDD	Included in annual maintenance cost

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
	▪ In the event of contamination, suspicion of contamination, or any related complaints, the quality of groundwater resources and wells in the area will be monitored. Groundwater samples will be collected and analysed at locations determined based on the proximity to potential pollution sources.			
Resource and Waste Management				
Potential impacts of wastes (municipal solid wastes, recyclables, hazardous and special wastes), if not managed properly	▪ Develop and implement the Project-specific Waste Management Plan. ▪ Submit official waste declarations for all waste generated to the online system of MoEUCC. ▪ Obtain Zero Waste Certificate as appropriate. ▪ Conduct visual checks along the railway route to identify illegally dumped waste and litter; collect these wastes periodically, identify their characteristics (hazardous or nonhazardous) by analysis to be conducted in line with related legislation, ensure segregation based on recyclability; store the segregated litter in separate containers and dispose of the wastes in line with relevant Turkish waste management regulations. ▪ Use lead-free paints for maintenance activities. ▪ Collect the garbage that will be generated at the stations from the collection areas to be placed in the station and forward them to the landfill and solid waste storage facilities of the relevant Municipalities.	PPP WMP	TCDD	Included in annual maintenance cost
An additional burden on the region's waste management	▪ Waste recycling, recovery, and disposal agreements will be executed with the authorized municipality or licensed recovery and disposal firms to ensure the	PPP WMP	TCDD	Included in annual maintenance cost

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
facilities (e.g. landfills, recovery / recycling facilities etc.)	proper management of both hazardous and non-hazardous wastes.			
Biodiversity				
Habitat loss / fragmentation Habitat loss / displacement	▪ Natural habitat will be restored upon completion of construction activities, enabling species to re-inhabit these areas. ▪ Statuses of habitats and associated species populations will be monitored throughout operation phase. Where necessary, habitat and species-specific measures will be developed and implemented with an adaptable management approach. ▪ To establish coherence between newly formed and natural habitats, conserve fauna species, prevent introduction of invasive alien species, and ensure secure transportation, integrated vegetation management strategies will be developed and implemented. ▪ Critical Habitat Monitoring will be performed and reported. ▪ Following the construction, observation studies will be conducted twice a year (in spring and autumn for 15 days/period) to determine whether there has been any impact on the habitat by an Ornithologist. Following the one-year study, the need for ongoing monitoring of the areas will be re-assessed. ▪ Animal mortality will be kept under control through implementation of methods to prevent animal passage and strategies related to use of existing	CHA-BMP	TCDD	Included in annual maintenance cost Additional cost on ecological services: USD 50,000

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
	passages / construction of new ones, based on habitat use of target species that will be identified during pre-construction and monitored throughout construction. ▪ In order to prevent animals being attracted to vegetation along the route, to limit the time animals spend near the railway, and increase their visibility and also vision, appropriate vegetation schemes will be implemented within the scope of the integrated vegetation management. ▪ Bird migration monitoring will be performed.			
Invasive alien species	▪ To avoid development of alien species along the railway route, natural plants will be used in restoration, and regular maintenance will continue throughout the operation phase. ▪ To take necessary measures against the risk of invasive alien species being transferred by the trains, there will be periodical controls and if identified, necessary measures will be taken in line with the Project standards to avoid spread of invasive alien species. ▪ During the operation phase biodiversity monitoring studies, potential for presence of invasive alien species in the area will also be monitored.	CHA-BMP	TCDD	
Indirect impacts (dust, air emissions, noise, waste, and impacts on water and soil quality)	▪ Use of chemicals for maintenance will be limited. ▪ Wastes will be recycled and disposed on a regular basis to prevent pollution of receiving environment due to operational activities.	CHA-BMP PPP WMP	TCDD	

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
	▪ Noise barriers will be used to minimize impacts on animals. ▪ Measures to minimize risk of erosion will be taken within the scope of integrated vegetation management. ▪ Necessary measures will be taken to minimize risk of erosion during integrated vegetation management. To identify and respond to any hazard related to erosion, landslide, etc., verges and sloped will be checked periodically. ▪ Solid wastes, hazardous wastes, and wastewater that will result from operation activities will be managed through implementation of related management plans (Waste Management Plan, Water and Wastewater Management Plan, etc.).			
Labor and Working Conditions				
Impacts on Labor and Working Conditions	▪ Equitable treatment of employees, non-discrimination and equal opportunity ▪ To maintain and improve the employee-management relationship ▪ To protect sensitive employees, migrant workers, personnel supplied by third parties ▪ To provide safe and healthy working conditions ▪ To meet necessary health requirements ▪ Preventing forced labor ▪ All workers should be issued with written contracts with the following information: job description and working conditions, working hours, wages, rights and duties, and Code of Conduct .	Employment and Training Plan Occupational Health and Safety Management Plan	TCDD	No additional cost

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
OHS	▪ Development of a site specific OHS risk assessment and management plan. ▪ Implementation of OHS Management Plan. ▪ Major railway failures that can lead to accidents such as broken wheel or axle and broken rail or track buckle will be controlled via control train and OHS personnel of TCDD monthly. ▪ Suitability of the signalization system will be controlled in a daily manner. ▪ No personnel will be working without having the necessary training. ▪ Level crossings will be controlled daily. ▪ Operations will be stopped immediately if any factor that may lead to accidents is reported.	OHSMP SEP including GM	TCDD	No additional cost
Community Health and Safety				
Emergency Preparedness and Response	▪ Implementing a site-specific Emergency Preparedness and Response Plan, ▪ Controlling the project route for unauthorized people, ▪ Cooperation with related authorities (for emergency prevention and during emergencies), ▪ Emergency response begins as soon as a rail emergency is identified or reported. When it is notified of a rail emergency, they will immediately make notifications per TCDD protocols. If a railway emergency occurs: ▪ The first responder on scene makes a preliminary assessment and notifies relevant authorities (Fire	EPRP	TCDD	Included in annual maintenance cost

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
	Department, police etc.) with all information available. ▪ The first arriving Fire Officer becomes the Incident Commander and will command and direct all emergency response actions until relieved by the senior official having legal or assigned responsibility. ▪ The Incident Commander assesses the need for additional resources. ▪ Together with the Incident Commander, law enforcement will set up security and establish access and traffic control. ▪ The TCDD Branch Director shall appoint supervisors to emergency response Divisions/Groups. ▪ The Incident Commander will instruct emergency response personnel not to move property and debris associated with the wreckage unless there is imminent danger of items being destroyed, or unless they inhibit access to passenger rescue. ▪ The health service officers are responsible for the identification, movement and/or removal of the dead bodies. ▪ In the event a body has been moved prior to the health service officers' approval, personnel moving the body shall make careful note of the location and condition of the body. ▪ The Ministry of Interior Disaster and Emergency Management (AFAD), Police Department, Fire brigade, TCDD, and other officials shall contact the Mayor. The TCDD will be in constant communication with the Command Post.			

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
General railway operational safety	▪ Implementing railway operational safety procedures, such as a Positive Train Control (PTC) system, aimed at reducing the likelihood of train collisions, ▪ If the PTC system is not considered practical, automatic rail trusses are found, in places where manual trusses are available, when the train passes from the main line to the side road in the absence of signaling, and when it returns to its normal position on the main line, reporting and transmitting this information to all employees and train officers on the train, ▪ To regularly inspect and maintain railway lines and facilities in order to operate in accordance with national and international railway line safety and standards, ▪ Implementing a general safety management program equivalent to internationally recognized railway safety programs.	CHSMP TTMP	TCDD	Included in annual maintenance cost
Level crossing safety	▪ Using bridges or tunnels instead of level crossings (removing gates can also improve train performance because most gates have low speed limits to minimize the risk of road traffic), ▪ Regular inspection / maintenance to ensure automatic doors installation and proper operation in all level crossings.	CHSMP TTMP	TCDD	Included in annual maintenance cost
Pedestrian safety	▪ Putting clear and clear warning signs at the entry points (e.g. stations and level crossings),	CHSMP TTMP	TCDD	Included in annual maintenance cost

Impact Description	Mitigation Measures	Implementation Plan	Responsibility	Cost *
	▪ Installation of fences or other barriers at the ends of the station and other areas and preventing unauthorized access to the rails, ▪ Providing training about not entering the area without permission, especially for local youth, ▪ Providing regular information on road safety/ traffic and awareness raising activities to local communities especially schools, neighboring villagers including women before construction, ▪ Ensuring that the specified route is safe, clearly determined and easy to use, ▪ Establishment of closed-circuit security cameras and monitoring systems (CCTV) to monitor railway stations, and an emergency announcement system to prevent violations in other areas where intruders are frequent.			

** It should be noted that, cost of annual maintenance of the project is estimated via expert judgement considering similar previous projects. On the other hand, as the railway will be handed over to TCDD after completion of construction activities, TCDD will develop and implement its own ESMS system. Thus, the costs given in this table should be reconsidered.*

5.2 Monitoring Plan and Reporting Requirements

The overall objective of environmental and social monitoring is to verify compliance with ESMP and other E&S management sub-plans, measure effectiveness of mitigation measures qualitatively and quantitatively, and develop appropriate responses to non-compliances with Project standards, and emerging environmental and social issues. A comprehensive plan for monitoring activities and thresholds are provided in this chapter of ESMP to be further developed as more information becomes available before the onset of land preparation and construction phase. Monitoring will be conducted to ensure that all project activities and mitigation measures comply with the ESMP, related E&S management sub-plans, national legislation, and the World Bank ESF. It will also verify that DGII and the Construction Contractor fulfill their commitments and meet the requirements outlined in this ESMP through regular audits and reporting. The primary objectives of the monitoring plan are to:

- Control that all mitigation measures are in place,
- Measure effectiveness of the mitigation measures,
- Enable timely action to be taken when unexpected environmental and social incidents are encountered.

Mitigation measures for each E&S component of the Monitoring Plan are provided within the scope of the ESMP (see Section 5.1). Parameters, locations, frequencies, methods, thresholds values, key performance indicators for the monitoring studies are identified along with identification of the responsible parties, reporting frequencies and corresponding budget in the Monitoring Plans for pre-construction, land preparation/construction and operation phases (see Table 7, Table 8 and Table 9, respectively). To determine whether monitoring outcomes comply with the Project standards, implementation of mitigation measures will be observed and measured, effectiveness of measures will be verified, all results will be recorded and monitored. In addition to the monitoring responsibilities outlined in Section 5.7, it should be noted that during the pre-operation period, the Construction Contractor's activities will be periodically monitored by DGII and/or reported to DGII with the support of the Design and Supervision Consultant, who will serve as a bridge/liaison between the Construction Contractor and DGII and actively participate on-site.

The 3rd Party Environmental and Social Monitoring Consultant and experts, who will take part in monitoring the compliance and performance of the project activities with the ESMP requirements, will be responsible for conducting relevant assessments, developing corrective actions and presenting them to the DGII and the Construction Contractor.

In addition to the impacts identified in the ESIA report, if there is an unforeseen change in the Project phases or if additional environmental and social study is required, the World Bank will be informed about the changed status and the ESMP will be revised according to Chapter 5.3 Management of Change Process. E&S management sub-plans prepared by the contractor will be reviewed and updated at least quarterly periods to reflect the changing conditions or the requirements of the DGII and the World Bank. Any revisions to be made in the ESMP and related management plans will be submitted to the approval of the DGII first, and the Contractor personnel will be provided with access to the updated versions of the ESMP.

Table 7. Monitoring Plan- Pre-Construction Phase

Issue	Monitoring Parameter	Monitoring Location	Responsible Party for Implementation	Monitoring Frequency / Timing	Monitoring Method	Threshold Values (when available)	Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard	Key Performance Indicator/Target	Reporting Frequency	Implementation Cost
Grievance management	% of grievances resolved through GM within defined target timeframe	All project areas along with AoI	DGII Contractor	Pre-cons	Grievance logbook, periodic GM reports	-	ESS1: Assessment and Management of Environmental and Social Risks and Impacts ESS10: Stakeholder Engagement and Information Disclosure	100% of grievances resolved within 30 days	Monthly	Additional cost on preventive corrective actions
Permission Regarding Non-Agricultural Use of Agricultural Areas	Non-agricultural use permit	All project areas	DGII	Pre-Cons.	Documentation	-	Soil Conservation and Land Use Law	Obtaining all necessary permits before starting construction activities	Monthly	No additional cost
Determination of the camp site, access roads and excavation storage areas and obtaining the necessary permissions	Site selection process for camp site, access roads and excavation areas and relevant approval letters and/or permits	All project areas	DGII Contractor	Pre-Cons.	Documentation	-	ESIA Report Expropriation Law ESS1: Assessment and Management of Environmental and Social Risks and Impacts ESS3: Resource Efficiency and Pollution Prevention and Management ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement ESS10: Stakeholder Engagement and Information Disclosure	Obtaining all necessary permits before starting construction activities	Monthly	Included in construction cost
Ensuring Ground Safety	Resilience/Durability of the structures	Project route and all engineering structures	DGII	Pre-Cons.	Documentation Visual observations at site	-	Regulation on Structures to be Built in Disaster Areas	Compliance of the structures with design standards	Monthly	No additional cost
Preparation of Site-specific Management Plans and Procedures	Site-specific management plans and procedures	Office	Contractor	Pre-Cons.	Documentation	-	ESS1: Assessment and Management of Environmental and Social Risks and Impacts	Number of site-specific management plans and competence	-	Included in construction cost
Obtaining EIA Exemption Letter/Opinion from the Zonguldak Provincial Directorate of Environment, Urbanization, and Climate Change for the project's final design	Approval letters and/or permits	Office	DGII	Pre-Cons.	Documentation	-	Environmental Law ESS1: Assessment and Management of Environmental and Social Risks and Impacts	Obtaining all necessary permits before starting construction activities	-	No additional cost

Issue	Monitoring Parameter	Monitoring Location	Responsible Party for Implementation	Monitoring Frequency / Timing	Monitoring Method	Threshold Values (when available)	Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard	Key Performance Indicator/Target	Reporting Frequency	Implementation Cost
Implementation of RP	Completion of all RP implementation prior to land entry.	Expropriation corridor	DGII Contractor	Prior to land entry	Cash compensation Full replacement costs Crop payments	-	Expropriation Law Zoning Law Settlement Law Cadastre Law Land Registry Law Land Registry Regulation Notification Law ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement ESS10: Stakeholder Engagement and Information Disclosure	Completion of all payments for movable /immovable assets All eligible project-affected persons (PAPs) have received the full compensation and assistance entitlements as defined in the Entitlement Matrix	Pre-Cons.	Included RP Budget

Table 8. Monitoring Plan – Land Preparation and Construction Phase

Issue	Monitoring Parameter	Monitoring Location	Responsible Party for Implementation	Monitoring Frequency / Timing	Monitoring Method	Threshold Values (when available)	Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard	Key Performance Indicator/Target	Reporting Frequency	Implementation Cost
Soil Contamination	Existence of soil contamination BTEX, TPH, TVOCs, pH, Oil-Grease, Cadmium, Mercury, Zinc, Copper, Nickel, Chromium, Lead, Selenium, Arsenic, Antimony, Molybdenum, Titanium, Tin, Barium, Berylllium, Boron, Uranium, Vanadium, Cobalt, Thallium, Silver	Points to be selected to represent near stations which were selected during ESIA Report	Contractor	Every six months and in case of a complaint/spill incident or leakage to soil	On-site visual observations/ inspections Soil sampling and analysis (by accredited and competent firms) Documentation: Training records, incident reports	Baseline measurement results specified in the ESIA Report	Regulation on Soil Pollution Control and Point Source Contaminated Sites Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management	Number of leakages/spill incidents Number of non-compliances with the applicable standards (Target: Zero non-compliance) Amount of contaminated soil Number and percentage of the personnel trained regarding emergency response to spills and leaks	Monthly	Included in Construction Cost Additional cost on Soil Sampling and Analysis: USD 5,000
Implementation of RP	RP implementation	After completion of RP implementations	Third Party Implementation Agent	Once	Confirmation report	RP requirements	Confirmation report	Submission of confirmation report of 100% RP implementation	Once	RP budget
Increase in Noise Level	Noise	Baseline measurement points determined within the scope of ESIA Studies / Closest settlement in case of complaint	Contractor	Quarterly and if there is a complaint	On-site visual observations/ inspections Noise level measurements (at least 48 hours of uninterrupted noise measurements by accredited and competent firms) Documentation: Training records, grievance records, correspondence with the relevant stakeholders, measurement reports	Baseline measurement results specified in the ESIA Report Legislative and WBG EHS Guidelines limit values	Regulation on Environmental Noise Control Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management	No exceedance of noise limit values observed in the noise measurements Number of noise related community grievances Number and percent of the personnel trained on noise management	Monthly	Included in Construction Cost Additional cost on Noise Measurement and Analysis: USD 10,000 / Year

Issue	Monitoring Parameter	Monitoring Location	Responsible Party for Implementation	Monitoring Frequency / Timing	Monitoring Method	Threshold Values (when available)	Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard	Key Performance Indicator/Target	Reporting Frequency	Implementation Cost
Air Quality	Settled Dust PM_{10} $PM_{2.5}$	Baseline measurement points determined within the scope of ESIA Studies / Closest settlement in case of complaint	Contractor	Quarterly and if there is a complaint	On-site visual observations/ inspections Settled Dust, PM_{10}, and $PM_{2.5}$ measurements (by accredited and competent firms) Documentation: Training records, grievance records, measurement records	Baseline measurement results specified in the ESIA Report Legislative and WBG EHS Guidelines limit values	Regulation on Control of Industrial Source Air Pollution IFC - WHO - Outdoor Air Quality Guidelines Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management	No exceedance of air quality limit values observed in air quality measurements Number of air quality related grievances Number and percent of the personnel trained on air quality	Monthly	Included in Construction Cost Additional cost on Air Quality Measurement and Analysis: USD 15,000 / Year
Air Quality	Vehicle emissions	Construction equipment and vehicles	Contractor	Daily	Documentation: Vehicle and equipment maintenance records On-site visual observations/ inspections	-	Regulation on Control of Exhaust Gas Emission and Gasoline and Diesel Oil Quality	The ratio of maintained vehicles and equipment to the total number	Monthly	Included in Construction Cost
Wastewater Generation	Wastewater	`Construction Site	Contractor	Daily	On-site visual observations/ inspections Documentation: Wastewater disposal records, grievance records on wastewater issues	-	Implementing Regulation on Pits to be Made in Sedimentation Areas Where Construction is Not Possible Water Pollution Control Regulation WBG General EHS Guidelines	Existence of wastewater collection system (impermeable septic tanks) and appropriate disposal of wastewater	Monthly	Included in Construction Cost
Surface Water Quality	pH, Oil-Grease, Color, Conductivity, Dissolved Oxygen, Chemical Oxygen Demand, Biochemical Oxygen Demand, Ammonium Nitrogen, Nitrate Nitrogen, Total Kjeldahl Nitrogen, Total Nitrogen, Ortho Phosphate Phosphorus, Total Phosphorus, Fluoride, Manganese, Selenium, Sulfur	Baseline measurement points determined within the scope of ESIA Studies	Contractor	Every 6 months and if there is a complaint	Sampling and analysis (by accredited and competent firms) Documentation: Grievance records	The limit values specified in Annex-5, Table-2 (Quality Criteria of Inland Surface Water Resources According to Their Classes in Terms of General Chemical and Physicochemical Parameters) of the Surface Water Control Regulation along with WBG EHS Guidelines	Surface Water Quality Regulation Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Compliance with the surface water quality standards Number of water quality related grievances	Monthly	Included in Construction Cost Additional cost on Water Quality Measurement and Analysis: USD 5,000 / Year
Groundwater Quality	pH, Conductivity, Dissolved Oxygen, Oxygen Saturation, Salinity, Suspended Solids, Total Cyanide, Sulphate, Chloride, Nitrate, Arsenic, Boron, Mercury, Cadmium, Lead, Trichloroethylene, Phosphate, Ammonium, Total Pesticide, Mineral Oil and Derivatives	The points to be identified based on the locations of potential pollution sources	Contractor	In the event of contamination, suspicion of contamination, or any related complaints	Sampling and analysis (by accredited and competent firms) Documentation: Grievance records	The limit values specified in Regulation on Water Intended for Human Consumption and WHO Drinking Water Guidelines	Regulation on Water Intended for Human Consumption WHO Drinking Water Guidelines Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Compliance with the groundwater quality standards Number of groundwater quality related grievances	Monthly	Included in Construction Cost Additional cost on in case of Groundwater Quality Measurement and Analysis: USD 5,000 / Year

Issue	Monitoring Parameter	Monitoring Location	Responsible Party for Implementation	Monitoring Frequency / Timing	Monitoring Method	Threshold Values (when available)	Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard	Key Performance Indicator/Target	Reporting Frequency	Implementation Cost
Seismicity resistance of the built structure	Project components following large seismic events occurred (to check in terms of their resilience/ durability)	Project route and all engineering structures	Contractor	After an earthquake	Visual observations at all routes and structures Documentation: Building permits and certificates	-	Regulation on Structures to be Built in Disaster Areas Türkiye Building Earthquake Regulation Emergency Preparedness and Response Plan ESS4: Community Health and Safety WBG EHS Guidelines	Number of related accidents/incidents recorded Effective implementation of the Emergency Preparedness and Response Plan Damage situation after the earthquake	Monthly	Included in Construction Cost
Waste Management	Excavation Waste	Project Route and Excavation Storage Areas	Contractor	Continuously during excavations	Visual observations at site Documentation: Waste records on reuse and disposal	-	Regulation on Control of Excavation Soil, Construction and Debris Wastes Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	The amount of excavation material and amount of excavated material reused	Monthly	Included in Construction Cost
Soil Management	Topsoil	Project Route and Excavation Storage Areas	Contractor	Continuously during excavations	Documentation and visual observations at site	-	Regulation on Control of Excavation Soil, Construction and Debris Wastes Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Topsoil adequately stripped, temporarily stored at designated areas and appropriately reused	Monthly	Included in Construction Cost
Waste Management	Solid Waste and Packaging Waste	Project working areas during construction work	Contractor	Daily	Visual observations at site Documentation: Waste generation and disposal records, notifications on Integrated Environment Information System/Waste Management Application (Waste Declaration System), training records, contracts/protocols regarding waste shipment	-	Waste Management Regulation Regulation on Control of Packaging Wastes Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Ratio of reused/recycled/recovered wastes to total wastes generated All types of wastes transferred to the relevant recycling/disposal facilities Number of incidents related to soil contamination due to improper waste management Number and percentage of the personnel trained on waste management	Monthly	Included in Construction Cost
Waste Management	Non-Hazardous and Inert Wastes	Project working areas during construction work	Contractor	Daily	Visual observations at site Documentation: Waste generation and disposal records, notifications on Integrated Environment Information System/Waste Management Application (Waste Declaration System), training records, contracts/protocols regarding waste shipment	-	Waste Management Regulation Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Ratio of reused/recycled/recovered wastes to total wastes generated All types of wastes transferred to the relevant recycling/disposal facilities Number and percentage of the personnel trained on waste management	Monthly	Included in Construction Cost

Issue	Monitoring Parameter	Monitoring Location	Responsible Party for Implementation	Monitoring Frequency / Timing	Monitoring Method	Threshold Values (when available)	Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard	Key Performance Indicator/Target	Reporting Frequency	Implementation Cost
Waste Management	Hazardous Wastes	Project working areas during construction work	Contractor	Daily	Visual observations at site Documentation: Waste generation and disposal records, notifications on Integrated Environment Information System/Waste Management Application (Waste Declaration System), training records, contracts/protocols regarding waste shipment	-	Waste Management Regulation Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Ratio of reused/recycled/recovered wastes to total wastes generated Wastes separately stored depending on their hazardous class and type of the waste All types of wastes transferred to the relevant recycling/disposal facilities Number of incidents related to soil contamination due to improper waste management Number and percentage of the personnel trained on waste management	Monthly	Included in Construction Cost
Waste Management	Medical Wastes	Infirmary	Contractor	Daily	Visual observations at site Documentation: Waste generation and disposal records, notifications on Integrated Environment Information System/Waste Management Application (Waste Declaration System), training records, contracts/protocols regarding waste shipment	-	Medical Waste Control Regulation Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Wastes separately stored depending on their hazardous class and type of the waste All types of wastes transferred to the relevant recycling/disposal facilities Number and percentage of the personnel trained on waste management	Monthly	Included in Construction Cost
Waste Management	Vegetable Oils	Camp Site (Kitchen)	Contractor	Daily	Visual observations at site Documentation: Waste generation and disposal records, notifications on Integrated Environment Information System/Waste Management Application (Waste Declaration System), training records, contracts/protocols regarding waste shipment	-	Regulation on Control of Vegetable Waste Oils Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Wastes separately stored depending on their hazardous class and type of the waste All types of wastes transferred to the relevant recycling/disposal facilities Number and percentage of the personnel trained on waste management	Monthly	Included in Construction Cost
Waste Management	Waste Batteries and Accumulators	Construction Site	Contractor	Daily	Visual observations at site Documentation: Waste generation and disposal records, notifications on Integrated Environment Information System/Waste Management Application (Waste Declaration System), training records, contracts/protocols regarding waste shipment	-	Regulation on Control of Waste Batteries Pollution Prevention Plan ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Wastes separately stored depending on their hazardous class and type of the waste All types of wastes transferred to the relevant recycling/disposal facilities Number and percentage of the personnel trained on waste management	Monthly	Included in Construction Cost

Issue	Monitoring Parameter	Monitoring Location	Responsible Party for Implementation	Monitoring Frequency / Timing	Monitoring Method	Threshold Values (when available)	Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard	Key Performance Indicator/Target	Reporting Frequency	Implementation Cost
Waste Management	End of Life Tires	Construction Site	Contractor	Daily	Visual observations at site Documentation: Waste generation and disposal records, notifications on Integrated Environment Information System/Waste Management Application (Waste Declaration System), training records, contracts/protocols regarding waste shipment	-	Regulation on Control of End-of-Life Tires Pollution Prevention Plan WBG EHS Guidelines ESS3: Resource Efficiency and Pollution Prevention and Management	Wastes separately stored depending on their hazardous class and type of the waste All types of wastes transferred to the relevant recycling/disposal facilities Number and percentage of the personnel trained on waste management	Monthly	Included in Construction Cost
Biodiversity (Habitat Monitoring)	Critical habitat	Bird Paradise (Kuş Cenneti)	Contractor in supervision of DGII	Biannually (spring: May-July and autumn: August-October 15 days each)	Monitoring/Observation at site Sampling Monitoring Plan for Birds	Population statuses of species and the habitat status	Biodiversity Management Plan ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	No harm to bird paradise and bird counts.	Biannual (Monitoring Reports in line with the Biodiversity Monitoring and Evaluation Program)	Included in Construction Cost along with additional cost on ecological survey. Included in Construction Cost
Biodiversity (Habitat Monitoring)	Natural habitats	Natural Areas.	Contractor in supervision of DGII	Biannually (May and September)	Monitoring/Observation at site Sampling	Population status of species and the habitat status	Biodiversity Management Plan ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	No harm to natural habitats	Biannual (Monitoring Reports in line with the Biodiversity Monitoring and Evaluation Program)	Included in Construction Cost along with additional cost on ecological survey.
Biodiversity	Fauna species of high conservation concern	All project working areas	Contractor in supervision of DGII	Biannually (May and September)	Monitoring/Observation at site Sampling / Counting	No significant population decline	Biodiversity Management Plan ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	No harm to fauna species	Biannual (Monitoring Reports in line with the Biodiversity Monitoring and Evaluation Program)	Included in Construction Cost along with additional cost on ecological survey.
Biodiversity	Invasive alien species	All project working areas and AoI	Contractor in supervision of DGII	Once per year during the vegetation period (until construction is completed)	Monitoring/Observation at site Species sampling and identification Botanist-led verification	Absence or early detection of IAS	Biodiversity Management Plan ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Absence of AIS or appropriate mitigation actions	Annual (Monitoring Reports in line with the Biodiversity Monitoring and Evaluation Program)	Included in Construction Cost along with additional cost on ecological survey.
Chemical and Hazardous Materials	Fuel, oil and hazardous materials (storage and transportation)	Project working areas during construction work	Contractor	Daily	Visual observations at site Documentation: Driver training certificate	-	Labor Law and Regulation on Classification, Labeling and Packaging of Substances and Mixtures Regulation on the Transport of Dangerous Goods by Road ESS4: Community Health and Safety Emergency Preparedness and Response Plan	Number of leakages/spill incidents Number of OHS related incidents Number of non-compliances with the applicable standards (Target: Zero non-compliance)	Monthly	Included in Construction Cost
Temporary Labor Influx	Total number of project workers; local / non-local workforce composition; labour-related grievances	All project working areas	Contractor	Monthly	Review of employment agreements; review of grievance records; attendance records; contractor–subcontractor meeting records		Labour Management Procedures & contractor's Labour Management Plan, Stakeholder Engagement Plan, Grievance Mechanism		Monthly	

Issue	Monitoring Parameter	Monitoring Location	Responsible Party for Implementation	Monitoring Frequency / Timing	Monitoring Method	Threshold Values (when available)	Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard	Key Performance Indicator/Target	Reporting Frequency	Implementation Cost
Local employment opportunities	Total number of project workers; local / non-local workforce composition; labour-related grievances	All project working areas	Contractor	Monthly	Review of local employment records; review of grievance records; consultation and informative meeting records; training and mentorship program records	-	Labour Management Procedures & contractor's Labour Management, Grievance Mechanism	Ratio of locally employed workers among other project workforce	Monthly	
Purchase of goods and services	Local Procurement of services, materials, and goods	All project working areas	Contractor	Monthly	Actual procurement of local goods and services		Community Relations Plan Labor Management Plan	Ratio of local service providers among other services providers	Monthly	Included in Construction Cost
Training programs	Informative meetings Consultation meetings Training programs for PAPs	All project working areas	Contractor	Monthly	Grievance records Attendance list Minutes of meetings Records of training for PAPs Outputs of training for PAPs		Stakeholder Engagement Plan Grievance Mechanism Community Relations Plan Labor Management Plan Resettlement Plan	Number of female participants Number of DVIG participants Number of female participants attending to training programs for PAPs Number of DVIG participants attending training programs for PAPs	Monthly	Included in SEP Budget, and RP Budget
Access problems	Site access roads	All project working areas	Contractor	Monthly	Upgraded and maintained access roads		Grievance Mechanism Traffic Management Plan	Ratio of completed works to maintained roads	Monthly	Included in Construction Cost
The effectiveness of stakeholder engagement processes for vulnerable groups	Number of informative activities included vulnerable groups	All project working areas	Contractor	Monthly	Grievance records Attendance list Minutes of meetings		Stakeholder Engagement Plan Grievance Mechanism	At least one meeting in each locality to represent each of identified vulnerable groups	Monthly	Included in SEP Budget,
OHS Management	OHS	All project working areas	Contractor	Daily	On-site visual observations/ inspections (safety working conditions on-site) Documentation: Training records, internal HS audit records, occupational accident records/reports, OHS documents, grievance records, non-compliance reports	-	Labor Law and Regulation on Classification, Labeling and Packaging of Substances and Mixtures ESS2: Labor and Working Conditions Occupational Health & Safety Management Plan SEP including GM	Number of accident-free days (Target: Zero accident) Compliance rate with OHS Performance criteria Number of trainings provided on OHS Participation rate of employees in OHS training Number of complaints collected via Workers' GM and resolving rate with stipulated time	Monthly	Included in Construction Cost

Issue	Monitoring Parameter	Monitoring Location	Responsible Party for Implementation	Monitoring Frequency / Timing	Monitoring Method	Threshold Values (when available)	Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard	Key Performance Indicator/Target	Reporting Frequency	Implementation Cost
Community Health and Safety	Training records Grievance records Information gathered through Public Consultation	Project working areas during construction work	Contractor	Monthly	Monitoring at site, Training Records Grievance Records	-	ESS4: Community Health and Safety Emergency Preparedness and Response Plan Community Health and Safety Management Plan SEP including GM	Percentage and number of community health and safety mitigation measures implemented on-site (e.g., dust suppression, noise control, traffic management, hygiene measures).100% implementation of Community Health and Safety Management Plan Number of community safety trainings and GBVH&SEA/SH performed Number and nature of grievance recorded and satisfactorily resolved within stipulated time Project health and safety information provided to the local PAPs and vulnerable groups	Monthly	Included in Construction Cost
Traffic (Transport) Management	Training records Grievance records Information gathered through Public Consultation	Office, project working areas during construction work	Contractor	Monthly	Documentation	-	ESS4: Community Health and Safety Community Health and Safety Management Plan Traffic (Transportation) Management Plan SEP including GM	Number of complaints about traffic problems, Number of traffic training provided to workers Road safety and traffic measures information provided to the local PAPs and vulnerable groups	Monthly	Included in Construction Cost
Cultural Heritage	Chance finds	Project area	Contractor	Daily	On-site visual observations / inspections Documentation: Chance find records, correspondence with relevant institutions, records on stakeholder engagement	-	Law on Preservation of Cultural and Natural Assets Convention on the Protection of the World Cultural and Natural Heritage UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage ESS1: Assessment and Management of Environmental and Social Risks and Impacts ESS8: Cultural Heritage Cultural Heritage Management Plan	Number of chance finds Number of personnel trained on chance find	Monthly	Included in Construction Cost

Table 9. Monitoring Plan – Operation Phase

Issue	Monitoring Parameter	Monitoring Location	Responsible Party for Implementation	Monitoring Frequency / Timing	Monitoring Method	Threshold Values (when available)	Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard	Key Performance Indicator/Target	Reporting Frequency	Implementation Cost
Increase in Noise Levels and Vibration	Noise and Vibration	Baseline measurement points determined within the scope of ESIA Studies / Closest settlement in case of complaint	TCDD	Quarterly for the first year of operation, every 2 years afterwards or in case of a complaint	Noise level measurements (by accredited and competent firms) Documentation: Grievance records, measurement reports	Baseline measurement results specified in the ESIA Report	Regulation on Environmental Noise Control Site specific Pollution Prevention Plan to be prepared ESS1: Assessment and Management of Environmental and Social Risks and Impacts SEP including GM	No exceedance of noise/vibration limit values observed in noise/vibration measurements Number of noise related community grievances	Quarterly during the first year and annually thereafter	Additional cost on Noise Measurement and Analysis: USD 10,000 / Year
Quality of the engineering structures considering the occurrence of natural disasters	Maintenance records Incident records	Project route and all engineering structures	TCDD	After a earthquake or other natural disasters	Visually in all routes and engineering structures Documentation: Maintenance records, incident records	-	Regulation on Structures to be Built in Disaster Areas Türkiye Building Earthquake Regulation Emergency Preparedness and Response Plan ESS1: Assessment and Management of Environmental and Social Risks and Impacts	Number of related incidents/accidents recorded Number of maintenance and repairs performed per year No significant damage observed situation after an earthquake or other natural disasters	Annually	Included in the operation costs
Waste Management	Solid Waste and Packaging Waste	The station and relevant auxiliary buildings	TCDD	Daily	Visual monitoring at site Documentation: Waste generation and disposal records, notifications on Integrated Environment Information System/Waste Management Application (Waste Declaration System), training records, contracts/protocols regarding waste shipment	-	Waste Management Regulation Regulation on Control of Packaging Wastes Site specific Pollution Prevention Plan to be prepared Site specific Waste Management Plan to be prepared ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Ratio of reused/recycled/recovered wastes to total wastes generated All types of wastes transferred to the relevant recycling/disposal facilities Number of incidents related to soil contamination due to improper waste management Number and percentage of the personnel trained on waste management	Quarterly	Included in the operation costs
Waste Management	Non-Hazardous and Inert Wastes	The station and relevant auxiliary buildings	TCDD	Daily	Visual monitoring at site Visual control of waste and garbage spilled along the railway route and periodic collection of these garbage, separation Documentation: Waste generation and disposal records, notifications on Integrated Environment Information System/Waste Management Application (Waste Declaration System), training records, contracts/protocols regarding waste shipment	-	Waste Management Regulation Site specific Pollution Prevention Plan to be prepared Site specific Waste Management Plan to be prepared ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Ratio of reused/recycled/recovered wastes to total wastes generated All types of wastes transferred to the relevant recycling/disposal facilities	Quarterly	Included in the operation costs

Issue	Monitoring Parameter	Monitoring Location	Responsible Party for Implementation	Monitoring Frequency / Timing	Monitoring Method	Threshold Values (when available)	Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard	Key Performance Indicator/Target	Reporting Frequency	Implementation Cost
Waste Management	Waste Batteries and Accumulators	The station and relevant auxiliary buildings	TCDD	Daily	Visual monitoring at site Documentation: Waste generation and disposal records, notifications on Integrated Environment Information System/Waste Management Application (Waste Declaration System), training records, contracts/protocols regarding waste shipment	-	Regulation on Control of Waste Batteries Site specific Pollution Prevention Plan to be prepared Site specific Waste Management Plan to be prepared ESS3: Resource Efficiency and Pollution Prevention and Management WBG EHS Guidelines	Wastes separately stored depending on their hazardous class and type of the waste All types of wastes transferred to the relevant recycling/disposal facilities	Quarterly	Included in the operation costs
Emergency Preparedness and Response	Emergency situations Corrective preventive actions taken Correspondence with relevant stakeholders	All project areas	TCDD	Weekly	Regular controls of Route Safety Regular inspection / maintenance to ensure automatic doors installation and smooth operation in all level crossings	-	ESS4: Community Health and Safety WBG EHS Guidelines Community Health and Safety Management Plan Traffic (Transportation) Management Plan	Number of emergency situations Number of corrective prevention actions	Quarterly	Included in the operation costs
OHS Management	OHS	All project areas	TCDD	Daily	On-site visual observations/ inspections Documentation: Training records, internal HS audit records, grievance records	-	Labor Law and Regulation on Classification, Labeling and Packaging of Substances and Mixtures ESS2 Labor and Working Conditions WBG EHS Guidelines Employment and Training Plan	Number of the health issues (Target: Zero health issues) Compliance rate with OHS Performance criteria Number of grievances recorded	Quarterly	Included in the operation costs
Biodiversity	Restored habitats	All project areas	TCDD	Twice a year (in May and September) during the operation phase	Monitoring/Observation at site Sampling	Population statuses of species and habitat status	Biodiversity Management Plan ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Habitats restored	Annual (Monitoring Reports in line with the Biodiversity Monitoring and Evaluation Program)	Included in the operation costs
Biodiversity	Invasive alien species	All project areas and AoI	TCDD	Once per year in the operation period (When vegetation period occurs)	Monitoring/Observation at site Species sampling and identification	Introduction of invasive alien species	Biodiversity Management Plan ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Absence or early detection of AIS	Annual (Monitoring Reports in line with the Biodiversity Monitoring and Evaluation Program)	Included in the operation costs
Biodiversity	Critical habitat	Bird Paradise (Kuş Cenneti)	TCDD	Twice a year (in spring and autumn) for one year in operation phase	Monitoring/Observation at site	Change of Population status and habitat	Biodiversity Management Plan ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	No harm to bird paradise and no change in population status	Biannual (Monitoring Reports in line with the Biodiversity Monitoring and Evaluation Program)	Included in the operation costs

5.3 Capacity Development and Training

The Project Owner is set to implement an ESMP training and awareness program that will focus on the identified social and environmental risks, along with measures in place to prevent, minimize, and mitigate any adverse impacts.

The organizational chart of DGII and the E&S capacity requirements of the contractor to be appointed are provided in Section 5.1.

The training, which is stated in the Terms of Reference (ToR) document, provided to all PIU personnel in previous periods as part of the project is shown in Table 10.

Table 10. Information on Trainings

Training and Content	Date
Biodiversity and Cultural Heritage Aspects of Linear Projects • Environmental risk assessment methods • National and international legislations • Risk assessment in linear infrastructure projects • Assessment of impacts on biodiversity in linear infrastructure projects and mitigation measures • Assessment of impacts on environment in linear infrastructure projects and mitigation measures • Assessment of impacts on cultural heritage in linear infrastructure projects and mitigation measures	29.05.2023
Road Safety and Traffic Safety • Defensive driving theoretical and on-site training • Training on management of driving fatigue process • Night driving training	23.05.2023 24.05.2023
Accident Investigation and Root Cause Analysis • Accident investigation techniques • Accident investigation with root cause analysis • Case studies	31.05.2023

In particular, the capacity of the PIU team needed to be strengthened to take more effective actions on social issues. In this context, a social specialist was included in the DGII PIU in October 2024.

The training program/modules for the sub-project will encompass a comprehensive range of topics to ensure that all project participants are well-informed and equipped to handle their roles effectively and responsibly. The curriculum will include, but is not limited to, the following subjects:

- **Purpose of the Environmental and Social Management Plan (ESMP):** Understanding the role and importance of the ESMP in relation to the project activities.
- **Management Plan Requirements and Monitoring Activities:** Details on the requirements specified in management plans and the monitoring activities to be conducted within the scope of these plans.
- **Environmental and Social Sensitivities:** Recognizing and understanding the sensitive environmental and social receptors within and around the project area.
- **Awareness of Potential Risks and Impacts:** Raising awareness about the possible risks and impacts associated with the project activities.

- **Grievance Mechanism:** Information on the grievance mechanism developed for the project, including its process, procedures, service standards, contact channels, and employee rights.
- **Occupational Health and Safety, First Aid, and Emergency Preparedness:** Training in health and safety at the workplace, first aid techniques, and preparedness for emergencies.
- **Code of Conduct:** Instructions on the professional code of conduct.
- **Community Communication:** Techniques and principles for effective communication with the local community.
- **Training on Gender-Based Violence and Harassment:** Training that includes aspects of gender-based violence and harassment (GBVH), sexual exploitation and abuse/sexual harassment (SEA/SH).
- **Traffic and Road Safety Principles:** Training on principles of traffic and road safety, particularly relevant to the project area.
- **Waste Management Training:** Instruction aimed at the sorting, storage, and environmental planning of waste.
- **Training on Pollution Prevention and Resource Efficiency:** Understanding pollution sources and types and the importance of pollution prevention in environmental protection along with concepts of resource efficiency and sustainability.
- **Training on Biodiversity:** The value of biodiversity for ecosystems, economies, and human well-being and the role of biodiversity in maintaining ecosystem health and function.
- **Training on Cultural Management:** The importance of cultural heritage and contemporary culture and conservation/preservation techniques for tangible and intangible cultural heritage.

This training program is designed to cover a wide array of critical topics, ensuring that all project participants are well-prepared to contribute to the project's success while adhering to the highest standards of safety, ethics, and environmental stewardship.

Details of the trainings prepared for the Contractor and the DGII within the scope of requirements of this ESMP are also presented in Table 11.

Table 11. Consolidated Training Program

Training Items	Specific Training Topics	Responsible Party	Target Group	Period	Cost
Induction Training	▪ Introduction to the organization ▪ Workplace Culture and Environment ▪ Role specific training ▪ Compliance and legal requirements ▪ Introduction to teams and departments	▪ Contractor	Newly recruited Personnel Personnel of newly contracted subcontractor-service provider	Whenever needed	No additional cost
Environmental Management	▪ Pollution Prevention and Resource Efficiency ▪ Waste Management ▪ Requirements of the National Legislation and Project Standards along with the ESMP	▪ Contractor ▪ DGII (PIU)	From the PIU to all Project personnel From the contractor to its own personnel	Once before the commencement of construction activities and quarterly throughout the lifecycle of the sub-project	No additional cost
OHS Management	▪ Introduction to Occupational Health and Safety	▪ Contractor ▪ DGII (PIU)	From the PIU to all Project personnel	Once before the commencement	No additional cost

Training Items	Specific Training Topics	Responsible Party	Target Group	Period	Cost
	▪ Workplace Hazards and Risk Assessment ▪ Emergency Procedures ▪ Personal Protective Equipment (PPE) ▪ Construction and Site-Specific Safety ▪ Incident Reporting, Root Cause Analysis and Investigation		From the contractor to its own personnel	of construction activities and whenever needed	
Biodiversity Management	▪ Introduction to biodiversity ▪ Threats to Biodiversity ▪ Sustainable Practices	▪ Contractor ▪ DGII (PIU)	From the PIU to all Project personnel From the contractor to its own personnel	Once before the commencement of construction activities and quarterly throughout the lifecycle of the sub-project	No additional cost
Cultural Heritage Management	▪ Introduction to cultural heritage ▪ Conservation/preservation techniques for tangible and intangible cultural heritage ▪ Chance Find Procedures for effective on-site implementation	▪ Contractor ▪ DGII (PIU)	From the PIU to all Project personnel From the contractor to its own personnel	Once before the commencement of construction activities and quarterly throughout the lifecycle of the sub-project	No additional cost
Labor Management	▪ Code of Conduct ▪ Gender-based violence and harassment (GBVH), sexual exploitation and abuse/sexual harassment (SEA/SH) ▪ Worker's GM ▪ SEP requirements	▪ Contractor ▪ DGII (PIU)	From the PIU to all Project personnel From the contractor to its own personnel	Once before the commencement of construction activities and quarterly throughout the lifecycle of the sub-project	No additional cost
Community Health, Safety Management	▪ Traffic and Road Safety Principles ▪ Environmental and Social Sensitivities ▪ SEP and GM ▪ Community Communication/Relations	▪ Contractor ▪ DGII (PIU)	From the PIU to all Project personnel From the contractor to its own personnel	Once before the commencement of construction activities and quarterly throughout the lifecycle of the sub-project	No additional cost