



**REPUBLIC OF TURKEY  
MINISTRY OF TRANSPORT  
AND INFRASTRUCTURE**

**AYEM**  
Altyapı Yatırımları Genel Müdürlüğü

**ÇINAR**  
ENGINEERING  
CONSULTANCY INC.



# **DİVRİĞİ-KARS-GEORGIA BORDER RAILWAY LINE REHABILITATION AND MODERNIZATION PROJECT**

## **ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**CNR-ETMIC-ESMP-001**

**(Final)**



|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 2 / 96               |



**Bağlıca Mah. Çambayırı Cad. Çınar Plaza No:66/5 06790 Etimesgut/ ANKARA**

**Tel: +90 312 472 38 39 Fax: +90 312 472 39 33**

**Web: cinarmuhendislik.com**

**E-mail: cinar@cinarmuhendislik.com**

**All rights of this report are reserved.**

All or part of this report cannot be reproduced, copied, electronically reproduced, traded, transmitted, sold, rented, used for any purpose, or used in any form and method in digital and/or electronic media without written permission from Çınar Engineering Consultancy Inc. as per the Law No. 5846 on Intellectual and Artistic Works amended with the Law No. 4110.

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 3 / 96               |

|                                  |   |
|----------------------------------|---|
| <b>Project Owner</b>             | <b>T. C. Ministry of Transport and Infrastructure<br/>General Directorate of Infrastructure<br/>Investments</b> |
| <b>Address</b>                   | <b>Hakkı Turaylıç Cad. No: 5 06338<br/>Emek/Çankaya/ANKARA</b>  |
| <b>Telephone and Fax Numbers</b> | <b>+90 (312) 203 10 00</b>  |
| <b>Project Title</b>             | <b>Divriği-Kars-Georgia Border Railway Line<br/>Rehabilitation and Modernization Project</b>                    |
| <b>Project Location</b>          | <b>Divriği – Erzincan – Erzurum – Kars – Georgia<br/>Border</b>   |
| <b>Consultant</b>                | <b>Çınar Engineering Consultancy Inc.</b>   |
| <b>Address</b>                   | <b>Bağlıca Mah. Çambayırı Cad.<br/>Çınar Plaza No: 66/5<br/>06790 Etimesgut / ANKARA</b>                        |
| <b>Telephone and Fax Numbers</b> | <b>Phone: +90 (312) 472 38 39<br/>Fax: +90 (312) 472 39 33</b>  |
| <b>Report Submission Date</b>    | <b>December 2024</b>  |

## TABLE OF CONTENTS

|   |           |
|---|-----------|
| <b>TABLE OF CONTENTS</b> .....  | <b>4</b>  |
| <b>LIST OF TABLES</b> .....   | <b>5</b>  |
| <b>LIST OF FIGURES</b> .....  | <b>5</b>  |
| <b>ABBREVIATIONS &amp; ACRONYMS</b> .....                                       | <b>6</b>  |
| <b>APPENDICES</b> .....   | <b>8</b>  |
| <b>1 INTRODUCTION</b> .....   | <b>9</b>  |
| 1.1 Purpose and Scope .....   | 10        |
| 1.2 Environmental and Social Management Plan Structure.....                     | 12        |
| <b>2 PROJECT DEFINITION</b> .....   | <b>14</b> |
| <b>3 PROJECT STANDARDS</b> .....  | <b>17</b> |
| 3.1 National Environmental and Social Legislation .....                         | 17        |
| 3.2 International Environmental and Social Standards .....                      | 19        |
| 3.3 Corporate Commitment .....  | 28        |
| <b>4 ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS OF THE PROJECT</b> .....        | <b>29</b> |
| <b>5 MANAGEMENT PLANS</b> .....   | <b>32</b> |
| <b>6 IMPLEMENTATION OF THE ENVIRONMENTAL &amp; SOCIAL MANAGEMENT PLAN</b> ..... | <b>34</b> |
| 6.1 Organizational Structure .....  | 34        |
| 6.2 Roles and Responsibilities .....  | 36        |
| 6.3 Management of Change Process.....   | 38        |
| 6.3.1 The initial assessment of the Change .....                                | 38        |
| 6.3.2 Coordination of the Change.....   | 38        |
| 6.3.3 Evaluation of the Change .....  | 38        |
| 6.3.4 Proceed Notification for the Change .....                                 | 39        |
| 6.3.5 Change Implementation .....   | 39        |
| 6.4 Stakeholder Engagement.....   | 40        |
| 6.5 Grievance Mechanism, Workers' Grievance Mechanism, and GBVH-SEA/SH.....     | 41        |
| 6.6 3 <sup>rd</sup> Party Environmental and Social Monitoring Activities.....   | 41        |
| 6.7 Monitoring, Reporting and Evaluation .....                                  | 42        |
| 6.8 Capacity Increase for ESMS Implementation.....                              | 42        |
| <b>7 ENVIRONMENTAL AND SOCIAL MITIGATION PLAN</b> .....                         | <b>45</b> |
| <b>8 MONITORING PLAN</b> .....  | <b>82</b> |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 5 / 96               |

## LIST OF TABLES

|   |    |
|---|----|
| Table 1. Subjects Covered within the Scope of ESMP .....                                  | 12 |
| Table 2. Gap Analysis .....   | 21 |
| Table 3. Environmental and Social Impacts and Risks of the Project.....                   | 29 |
| Table 4. Sub-Management Plans.....  | 33 |
| Table 5. Roles and Responsibilities Regarding the Implementation of the ESMP .....        | 36 |
| Table 6. Training Program.....  | 43 |
| Table 7. Environmental and Social Mitigation Plan – Pre-Construction.....                 | 45 |
| Table 8. Environmental and Social Mitigation Plan – Land Preparation & Construction ..... | 50 |
| Table 9. Environmental and Social Mitigation Plan – Operation .....                       | 74 |
| Table 10. Monitoring Plan* .....  | 83 |

## LIST OF FIGURES

|   |    |
|---|----|
| Figure 1. Project Route.....                  | 16 |
| Figure 2. ESMS Organizational Structure ..... | 36 |

## ABBREVIATIONS & ACRONYMS

|                |   |
|----------------|---|
| <b>AIIB</b>    | Asian Infrastructure Investment Bank                        |
| <b>AYGM</b>    | Directorate General of Infrastructure Investments           |
| <b>BMP</b>     | Biodiversity Management Plan                                |
| <b>BTK</b>     | Baku-Tbilisi-Kars   |
| <b>C-ESMP</b>  | Contractor's Environmental and Social Management Plan       |
| <b>CHMP</b>    | Cultural Heritage Management Plan                           |
| <b>CHSMP</b>   | Community Health and Safety Management Plan                 |
| <b>CIMER</b>   | The Presidential Communication Center                       |
| <b>ÇINAR</b>   | Çınar Engineering Consultancy Inc.                          |
| <b>CLO</b>     | Community Liaison Officer                                   |
| <b>CRF</b>     | Complaint Register Form                                     |
| <b>EHS</b>     | Environmental, Health and Safety                            |
| <b>EHSG</b>    | Environmental, Health, and Safety Guidelines                |
| <b>EIA</b>     | Environmental Impact Assessment                             |
| <b>EPRP</b>    | Emergency Preparedness and Response Plan                    |
| <b>ERTMS</b>   | European Rail Traffic Management System                     |
| <b>ESCP</b>    | Environmental and Social Commitment Plan                    |
| <b>ESIA</b>    | Environmental and Social Impact Assessment                  |
| <b>ESIRT</b>   | Environment and Social Incidence Response Toolkit           |
| <b>ESMP</b>    | Environmental and Social Management Plan                    |
| <b>ESMS</b>    | Environmental and Social Management System                  |
| <b>ESS</b>     | Environmental and Social Standards                          |
| <b>ETCS</b>    | European Train Control System                               |
| <b>ETMIC</b>   | Eastern Türkiye Middle Corridor Railway Development Project |
| <b>FI</b>      | Financial Intermediaries                                    |
| <b>GBVH</b>    | Gender-based Violence and Harassment                        |
| <b>GRM</b>     | Grievance Redress Mechanism                                 |
| <b>GRS</b>     | Grievance Redress Service                                   |
| <b>IsDB</b>    | Islamic Development Bank                                    |
| <b>Km</b>      | Kilometer   |
| <b>kV</b>      | Kilovolt  |
| <b>LARAP</b>   | Land Acquisition and Resettlement Action Plan               |
| <b>LM Plan</b> | Labor Management Plan                                       |
| <b>LMP</b>     | Labor Management Procedure                                  |
| <b>MCP</b>     | Management of Change Process                                |
| <b>MoTI</b>    | Ministry of Transport and Infrastructure                    |
| <b>OHS</b>     | Occupational Health and Safety                              |
| <b>OHSMP</b>   | Occupational Health and Safety Management Plan              |
| <b>PIU</b>     | Project Implementation Unit                                 |
| <b>PPWMP</b>   | Pollution Prevention and Waste Management Plan              |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 7 / 96               |

|               |  |
|---------------|--|
| <b>PR</b>     | Public Relations                                 |
| <b>RAP</b>    | Resettlement Action Plan                         |
| <b>RCA</b>    | Root Cause Analysis                              |
| <b>RF</b>     | Resettlement Framework                           |
| <b>SC</b>     | Supervision Consultant                           |
| <b>SEA/SH</b> | Sexual Exploitation and Abuse/ Sexual Harassment |
| <b>SEP</b>    | Stakeholder Engagement Plan                      |
| <b>TCDD</b>   | Turkish State Railways                           |
| <b>TMP</b>    | Traffic Management Plan                          |
| <b>WB</b>     | World Bank                                       |
| <b>WBG</b>    | World Bank Group                                 |
| <b>WHO</b>    | World Health Organization                        |
| <b>YİMER</b>  | Foreigners Communication Center                  |



## APPENDICES

|                   |  |
|-------------------|--|
| <b>Appendix-1</b> | Community Health and Safety Management Plan (CHSMP)    |
| <b>Appendix-2</b> | Emergency Preparedness and Response Plan (EPRP)        |
| <b>Appendix-3</b> | Pollution Prevention and Waste Management Plan (PPWMP) |
| <b>Appendix-4</b> | Traffic Management Plan (TMP)                          |
| <b>Appendix-5</b> | Biodiversity Management Plan (BMP)                     |
| <b>Appendix-6</b> | Cultural Heritage Management Plan (CHMP)               |
| <b>Appendix-7</b> | Occupational Health and Safety Management Plan (OHSMP) |
| <b>Appendix-8</b> | Management of Change Process Form (MCP Form)           |





|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 9 / 96               |

## 1 INTRODUCTION

The Divriği-Kars-Georgia Border Railway Line Rehabilitation and Modernization Project (covered under Component 1 of Eastern Türkiye Middle Corridor Railway Development Project (ETMIC)) stands as a transformative initiative poised to rejuvenate and upgrade the existing railway infrastructure spanning several provinces in Türkiye. This ambitious project, overseen by the General Directorate of Infrastructure Investments (AYGM) under the Ministry of Transport and Infrastructure (MoTI), seeks not only to modernize rail transportation but also to catalyze regional economic growth and fortify cross-border connectivity.

The multifaceted project unfolds in several strategic components. The preliminary phase involves meticulous land preparation activities, setting the stage for an extensive construction phase encompassing the refurbishment of railway tracks, bridges, and stations. The operational phase is dedicated to ensuring the seamless and sustainable operation of the revitalized railway infrastructure.

ETMIC financed by the World Bank (WB), Asian Infrastructure Investment Bank (AIIB) and Islamic Development Bank (IsDB) is developed around two main components: Component 1 - Rehabilitation and Modernization of the Divriği-Kars-Georgia Border Railway Line; and Component 2 – Project Management. Details of the components are provided in Section 2.

The details of the related/auxiliary facilities (such as quarries, camp sites, etc.) will be determined after the Contractor is identified and the relevant ES Study will be carried out afterwards.

The environmental and social risk rating of ETMIC identified as “Substantial” according to the Environmental and Social Framework (ESF) of the World Bank.

A contract was signed between AYGM and Çınar Engineering Consultancy Inc. (ÇINAR) in November 2023, for conducting the Environmental and Social Impact Assessment in accordance with the WB standards. The contract entails the preparation of an ESIA Package, which includes the following components:

- Environmental and Social Impact Assessment Report (ESIA)
- Environmental and Social Management Plan (ESMP),
- Community Health and Safety Management Plan (CHSMP),
- Emergency Preparedness and Response Plan (EPRP),
- Traffic Management Plan (TMP),
- Biodiversity Management Plan (BMP),
- Pollution Prevention and Waste Management Plan (PPWMP),
- Cultural Heritage Management Plan (CHMP),
- Labor Management Procedure (LMP),
- Resettlement Framework (RF),
- Occupational Health and Safety Management Plan (OHSMP),
- Stakeholder Engagement Plan (SEP).

The noteworthy point is that the Project will not necessitate land acquisition. A Resettlement Framework (RF) is formulated, which will form the guidance for any Resettlement Plan (RP) which will be required in case of any land acquisition under the project or any associated facilities.

During the preparatory studies environmental, social, and culturally sensitive areas in the project impact area were specified in the ESIA reports, and mitigation measures were proposed.

This ESMP describes the measures and controls developed in line with the mitigation hierarchy for the management of the impacts identified during the impact assessment process, determines the implementation schedule, roles and responsibilities, reporting and monitoring

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 10 / 96              |

requirements. Each of the management plans included in the appendices of this 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.

ESMP is a living document that is open to regular review and update due to changes in environmental and social conditions as the project progresses. AYGM 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 ESMP (i) identifies and summarizes all anticipated adverse environmental and social impacts, (ii) describes with technical details each mitigation measure, including the type of impact to which it relates and the conditions under which it is required, together with designs, equipment descriptions, and operating procedures, as appropriate, (iii) estimates any potential environmental and social impacts of these measures, and (iv) takes into account, and is consistent with, other mitigation plans required for the project (e.g. cultural heritage, land acquisition). It is a comprehensive plan for the Environmental and Social Management System (ESMS) that is intended to be put into effect as part of the Project. 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 AYGM and the contractor/sub-contractors involved in the project. The main content of ESMP is as follows:

- **Understanding Policies and Standards:** Provide an overview of environment, health, safety (EHS), socio-economic, and cultural heritage policies, standards, and legal legislation applicable to the project.
- **Identification of risks:** Providing a summary of all expected negative environmental and social effects.
- **Description of technical details:** Details of each mitigation measure with technical specifics, including its related impact type, necessary conditions, designs, equipment descriptions, and operational procedures, as needed.
- **Estimation:** Assessment of potential environmental and social impacts of these measures.
- **Mitigation Plans:** Consideration and alignment of other necessary mitigation plans for the project, such as those related to cultural heritage.
- **Monitoring, Capacity Development and Training, Implementation Schedule and Cost Estimates,**
- **Guidance on Risk Management:** Offer guidance for managing EHS risks during the construction and operation phases in compliance with relevant policies, standards, national legislation, and the World Bank's Environmental and Social Framework (ESF).
- **Defining Roles and Responsibilities:** Determine the roles and responsibilities of AYGM and contractors to ensure compliance with the Environmental and Social Management Plan (ESMP) and EHS requirements throughout construction and operation.
- **Monitoring both Construction and Operation Activities:** Implement monitoring procedures to ensure construction and operational activities align with the ESMP and adhere to EHS policies, standards, and legal regulations.

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 11 / 96              |

- **Establishing Reporting Systems:** Develop streamlined reporting systems to track and communicate compliance performance regarding the ESMP and EHS requirements.

ESMP sets out the approach planned by the Project, involving AYGM, its consultants and contractors, to prevent or mitigate the identified environmental and social impacts. Sub-management plans within the ESMP, covering the construction and commissioning phases, have been prepared to 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**

|   |
|---|
| <b>1. Introduction</b>  |
| The Environmental and Social Management Plan (ESMP) covers the project's scope by detailing the introduction of potential impacts and mitigation measures, summarizing project activities and costs, and adhering to national and international standards. It also includes specific management plans, adaptive implementation strategies, and a comprehensive monitoring plan to ensure compliance and effective impact management throughout the project lifecycle.   |
| <b>2. Project Definition</b>  |
| Summary information about project activities, duration and cost of the project is provided.   |
| <b>3. Project Standards</b>   |
| National legislation, WB, AIIB and IsDB standards and guidance documents, corporate commitment of AYGM regarding its environmental and social responsibilities are provided.  |
| <b>4. Environmental and Social Impacts and Risks of the Project</b>   |
| The anticipated environmental and social impacts and risks of the project during the construction and operation phases are outlined.  |
| <b>5. Management Plans</b>  |
| The management plans prepared within the scope of the project are given. The framework and scope of environmental and social management plans presented in the Appendices section of the ESMP are provided.   |
| <b>6. Implementation of the ESMP</b>  |
| The Environmental & Social Management Plan (ESMP) will be executed with an adaptive management approach by AYGM, ensuring it evolves with the project's needs. The ESMP mandates the involvement of qualified personnel and a structured organization to manage environmental and social aspects, integrating contractors and subcontractors. AYGM/MoTI as a public institution, will oversee the project until its completion, after which it will be managed by TCDD. The Project Implementation Unit (PIU) within AYGM will monitor the construction contractors, ensuring adherence to ESMP requirements with the help of a Design & Supervision Consultant and third-party experts. The ESMP includes clear roles for each party. It outlines a Management of Change process to address project modifications and emphasizes stakeholder engagement and grievance resolution. Third-party monitoring will ensure compliance with environmental and social obligations throughout the project's lifecycle. Requirements for capacity enhancement in ESMS implementation are provided through capacity assessments, along with a training program. |
| <b>7. Environmental and Social Mitigation Plan</b>  |
| This section outlines the Environmental and Social Mitigation Plan for the pre-construction, land preparation and construction, and operation phases of the project. It identifies various environmental and social risks discovered during the Environmental and Social Impact Assessment (ESIA) process and provides a structured approach to mitigate these risks. The plan includes: <ul style="list-style-type: none"> <li>• <b>Impact Description:</b> A summary of potential risks.</li> <li>• <b>Mitigation Measures:</b> Strategies to address and minimize these risks.</li> <li>• <b>Implementation Plan:</b> Steps for executing the mitigation measures.</li> <li>• <b>Responsibility:</b> Individuals or teams responsible for implementing the measures.</li> <li>• <b>Cost:</b> Estimated expenses associated with the mitigation efforts.</li> </ul>   |





|   |                           |
|---|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024       |
|   | Page 13 / 96              |

The plan is designed to be dynamic, incorporating additional risks and updates as they arise during project implementation.

## 8. Monitoring Plan

This section outlines the Environmental and Social Monitoring Plan for the project. It aims to:

- **Ensure Effectiveness:** Verify that mitigation measures are implemented and effective.
- **Respond to Issues:** Provide mechanisms for timely action on unexpected incidents.
- **Identify Training Needs:** Determine training requirements across the organization.

A 3rd Party Monitoring Consultant will assess compliance, develop corrective actions, and report to AYGM and the Contractors. The plan will be updated as needed, with revisions submitted for AYGM approval and provided to Contractors.

Monitoring Plan details parameters to be monitored, responsibilities, locations, frequency, methods, legislation and standards, KPIs and records, reporting responsibilities and costs.

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 14 / 96              |

## 2 PROJECT DEFINITION

The Eastern Türkiye Middle Corridor Railway Development Project (ETMIC) is a comprehensive initiative aimed at enhancing rail connectivity in eastern Türkiye along the Divriği-Kars-Georgia border railway section of the Trans-Caspian Middle Corridor (see Figure 1). This project is designed to address critical infrastructure needs, improve transportation efficiency, reduce environmental impact, and stimulate economic growth in the region.

### Project Development Objective (PDO)

The overarching goal of the ETMIC project is to improve the rail connectivity of eastern Türkiye, thereby facilitating efficient movement of goods and people along the Divriği-Kars-Georgia border railway line. Specifically, the project aims to achieve the following PDO level indicators:

1. Reduce rail freight travel time between Divriği and the Türkiye-Georgia border.
2. Enhance predictability of rail freight travel time along the target route.
3. Lower well-to-wheel greenhouse gas (GHG) emissions per ton-km transported on the railway line.
4. Increase the number of people benefiting from improved access to sustainable transport infrastructure and services.

### Project Components

The ETMIC project consists of two main components:

#### Component 1: Rehabilitation and Modernization of the Divriği-Kars-Georgia Border Railway Line

This component, with a total cost of US\$1,339.2 million, aims to rehabilitate and modernize the existing 667 km railway line between Divriği and the Türkiye-Georgia border. It includes comprehensive design and construction works to renew railway infrastructure and superstructure, electrify the line, and install advanced signaling systems compliant with EU standards. The project will significantly enhance the line's cargo capacity, increasing it from 750,000 tons per year to 20 million tons per year, while improving resilience to climate hazards through updated engineering standards and the integration of a Distributed Acoustic Sensing (DAS) early-warning system.

##### Sub-component 1.1: Design, Infrastructure and Superstructure Works, Electrification, and Signalization of the Divriği-Kars-Georgia Border Railway Line

The major portion of the budget, US\$1,317.4 million, will be allocated to detailed engineering design and extensive civil works. This includes the renewal of 143 km of railway, electrification of the entire line, installation of a European Train Control System, and construction of new sidings and extension of existing ones. Additional improvements include tunnel clearance and drainage works, construction of bridges and controlled level crossings, and station renovations. These enhancements will not only increase capacity and speed but also significantly reduce GHG emissions by transitioning from diesel to electric trains.

##### Sub-component 1.2: Design Supervision and Construction Supervision Services for the Rehabilitation and Modernization of the Divriği-Kars-Georgia Border Railway Line

This sub-component allocates US\$21.8 million for supervision services, ensuring high-quality implementation of the design and construction works. It includes oversight of the procurement process and the supervision of the entire project execution to guarantee robust construction standards and adherence to resilience measures against climate and natural hazards. This component will enhance the project's overall efficiency and effectiveness, ultimately delivering a modernized, higher-capacity railway line that meets international standards and supports Türkiye's strategic logistics and environmental goals.

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 15 / 96              |

## Component 2: Project Management

This component, with a budget of US\$5.5 million, focuses on the mobilization of a specialized firm to manage the project. It covers various aspects such as construction, engineering, social and environmental monitoring, citizen engagement, and results monitoring and evaluation. The objective is to ensure seamless project implementation under the Project Implementation Unit (PIU), enhancing project management capacity and ensuring that all project activities align with the intended outcomes and sustainability goals.

### Project Beneficiaries

The ETMIC project will benefit various stakeholders, including:

- State Railways of the Republic of Türkiye (TCDD): Improved infrastructure will enhance TCDD's operational efficiency and reduce maintenance expenses.
- Cargo owners and logistics service providers: Enhanced rail connectivity will lead to lower transport costs, faster transit times, and increased market access.
- Communities in the project area: Economic activity and employment opportunities are expected to increase, particularly in regional economic centers and areas linked to the railway line.

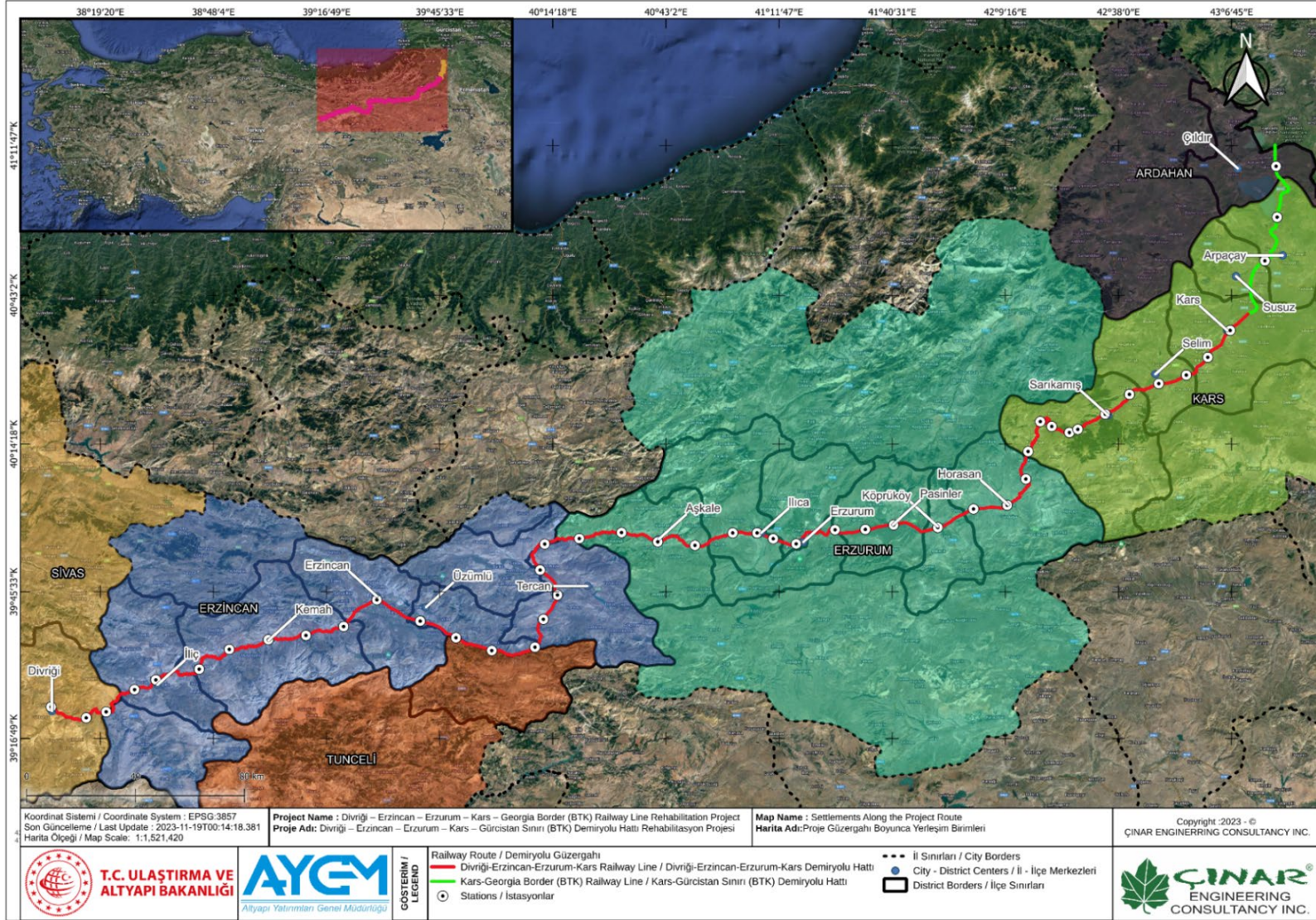
### Implementation Arrangements

The project owner, MoTI, is the primary governmental body responsible for overseeing and developing the nation's transport and logistics infrastructure. The General Directorate of Infrastructure Investments (AYGM), which is a public institution affiliated with the MoTI with a special budget for finance, is the implementing agency of the project. After the completion of the construction works, the project will be handed over to The Republic of Türkiye Directorate General of State Railways (TCDD) and the operational activities will be performed by TCDD.

A Project Implementation Unit (PIU) has already been established under AYGM for the ongoing World Bank-financed Rail Logistics Improvement Project – P170532 (RLIP). For this Project, an ETMIC-dedicated PIU sub-unit will be established under this PIU. This PIU sub-unit will be led by the Deputy Director General of AYGM as PIU Director, and by the Director of AYGM's Railway Construction Department as Deputy PIU Director. The ETMIC sub-unit will be staffed by a total of 10 members, including a sub-unit leader, engineering and construction specialist, procurement specialist, financial management specialist, Environmental, Social, Health and Safety (ESHS) manager, social development specialist, environmental specialist, occupational health and safety specialist and two Community Liaison Officers. These staff are expected to be recruited during project implementation through the engagement of a specialized firm with expertise in project management, construction, engineering, and monitoring. The Terms of Reference (ToR) for the selection of these services have been prepared by AYGM and confirmed by the World Bank as responsive to the Bank's Procurement Framework, Financial Management requirements, and ESF principles.



Figure 1. Project Route





|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 17 / 96              |

### 3 PROJECT STANDARDS

Environmental and social risks associated with development projects encompass a broad spectrum of potential challenges that can arise throughout the project lifecycle. Environmental risks may include habitat destruction, pollution, and ecosystem degradation, which can lead to biodiversity loss and negative impacts on local communities dependent on natural resources. Social risks, on the other hand, may involve involuntary resettlement, loss of livelihoods, cultural disruption, and social conflicts stemming from unequal distribution of project benefits or inadequate consultation and participation of affected stakeholders. Failure to adequately address these risks can result in project delays, reputational damage, legal liabilities, and ultimately undermine the project's sustainability and social license to operate. Therefore, comprehensive risk assessments, stakeholder engagement processes, mitigation measures, and monitoring mechanisms are essential to minimize environmental and social risks and ensure the project's long-term viability and positive impact on both the environment and local communities.

The Project will be carried out in accordance with the ESIA commitments based on the following national legislation and the requirements of international standards and guideline documents:

- Turkish laws, regulations and other legal provisions regarding all environmental, health, safety, socio-economic, cultural heritage and biodiversity issues covered by ESIA,
- WB Environmental and Social Standards (ESS),
- The World Bank Group Environmental, Health and Safety (EHS) Guidelines (General and Sector-specific),
- AIIB Environmental and Social Standards (ESS),
- The Environmental and Social Safeguards Policy of the Islamic Development Bank (IsDB)
- Corporate commitments in ESIA and other related documents.

#### 3.1 National Environmental and Social Legislation

National Environmental and Social Legislation related to the Project in Türkiye is summarized as below and details of the legislation is provided in Chapter 2 of the ESIA Report:

Turkish Environmental Law No. 2872: This law, issued in the Official Gazette No. 18132 on August 11, 1983, outlines fundamental principles for environmental protection in alignment with sustainable development goals. It provides a legal framework for developing environmental regulations based on national and international standards.

Highlighted Laws Covered by National Legislation:

- Agricultural Reform Law on Land Rearrangement in Irrigated Areas (Law No. 3083)
- Electricity Market Law (Law No. 6446)
- Energy Efficiency Law (Law No. 5627)
- Expropriation Law (Law No. 2942)
- Forestry Law (Law No. 6831)
- Groundwater Law (Law No. 167)
- Highway Traffic Law (Law No. 2918)
- Labor Law (Law No. 4857)
- Law on Conservation of Cultural and Natural Assets (Law No. 2863)
- Law on Soil Conservation and Land Use (Law No. 5403)
- Mining Law (Law No. 3213)
- Municipality Law (Law No. 5393)
- National Parks Law (Law No. 2873)

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 18 / 96              |

- Occupational Health and Safety Law (Law No. 6331)
- Pasture Law (Law No. 4342)
- Public Health Law (Law No. 1593)
- Settlement Law (Law No. 5543)
- Prominent Regulations Covered by National Legislation:
- Regulation on Environmental Impact Assessment: Published in the Official Gazette on 29.07.2022 (Number: 31907).
- Regulation on Environmental Permit and License: Issued on 10.09.2014 (Number: 29115).
- Regulation on Environmental Audit: Enacted on 12.06.2021 (Number: 31509).
- Regulation Concerning Environmental Management Services: Introduced on 01.11.2022 (Number: 32000).
- Regulation on Traffic in Highway: Dated 18.07.1997 (Number: 23053, Duplicate entry).
- Regulation on Waste Management: Established on 02.04.2015 (Number: 29314).
- Regulation on Waste Oil Management: Enforced on 21.12.2019 (Number: 30985).

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 19 / 96              |

### 3.2 International Environmental and Social Standards

As the WB, AIIB and IsDB are the lending institutions/banks for the project, the project activities should be performed in line with international standards and Good International Industry Practice (GIIP) in addition to national legislation.

The World Bank's Environmental and Social Standards (ESSs) provide a framework for assessing and managing environmental and social risks and impacts associated with investment projects. These standards are crucial for ensuring that projects are implemented in a manner that promotes sustainable development and minimizes adverse effects on communities and the environment.

#### **ESS1: Assessment and Management of Environmental and Social Risks and Impacts**

This standard outlines the borrower's responsibilities for assessing, managing, and monitoring environmental and social risks throughout the project lifecycle. It covers a range of issues including environmental risks, community safety concerns, climate change impacts, and social risks such as threats to human security and impacts on cultural heritage.

#### **ESS2: Labor and Working Conditions**

ESS2 emphasizes the importance of fair treatment of workers and provision of safe working conditions to promote employment creation and poverty reduction.

#### **ESS3: Resource Efficiency and Pollution Prevention and Management**

This standard highlights the need for resource efficiency and pollution prevention in project implementation to minimize environmental impacts and ensure sustainable use of resources.

#### **ESS4: Community Health and Safety**

ESS4 focuses on addressing health, safety, and security risks and impacts on communities resulting from project activities, particularly for vulnerable groups.

#### **ESS5: Land Acquisition, Restrictions on Land Use & Involuntary Resettlement**

This standard emphasizes the importance of avoiding involuntary resettlement and mitigating adverse impacts on displaced people if resettlement is unavoidable.

#### **ESS6: Biodiversity Conservation & Sustainable Management of Living Natural Resources**

ESS6 stresses the protection and conservation of biodiversity and sustainable management of natural resources, including consideration of Indigenous Peoples' livelihoods.

#### **ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities**

This standard is not relevant for the project as there are no Indigenous Peoples meeting the definition in Türkiye.

#### **ESS8: Cultural Heritage**

ESS8 highlights the importance of protecting cultural heritage during project implementation.

#### **ESS9: Financial Intermediaries (FIs)**

This standard focuses on assessing and managing environmental and social risks associated with project-related investments or subprojects financed by financial intermediaries. This standard is not relevant for the project as it does not involve any financial intermediaries.

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 20 / 96              |

## **ESS10: Stakeholder Engagement and Information Disclosure**

ESS10 emphasizes the importance of open and transparent engagement with stakeholders throughout the project lifecycle.

In addition to the World Bank's ESSs, the project will also consider relevant guidance documents and policies from other institutions such as the Islamic Development Bank (IsDB) and Asian Infrastructure Investment Bank (AIIB). These documents provide additional guidance on environmental and social safeguards to ensure that projects are implemented responsibly and sustainably.

The Environment, Health, and Safety (EHS) Guidelines of the World Bank Group (WBG) have been prepared as reference documents containing general and industry-specific GIIP guidelines. The EHS Guidelines are acceptable for the World Bank Group and include the expected performance ratings and measures to be implemented by customers. Guidance documents that guide the evaluation and management of the environmental and social impacts of the project are listed below:

- WBG EHS Guidelines for Railways (2007)
- WBG General EHS Guidelines (2007)
- WBG EHS Guidelines for Construction Materials Extraction (2007)
- WBG EHS Guidelines for Electric Power Transmission and Distribution (2007)
- Environmental and Social Management System Implementation Manual: General (2015)
- Environmental and Social Management System Implementation Manual: Construction (2014)
- Contractor's Environmental and Social Performance Management Good Practice Rating (2017)
- Cumulative Impact Assessment and Management Good Practice Guide (2013)
- Introduction to Health Impact Assessment (2009)
- IFC and EBRD - Guide to Workers' Accommodation: Processes and Standards (2009)
- Good Practice Handbook on Using Security Forces (2017)
- Stakeholder Engagement Handbook (2007)
- Handbook on Project Migration Problems (2009)
- Good Practice Score on Complaints from Communities Affected by the Project (2009)

Within the scope of this ESIA Report, a Gap Analysis Study has been carried out (see Table 2) to identify the requirements for WB ESSs relevant to the project, the scale the National ES Legislation covers and gaps identified within this scope.



**Table 2. Gap Analysis**

| ESS   | Requirements   | Coverage by National Legislation   | Identified Gaps  | Actions to Bridge the Gaps   |
|---|--|--|--|--|
| <p><b>ESS1: Assessment and Management of Environmental and Social Risks and Impacts</b></p> | <p>Conduct ESIA for the project. Identify potential risks and impacts of the project on the physical, biological, and social environments during construction and operation phases. Develop mitigation measures.</p> | <p>Turkish Environmental Law No. 2872 mandates environmental impact assessments (EIAs) for projects.</p> | <p>The main gaps between the national EIA and the ESS1 are as follows:</p> <ul style="list-style-type: none"> <li>The process of integrating social impact assessment into the Turkish EIA has started in recent years. Especially with the EIA Regulation published in the Official Gazette dated 29.07.2022 and numbered 31907, social impact assessment has started to be included in Turkish EIA. Turkish EIA process is currently open for improvement but requires a fully integrated process to reach ESS1.</li> <li>In addition, the requirement to address cumulative impacts of other concurrent projects is limited in Turkish EIA legislation. Under ESS1, cumulative impact assessment is in a more important position. Additionally, where the project involves specifically identified physical elements, aspects, and (associated) facilities that are likely to generate impacts, environmental and social risks and impacts have to be identified in the context of the project's area of influence under ESS1.</li> <li>The preparation of Environmental and Social Management Plans together with the Stakeholder Engagement Plan (during the EIA application process) has been included in Turkish legislation with the latest regulation. However, the management plans prepared are less</li> </ul> | <p>To bridge the identified gaps between national EIA and ESS1 requirements, the project has adopted a proactive approach by implementing recommended actions. Firstly, an expanded scope of ESIA has been undertaken, aligning with ESS1 standards. This comprehensive assessment encompasses both direct and indirect impacts, ensuring a thorough understanding of potential E&amp;S ramifications throughout the project lifecycle. By addressing cumulative effects and considering long-term impacts on local communities and ecosystems, the project aims to minimize adverse consequences and promote sustainable development. The ESIA prepared for the Project also includes ESMP and relevant E&amp;S sub-management plans to address identified gaps.</p> <p>Additionally, the project has developed an enhanced Stakeholder Engagement Plan (SEP) to foster transparent and continuous dialogue with affected stakeholders. This plan goes beyond regulatory requirements, incorporating regular consultations, information dissemination, and a grievance redress mechanism (GRM) to address concerns promptly. By prioritizing stakeholder involvement and feedback, the project seeks to build trust, mitigate conflicts, and ensure that the diverse perspectives and needs of stakeholders are integrated into</p> |

| ESS                                       | Requirements   | Coverage by National Legislation  | Identified Gaps   | Actions to Bridge the Gaps   |
|---|--|---|---|--|
|   |  |   | <p>comprehensive than the ones required under ESS1.</p> <ul style="list-style-type: none"> <li>In addition, ESS1 supports the use of an effective grievance mechanism that can facilitate early indication and prompt remediation for those who believe that they have been harmed by a client's actions.</li> <li>Supply chain management is also highlighted in ESS1.</li> </ul> <p>The procedures related to social issues/assessments are limited and include only generic information based on secondary data collection. It does not have definitions regarding the area of influence, solid social baseline, stakeholder definitions, procedures for meaningful stakeholder engagement, social impacts and mitigations, cumulative impacts, or an E&amp;S monitoring plan.</p> | <p>decision-making processes. Through these proactive measures, the project endeavors to meet ESS1 standards and uphold environmental and social sustainability principles.</p>  |
| <b>ESS2: Labor and Working Conditions</b> | <p>Ensure fair labor practices and safe working conditions for all workers involved in the project. Comply with national labor laws and regulations. Provide training and capacity building for workers.</p> | <p>Turkish Labor Law provides regulations on labor rights and working conditions. Occupational Health and Safety Law has provisions on OHS.</p> | <p>Despite the overall alignment with Good International Industrial Practices (GIIPs), labor risks under construction projects stem from not sufficient enforcement of OHS measures, over-time work and related non-payment, and unequal treatment of men and women. In addition, under the national labor and working conditions legislation, there is no specific requirement for a Workers' GM that allows workers to communicate their complaints to the employer.</p>  | <p>Confirm that project contractors adhere to labor laws and regulations, especially regarding working hours, wages, and occupational health and safety. Monitor compliance throughout project implementation.</p> <p>The contractor is required to prepare its own Labor Management Plan (LM Plan) according to the Project's LMP. This document will include a Code of Conduct (CoC), which has provisions on the prevention of Sexual Exploitation, Abuse, and Harassment (SEA/SH) incidents. A Workers' Grievance Mechanism (WGM) must be established ensuring it is open to anonymous reporting for SEA/SH.</p> |

| ESS   | Requirements   | Coverage by National Legislation  | Identified Gaps  | Actions to Bridge the Gaps   |
|---|--|---|--|--|
|   |  |   |  | <p>In addition, AYGM will establish a monitoring system for child and forced labor incidents covering primary suppliers.</p> <p>Labor Influx Management Plan and Workers' Camp Management Plan will be prepared by the contractor under the supervision of AYGM to submit ETMIC sub-unit of PIU</p>  |
| <b>ESS3: Resource Efficiency and Pollution Prevention</b> | Minimize resource use, waste generation, and pollution during project implementation. Implement measures to reduce energy consumption, water usage, and emissions. | Turkish environmental legislation includes regulations on pollution prevention and resource management. | <p>Most Turkish national laws and regulations are in line with European Union (EU) directives. There is no major gap between ESS3 and Turkish national legislation. National EIA process is quite successful in identifying impacts but does not require provision of a detailed overview of mitigation methods and monitoring. However, within the scope of ESS3, the client needs to consider alternatives and implement technically and financially feasible and cost-effective options to reduce project related GHG emissions during the design and operation of the project.</p> <p>Sub-management plans and monitoring programs have started to be integrated into Turkish legislation with the recent EIA Regulation. Furthermore, there are no major gaps between the impacts and mitigation methods in the national legislation and ESS3 on major environmental issues such as waste, air pollution, water resources, wastewater, noise level. On the other hand, ESS3 requires application of pollution prevention and control technologies and practices under the Project consistent with international good practice, as reflected in internationally recognized standards, such as the World Bank Group</p> | <p>To address these identified gaps, the project has implemented several recommended actions aimed at enhancing resource efficiency and pollution prevention measures. Firstly, comprehensive sub-management plans have been developed, integrating ESS3 standards to minimize resource consumption and pollution generation throughout the project lifecycle. These plans outline specific strategies, technologies, and best practices for reducing waste generation, optimizing resource use, and mitigating pollution risks. Additionally, the project has invested in advanced pollution control technologies and treatment systems to ensure compliance with stringent pollution prevention standards. Regular monitoring and reporting mechanisms have also been established to track resource consumption, waste generation, and pollution levels, enabling timely interventions and continuous improvement. Through these proactive measures, the project aims to align with ESS3 requirements, mitigate environmental risks, and promote</p> |

| ESS  | Requirements  | Coverage by National Legislation                                       | Identified Gaps  | Actions to Bridge the Gaps  |
|--|---|--|--|---|
|  |   |  | (WBG) Environmental, Health and Safety (EHS) Guidelines.   | <p>sustainable resource management practices.</p> <p>Besides, the relevant requirements of the WBG EHS Guidelines have been applied to the Project in accordance with the ESS3. In cases where the Turkish requirements differ from the levels and measures presented in the WBG EHS Guidelines, the more stringent one (such as the most stringent discharge and emission standards) will be applied in the project specifications.</p>  |
| <b>ESS4:<br/>Community Health and Safety</b> | Protect the health and safety of communities living near project sites. Identify potential health and safety risks associated with project activities. Develop measures to minimize risks and respond to emergencies. | Turkish Occupational Health and Safety Law addresses workplace safety. | <p>In Turkish national legislation, the general principles of community health, safety and security are fragmented under different regulations. The general principles are like ESS4. However, social issues such as labor influx, gender impacts and violence-based risks are more prominent under the ESS4 along with cumulative assessment and communication mechanism with external stakeholders.</p> <p>There is neither identified risk related to use force of security personnel nor mitigation measures to prevent such by considering community, health, and safety.</p> | <p>Community health assessments to identify potential risks from project activities were conducted. The community health and safety management plan to mitigate identified risks was prepared.</p> <p><i>Security personnel</i></p> <ul style="list-style-type: none"> <li>• Screening and Training: Security personnel should be vetted for past behavior and trained to respect human rights and avoid escalation of violence.</li> <li>• Code of Conduct: Security forces must follow a code of conduct that protects community members and upholds local laws.</li> <li>• Community Engagement: The community should be informed about the security measures, with mechanisms in place to address concerns.</li> </ul> <p>Monitoring and Accountability: Systems should be in place to monitor security</p> |



| ESS   | Requirements  | Coverage by National Legislation   | Identified Gaps   | Actions to Bridge the Gaps  |
|---|---|--|---|---|
|   |   |  |   | personnel and respond to any grievances or incidents.   |
| <b>ESS5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement</b> | Avoid or minimize involuntary resettlement and land acquisition. If unavoidable, provide compensation and assistance to affected communities. Respect the rights and interests of indigenous peoples and vulnerable groups. | Turkish Land Law governs land acquisition and compensation procedures.                     | Turkish legislation primarily focuses on formal landowners and registered property, providing compensation based on market value, which is limited to landowners. Resettlement assistance is minimal and mainly involves cash compensation. Public consultations are not always mandatory, leading to limited stakeholder engagement. While there are mechanisms for grievances, they are often not well-publicized or accessible to all affected people. Additionally, there are limited provisions for monitoring and evaluation of resettlement processes, with a stronger focus on physical displacement rather than economic displacement. The needs of vulnerable groups are not specifically addressed, and there are limited provisions for transitional support to affected persons. | <p>Review project plans to assess potential impacts on land use and communities. Develop resettlement plans in consultation with affected communities. Ensure that compensation and assistance measures are fair and transparent.</p> <p>There is no land acquisition activity planned within the scope of the project. Never-the-less a Resettlement Framework (RF) has been prepared in case land acquisition is required during the implementation of the project.</p> <p>In case any type of land acquisition is required, a RP will be prepared based on the RF. Land acquisition encompasses all transactions, whether temporary or permanent purchase or lease. Prior to commencing these transactions, all shareholders, landowners, users, both official and unofficial, should be informed and consulted. And compensation will be based on replacement value, and without depreciations and transaction costs.</p> |
| <b>ESS6: Biodiversity Conservation and Sustainable Natural Resource Management</b>    | Protect and conserve biodiversity and habitats. Apply mitigation hierarchy and precautionary approach in the design and implementation of projects that could have an impact on biodiversity and promote sustainable        | Turkish legislation includes provisions for biodiversity conservation and protected areas. | There is no gap in terms of policy level but internationally recognized areas of high biodiversity value including key biodiversity areas, important nature areas, important bird areas and important plant areas are not fully assessed/considered under national legislation. There is no clear requirement for habitat assessment in national legislation as well  | To fill this gap, biodiversity assessments made within the scope of ESIA covered internationally recognized areas of high biodiversity value and habitat assessment. A biodiversity management plan has also been prepared.   |

| ESS                            | Requirements  | Coverage by National Legislation  | Identified Gaps   | Actions to Bridge the Gaps  |
|--------------------------------|---|---|---|---|
|                                | management of living natural resources.   |   |   |   |
| <b>ESS8: Cultural Heritage</b> | Identify and protect cultural heritage sites and artifacts affected by project activities. Avoid or minimize impacts on cultural heritage (tangible and intangible). Implement measures to mitigate adverse impacts and promote cultural heritage preservation. | Law on the Conservation of Cultural and Natural Property (N° 2863) includes provisions for the protection of cultural heritage sites and artifacts. | The national legislation covers most of the requirements of the ESS8. However, the projects' impacts on intangible cultural heritage are not required to be thoroughly assessed. In addition, while national legislation covers only registered cultural heritage, ESS8 applies to all cultural heritage regardless of whether it has been legally protected. | <ul style="list-style-type: none"> <li>• Cultural heritage assessments covering both registered and unregistered tangible and intangible cultural heritage were made during the preparation of ESIA.</li> <li>• Accordingly, a Cultural Heritage Management Plan was prepared and will be included in all construction contracts.</li> <li>▪ A chance find procedure was prepared (see Appendix-6, provided in Cultural Heritage Management Plan) and will be included in all construction contracts.</li> <li>• Project activities will be monitored by experienced cultural heritage expert(s). In case of a need, the site-specific mitigation measures will be defined, and the construction works will be supervised by the cultural heritage expert(s).</li> <li>• A gap analysis on the cultural heritage assets legislation has been carried out in line with the ESIA studies. In terms of ESS 8 and National legislation and the proposed actions for these gaps are presented in ESIA Chapter 4.6 (Cultural Heritage). The recommendations in the aforementioned section should be taken into account regarding the cultural heritage assets that are within the scope of the project and may be affected by the project.</li> </ul> |

| ESS   | Requirements  | Coverage by National Legislation  | Identified Gaps   | Actions to Bridge the Gaps  |
|---|---|---|---|---|
| <b>ESS10:<br/>Stakeholder<br/>Engagement<br/>and Information<br/>Disclosure</b> | Engage with stakeholders throughout the project lifecycle. Provide timely and relevant information about project activities, risks, and impacts. Address stakeholder concerns and grievances effectively. | Turkish legislation may include provisions for grievance mechanisms, but specific guidance for project-specific mechanisms may be needed. | Development of the project-specific mechanisms and consultation with affected communities throughout the lifecycle of project are crucial according to the ESS10. | <p>A stakeholder engagement plan to identify and engage with relevant stakeholders was developed, including plans for disclosure of information regarding project E&amp;S risks and impacts. The stakeholder engagement will be continuous – from before project start and throughout all phases of the project.</p> <p>The mechanisms for information disclosure and feedback collection were established.</p> <p>A project-specific grievance mechanism in consultation with affected communities and stakeholders was developed.</p> |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 28 / 96              |

### 3.3 Corporate Commitment

AYGM is responsible for the implementation of all environmental and social plans in the ESMP and within its structure and ensuring the implementation of related mitigation measures and management controls by consultants / contractors. AYGM is committed to providing the necessary institutional capacity and resource allocation for the implementation of the relevant plans. In line with the implementation of the ESMP, which has been prepared in accordance with the Turkish legislation and international standards, it will be acted in accordance with the Project standards, and in case of any inconsistency, necessary measures will be taken. The basic principles of AYGM's environmental and social policy framework are as follows;

- Respect national culture and intercultural sensitivities and universal human rights and natural resources and contribute to environmental protection measures and improve the quality of life in areas where AYGM operates,
- Adopting the concept of corporate social responsibility,
- To comply with the UN Declaration of Human Rights,
- To measure, evaluate and supervise E&S performance according to national standards, World Bank standards and industry best practices to ensure continuous development,
- Attaching great importance to maintaining an active and open dialogue with stakeholders to improve the corporate image and thus create trust between the AYGM Organization and the Project Affected Communities, and
- Encouraging ethical business practice and good corporate image in the Project by ensuring that ESIA commitments are fulfilled as well as not only compensation and timely response to complaints.

## 4 ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS OF THE PROJECT

The environmental and social impacts and risks of the project during the construction and operation phases are outlined in Table 3. Relevant mitigation measures and monitoring plans for each phase of the project are detailed in Chapter 7 and Chapter 8, respectively.

**Table 3. Environmental and Social Impacts and Risks of the Project**

| Topic   | Associated impacts and/or risks during the construction phase  | Associated impacts and/or risks during the operation phase   |
|---|--|--|
| Land Use, Soil and Geology                    | <ul style="list-style-type: none"> <li>Risks of temporarily disruption to existing land use pattern and on visual landscape</li> <li>Risks of direct or indirect damage to adjacent properties that are state-owned or private property due to project-related activities about land occupation</li> <li>Impacts of topsoil stripping on arable and pasture lands along with ecological receptors</li> <li>Soil erosion risk originated from poor soil management</li> <li>Soil contamination risk due to improper management of waste, wastewater and hazardous materials</li> <li>Risks related to landslides, seismicity and geotechnical issues</li> </ul> | <ul style="list-style-type: none"> <li>Risks related to landslides, seismicity and geotechnical issues</li> <li>Soil contamination risk during the maintenance and repair activities</li> </ul>  |
| Noise   | <ul style="list-style-type: none"> <li>Increase in noise levels due to land preparation and construction activities</li> </ul>   | <ul style="list-style-type: none"> <li>Increase in noise levels due to train movement/traffic flow along with associated vibrations, stationary train activities, audible warning signals and periodic maintenance activities originated from machinery and equipment used for these purposes</li> </ul>   |
| Air Quality and Greenhouse Gas Emissions      | <ul style="list-style-type: none"> <li>Decrease in air quality due to dust formation originating from excavation, concrete works, material storage, unloading and transportation processes and due to air emissions originating from diesel-powered construction equipment/machinery</li> <li>Greenhouse gas contribution resulting from operation of construction vehicles</li> </ul>   | <ul style="list-style-type: none"> <li>Decrease in air quality due to operation of vehicles associated with the project, including maintenance and support vehicles; due to energy sources used for the operation of the project, such as electricity generation and heating system; due to maintenance activities, including vehicle and equipment servicing; due to regular vehicular traffic associated with the operation, such as commuting staff and visitors</li> </ul> |
| Water Resources, Water Quality and Wastewater | <ul style="list-style-type: none"> <li>Impacts on surface water flow and flood risk due to the establishment of infrastructure and superstructure</li> <li>Impacts on water quantities due to the water consumption associated with construction activities</li> <li>Impacts on surface water and groundwater qualities due to poor management of waste, wastewater and hazardous material</li> </ul>  | <ul style="list-style-type: none"> <li>Impacts on surface water and groundwater qualities originating from dust erosion and emissions due to movement of the trains, waste deposition and chemical and hazardous material storage</li> <li>Impacts on water quantities due to the consumption of operational water for train washing, station facilities, and maintenance yards</li> </ul>   |
| Resources and Waste Management                | <ul style="list-style-type: none"> <li>Possible impacts from storage of excavation surplus materials</li> <li>Impacts of inadequate management of hazardous and non-hazardous solid waste on environmental resources (soil, surface water, and groundwater), ecological</li> </ul>   | <ul style="list-style-type: none"> <li>Potential impacts of hazardous and non-hazardous solid waste generated from maintenance, repair and housekeeping due to poor waste management, resulting in environmental pollution and</li> </ul>  |



| Topic   | Associated impacts and/or risks during the construction phase  | Associated impacts and/or risks during the operation phase   |
|---|--|--|
|   | <ul style="list-style-type: none"> <li>receptors, and occupational and community health and safety</li> <li>▪ Additional load on the waste management facilities of the region</li> <li>▪ Raw material and energy usage due to the construction and rehabilitation activities</li> </ul>   | <ul style="list-style-type: none"> <li>occupational and community related health and safety risks</li> <li>▪ Additional load on the waste management facilities around the project area in the absence of the best management practices and effective waste management</li> </ul>                          |
| Cultural Heritage   | <ul style="list-style-type: none"> <li>▪ Physical disturbance of tangible cultural heritage (chance finds that might be encountered) during land preparation and construction activities</li> </ul>  | -  |
| Biological Environment  | <ul style="list-style-type: none"> <li>▪ Risks of habitat loss / fragmentation including vegetation and soil losses, biodiversity losses, disturbance/ destruction of flora and fauna habitat (ecosystem) and displacement/destruction of fauna due to land preparation and construction activities</li> <li>▪ Risks associated with the introduction of invasive alien species</li> <li>▪ Indirect impacts (dust, air emissions, noise, waste, and impacts on water and soil quality) on natural habitats and flora and fauna species of high conservation concern</li> </ul> | <ul style="list-style-type: none"> <li>▪ Habitat loss / fragmentation / displacement due to lack of reinstatement of the project area and integrated vegetation management strategies</li> <li>▪ Risks associated with the introduction of invasive alien species</li> </ul>                               |
| Socio-Economic Environment including Labor and Working Conditions | <ul style="list-style-type: none"> <li>▪ Risks to railway employees, local residents, vulnerable groups and project personnel due to land preparation and construction activities</li> <li>▪ Social compliance, SEA/SH issues and gender-based violence and risks of harassment</li> <li>▪ Impacts on labor and working conditions related to child labor and forced labor, discrimination, the right to association, and labor influx</li> <li>▪ Risks arising from the lack of implementation of stakeholder engagement and grievance mechanism</li> </ul>                   | <ul style="list-style-type: none"> <li>▪ Impacts on labor and working conditions related to child labor and forced labor, discrimination, the right to association, and labor influx</li> <li>▪ Risks arising from the lack of implementation of stakeholder engagement and grievance mechanism</li> </ul> |
| Occupational Health and Safety                                    | <ul style="list-style-type: none"> <li>▪ Increased health and safety risks due to poor management of OHS</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Increased health and safety risks due to poor management of OHS</li> </ul>  |
| Community Health and Safety                                       | <ul style="list-style-type: none"> <li>▪ Risks to traffic and pedestrian safety due to construction traffic</li> <li>▪ Risks associated with Emergency Preparedness and Response</li> <li>▪ Risk of security personnel due to inadequate behavior management</li> <li>▪ Community exposure to health problems</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Risks to pedestrian safety and level crossing</li> <li>▪ Risks associated with Emergency Preparedness and Response</li> <li>▪ Risks associated with general railway operational safety</li> </ul>   |

Besides, the environmental and social assessment of other project components (such as access roads, camp site(s), etc.) and the related and/or auxiliary facilities such as power transmission lines, material borrow pits/quarries, crushing and screening plants, and ready-mixed concrete plants will be conducted before commencement of construction works in line with both national and WB ESF requirements once the specific locations and technical details of these facilities are known. These assessments will be carried out by the ETMIC sub-unit of PIU, who will be responsible for identifying potential risks and impacts, as well as developing and implementing the necessary mitigation measures. Additionally, any additional E&S assessments and site-specific findings for these facilities will be incorporated into the Contractor's ESMP along with sub-management plans before the commencement of

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 31 / 96              |

construction works, once the construction consultant is selected, in line with the World Bank Environmental and Social Framework (WB ESF).

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 32 / 96              |

## 5 MANAGEMENT PLANS

The rehabilitation and modernization and operation of a railway project will have impacts on the environment, including soil contamination, air quality, noise pollution, water use, waste management, and biodiversity. Construction activities can cause soil disturbance, excavation, and material handling, leading to pollutants such as heavy metals and hydrocarbons. Soil erosion can result from rainfall or runoff, and proper erosion control measures are crucial.

Air quality is affected by dust generated during construction activities, while locomotives and maintenance facilities emit pollutants. Noise pollution is inevitable due to pile driving, track laying, and other construction activities. Noise barriers, scheduling restrictions, and proper equipment maintenance can mitigate construction-related noise. Water use is also affected by construction activities, and efficient water management practices are essential.

Waste and wastewater management will be managed through systematic collection, segregation, and disposal of debris, hazardous materials, and domestic waste. Contractors will implement waste minimization strategies and adhere to strict protocols for hazardous substance disposal. In the operation phase, waste and wastewater management will focus on maintaining cleanliness and environmental standards across railway facilities.

Biodiversity surveys were conducted in Aol to identify endemic/rare species and potential impacts on high concern species and habitats. Mitigation measures are defined and a BMP is prepared.

Social impact assessment field research was conducted, with key findings showing that the project's positive impact is related to improving transportation facilities, benefiting young people, students, and tourists. However, negative effects include impacts on livestock farming and grazing activities, negatively impacting road transportation firms and local minibuses operators.

Community health and safety concerns along the railway line are also highlighted, with inadequately controlled crossings, protective barriers, and level crossings. Local participation, illiteracy and regional language sensitivities should be taken into account to enhance local participation. Additionally, disadvantaged individuals with disabilities and those who are older should be considered in terms of participation (please refer to SEP for details).

AYGM will establish and manage an information system in compliance with World Bank policies and gather public opinions through an active grievance mechanism and stakeholder engagement.

The management plans prepared for the purpose of successfully implementing the ESMP and revealing the management controls of the risks and impacts related to all environmental and social issues addressed within the scope of ESIA are presented in the Appendices section. Each plan includes mitigation measures specific to the issues they are addressing and sets out the framework for other plans and procedures to be developed later in the Project. As there might be some differences in the structure of the 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

This ESMP contains both Construction-ESMP and Operations-ESMP. Contractors will use the Construction-ESMP as a guideline for the preparation of their own site-specific ESMP, i.e. Contractor's ESMP (C-ESMP), including sub-management plans.

The sub-management plans presented within the scope of ESMP, and their contents are given in Table 4. Construction contractor(s) will develop and implement their own site-specific sub-management plans on the basis of these plans. Similarly, TCDD will prepare their project specific sub-management plans prior to the start of the operation phase and implement them accordingly during the operational activities.

**Table 4. Sub-Management Plans**

| Document Code                           | Sub-Management Plan  | Scope   |
|---|--|---|
| CNR-ETMIC-CHSMP-001<br>(see Appendix-1) | Community Health and Safety Management Plan (CHSMP)                      | It aims to minimize the project's risks and impact on the safety and security of local communities during land preparation, construction and rehabilitation activities.   |
| CNR-ETMIC-EPRP-001<br>(see Appendix-2)  | Emergency Preparedness and Response Plan (EPRP)                          | It has been developed to provide a clear framework for taking specific actions and following established protocols when emergencies arise. The plan has a dual purpose: firstly, it aims to proactively prevent emergencies during both the construction, rehabilitation and operation phases of the project; secondly, it aims to minimize potential damages that might occur due to unexpected emergencies. |
| CNR-ETMIC-PPWMP-001<br>(see Appendix-3) | Pollution Prevention and Waste Management Plan (PPWMP)                   | The objective of the PPWMP is to enhance resource efficiency and capacity management and outline requirements for pollution prevention and waste management.  |
| CNR-ETMIC-TMP-001<br>(see Appendix-4)   | Traffic Management Plan (TMP)  | It includes the mitigation measures and administrative practices required to prevent or minimize the risks and adverse impacts on the environment and society that will occur as a result of the activities to be carried out during the construction and operation phases of the Project by evaluating the traffic load together with the existing traffic load.   |
| CNR-ETMIC-BMP-001<br>(see Appendix-5)   | Biodiversity Management Plan (BMP)                                       | It is a comprehensive document that outlines strategies and actions for the conservation and sustainable management of biodiversity within and around the project's route.  |
| CNR-ETMIC-CHMP-001<br>(see Appendix-6)  | Cultural Heritage Management Plan (CHMP) including Chance Find Procedure | It outlines strategies and actions for the identification, protection, and management of cultural heritage resources within and around the project's route.   |
| CNR-ETMIC-OHSMP (See Appendix-7)        | Occupational Health and Safety Plan (OHSMP)                              | It outlines measures and protocols aimed at ensuring the health, safety, and well-being of workers within a workplace or project site. It encompasses risk assessments, safety training, emergency procedures, and compliance with relevant regulations to mitigate occupational hazards and promote a safe working environment.  |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 34 / 96              |

## 6 IMPLEMENTATION OF THE ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN

The ESMP 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.

AYGM 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.

### 6.1 Organizational Structure

Managing an environmental and social system requires a multifaceted approach and organizational capacity. Here are two essential aspects that an organization should possess:

#### **Strategic Vision and Commitment:**

**Leadership:** The organization's top leadership must demonstrate unwavering commitment to environmental and social responsibility. They set the tone for the entire organization by integrating sustainability into the core business strategy.

**Clear Policies and Goals:** Establishing comprehensive policies and measurable goals related to environmental protection, social equity, and community well-being is crucial. These policies guide decision-making at all levels.

**Risk Assessment and Mitigation:** Organizations should conduct thorough risk assessments, considering environmental impacts, social risks, and stakeholder concerns. This enables proactive mitigation strategies.

**Integration Across Functions:** Environmental and social considerations should permeate all functions, from procurement and operations to marketing and finance. Silos hinder effective management.

#### **Operational Capabilities:**

**Expertise and Training:** Organizations need skilled professionals who understand environmental regulations, social dynamics, and stakeholder engagement. Regular training ensures up-to-date knowledge.

**Monitoring and Reporting:** Robust monitoring systems track environmental performance, social indicators, and compliance. Transparent reporting builds trust with stakeholders.

**Stakeholder Engagement:** Effective communication with communities, NGOs, regulators, and employees is essential. Organizations must actively listen, address concerns, and collaborate for positive impact.

**Continuous Improvement:** An adaptive mindset is critical. Organizations should learn from successes and failures, adapt strategies, and continuously improve their environmental and social practices.

AYGM 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 AYGM. The Project will be handed over to General Directorate of TCDD after the completion of



|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 35 / 96              |

construction. General Directorate of TCDD will include the Project in its environmental and social management system within the scope of railway management.

Once the Project Implementation Unit (PIU) is established within AYGM, the Construction Contractors, 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. The Construction Contractors will use consultancy both from within its organization and by hiring consultants from outside. The Contractors will employ necessary experts on the following subjects regarding the implementation of the management controls determined within the scope of the ESMP, when necessary:

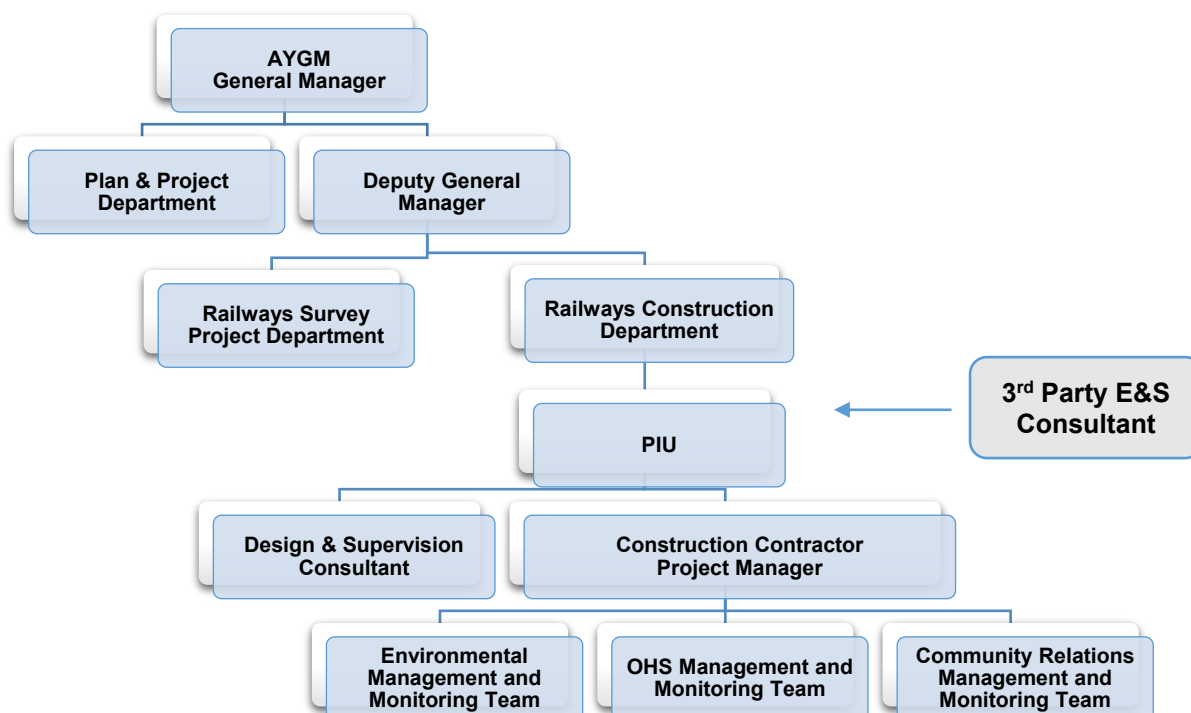
- Environmental Experts,
- Cultural Heritage Specialists,
- Ecological / Biological Experts,
- Soil / Landscape Experts,
- Social / Public Relations Specialists,
- Environmental and Social Trainers.

The Contractors will be responsible for all its staff (including contractor and subcontractor staff) to have E&S responsibility awareness to ensure that E&S requirements are implemented smoothly on site.

A Design & Supervision Consultant will be contracted by AYGM and they will be responsible from reviewing the final design of the project including the engineering structures, conducting necessary additional environmental and social studies, in line with both national and WB ESF requirements, such as environmental and social assessment of other project components (such as access roads, etc.) and related/auxiliary facilities (such as energy transmission line, borrow pits, etc.) which could not be assessed within the scope of ESIA since the layout and design of these facilities were not determined, before the start of construction activities. Findings of these studies will be reflected in the respective sub-management plans and Contractor's ESMP (C-ESMP). The Design & Supervision Consultant will be contracted once financial closure is finalized and necessary evaluation will be done prior to the construction. Additional pre-construction fauna surveys will be performed during pre-construction phase by the Contractor under supervision by AYGM.

The ESMS structure to be executed by AYGM and the Construction Contractors will be managed with the organizational structure defined in Figure 2.

**Figure 2. ESMS Organizational Structure**



## 6.2 Roles and Responsibilities

As the project owner, it is the responsibility of AYGM 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 AYGM PIU and the Construction Contractors is presented in Table 5.

**Table 5. Roles and Responsibilities Regarding the Implementation of the ESMP**

| AYGM PIU  |
|---|
| <ul style="list-style-type: none"> <li>▪ Implementation of ESMP and related management plans and fulfillment of all commitments within the scope of ESCP,</li> <li>▪ Sharing the ESMP and sub-management plans with the Contractors, guiding the Contractors in preparing the implementation plans, approving these plans,</li> <li>▪ Updating the ESMP when necessary and sharing additional commitments with the Contractors,</li> <li>▪ Employment of competent E, S and EHS staff and external experts to work under the project,</li> <li>▪ Providing EHS trainings to all Project staff,</li> <li>▪ Training staff regarding EHS matters and requirements of the ESMP</li> <li>▪ Environmental review, monitoring and audits related to ESMP practices, evaluation of results,</li> <li>▪ Auditing contractor activities in line with ESMP requirements,</li> <li>▪ Stopping of work in case of significant Chance Finds (regarding Chance Finds Procedures, which is a part of this ESMP, specifically within the Cultural Heritage Management Plan)</li> <li>▪ Ensuring compliance with project standards, making necessary emergency corrections in case of non-compliance,</li> <li>▪ Stopping work in any situation that threatens environment and human health and safety,</li> <li>▪ Providing follow-up and analysis of environmental, social and occupational health and safety accidents,</li> <li>▪ Ensuring stakeholder participation, implementing the grievance mechanism, ensuring continuous information transfer through open communication,</li> <li>▪ Promptly notify the Bank of any incident or accident (within 48 hours after the occurrence of the 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.,</li> </ul> |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 37 / 96              |

- Provide sufficient detail 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 (A report (an incident report including root cause analysis, precautions and compensation measures taken) would be provided within 30 days to the Bank, as requested),
- 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 Contractors**

- Fulfillment of all requirements of the ESMP and sub-management plans,
- Implementation of additional commitments determined by AYGM,
- 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 AYGM,
- Employment of competent E, S and EHS staff within the scope of the project,
- Providing the necessary trainings to the contractors and sub-contractors 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, reporting to AYGM,
- Responding to environmental and social incidents or complaints raised by project stakeholders and implementing corrective actions as necessary.
- Prompt notification of accident and incidents and keeping an incident register at construction site throughout the Project life,
- Carrying out the management of change process via filling in the Management of Change Process Form (Appendix-8) and informing AYGM, WB and AIIB about the details and the results of the process including at the final design stage.

#### **Supervision Consultant (SC)**

- The SC will regularly monitor construction activities to ensure they are carried out according to the approved designs, plans, and specifications.
- They will oversee quality assurance and quality control processes to ensure that construction work meets required standards and specifications.
- The SC will verify compliance with environmental and social safeguards, as well as health and safety regulations, throughout the construction phase.
- They will prepare regular progress reports detailing the status of construction activities, any issues encountered, and actions taken to address them.
- The SC will assess proposed changes to project scope, design, or specifications and advise on their feasibility and potential impacts.
- They will manage contracts with construction contractors, ensuring adherence to contractual obligations, payment schedules, and performance requirements.
- The SC will facilitate resolution of any disputes or conflicts that arise during construction, involving relevant stakeholders as necessary.
- They will facilitate communication and coordination among project stakeholders, including the client, contractors, regulatory agencies, and financing institutions.
- They will identify and assess potential risks to project implementation and develop strategies to mitigate them.
- The SC may provide training and capacity building to project staff and contractors on relevant technical and managerial aspects of project implementation.
- They will ensure that all project documentation, including construction records, inspection reports, and correspondence, is properly maintained and archived.

#### **3<sup>rd</sup> Party Environmental and Social Consultant**

- Monitoring and evaluating the implementation of environmental and social mitigation measures to ensure effectiveness and compliance.
- Providing technical expertise and guidance to project stakeholders on environmental and social issues, including best practices and industry standards.

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 38 / 96              |

- Facilitating stakeholder engagement and consultation processes to ensure that community concerns and interests are adequately addressed.
- Conducting training and capacity building activities for project staff and stakeholders on environmental and social management and compliance requirements.
- Reporting on environmental and social performance and compliance to project management, financing institutions, and regulatory authorities.
- Conducting audits and reviews to assess the effectiveness of environmental and social management systems and identify areas for improvement.
- Ensuring that project documentation and reporting meet the requirements of financing institutions and regulatory authorities regarding environmental and social safeguards.

### 6.3 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 Project Implementation unit (PIU) at AYGM, which shall be responsible for the coordination of the actions and assessments of a deviation from scope of works ensure that the ESIA Specialist in the PIU is informed of any change, as specified above, which could have a potential environmental and social impacts.

#### 6.3.1 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-8, is used to specifically describe potential environmental and social issues associated with the proposed change. If the potential environmental and social issues are identified from this process, the Project Director shall be notified by delivering the MCP data for evaluation.

#### 6.3.2 Coordination of the Change

Subsequently after the MCP data is received from the Facilitator of the Change, Project Director coordinates with the ESIA Specialist, Community Liaison Specialist and Stakeholder Management Specialist. Community Liaison Officer Specialist and Stakeholder Management Specialist review the MCP data and advise whether a stakeholder consultation and/or new mitigations are required with respect to the change.

Project Director ensures that the feedback of ESIA Specialist and Community Liaison Specialist and Stakeholder Management Specialist are reflected in MCP form and delivered to the Facilitator of the Change together with the evaluation results of Environmental and Social Impact Assessment Specialist and Community Liaison Specialist and Stakeholder Management Specialist.

#### 6.3.3 Evaluation of the Change

The Project Director ensures that any potential environmental and social risks and impacts associated with the change which are not within the scope of ESIA studies are evaluated using

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 39 / 96              |

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".

#### The changes associated with Route and Facility Location

If the change is associated with the route or site facility change then the Facilitator of the Change subsequently notifies the Project Director (e.g., by MCP form in Appendix-8). Project Director ensures that environmental and social assessment studies as well as the official process are initiated. The ESIA Specialist checks whether the change requires an additional environmental permit and/or approval.

#### The changes associated with Design

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-8 will be used for such an evaluation. The findings then are forwarded to Project Director. 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 Stakeholder Influence

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 current studies and assessments. Project Director ensures that environmental and social assessment studies are implemented if required.

### **6.3.4 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.

### **6.3.5 Change Implementation**

The Project Director reviews progress against implementation of the proposed change, as required, to verify that the environmental and social considerations have been fully addressed



|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 40 / 96              |

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.

## 6.4 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 participation of all relevant parties, including individuals, groups, and organizations affected by or 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. AYGM 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.

### Identification of the Stakeholder

The direct impacts of the project will be observed within the 0-500 m corridor, while the indirect impacts will be observed within the 0-5 km corridor. As a summary;

- 1st Social Impact Area, 0-500 m buffer, Primary Social Impact Area, Direct impacts of the Project: Center of the social impact area is the Stations. Station employees are at the very core of this impact area. Additionally, this social impact area also includes the settlements around the stations, which are located within the 500 m corridor.
- 2nd Social Impact Area, 0-5 km buffer, Secondary Social Impact Area, Indirect impacts of the Project. Center of the social impact area is the railway line. This social impact area includes the settlements around the railway line, which are located within the 0 - 5 km corridor.

Stakeholders are identified in four steps according to the social impact areas. These steps are as follows. Details of these identifications are given in project-specific SEP document.

- Step 1: Project Affected Parties (PAP), and Disadvantaged / Vulnerable Individuals or Groups (DVIGs): Individuals or groups directly affected by the project. In this project, directly affected PAPs are employees of the stations, local people around the settlements, and local representatives of these settlements, respectively. They are stated within the 1st social impact area.  
For this project, vulnerable groups, according to ESS10, have been defined based on characteristics that could be subject to limitations such as access to project-related information, participation in consultations, and access to announcements. Therefore, non-Turkish-speaking groups, the elderly, and people with disabilities are among the vulnerable groups for this project. Data on DVIGs has mostly been collected through studies in Step 1 and Step 2.
- Step 2: PAPs: Individuals or groups indirectly affected by the project. In this project, indirectly affected PAPs are local people around the railway line, and local representatives of these settlements, respectively. They are stated within the 2nd social impact area. Information on DVIGs has also been obtained here.
- Step 3: Other Interested Parties (OIP): Local and regional institutions who may be interested in the project. In this project these are stated in the centers of districts and provinces.

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 41 / 96              |

- Step 4: At this Step, it is aimed to reach out to stakeholders expected to be more significantly affected than others by the anticipated adverse impacts of the project, including students, youth, women, and groups with different ethnic-cultural backgrounds. These stakeholders, along with groups dependent on livelihood sources such as agriculture, animal husbandry, and fisheries, have also been included in the study to assess the impacts of the project on these activities.

The existing conditions faced by railway employees can be adapted to the specific context of land preparation and construction activities for siding. Passengers traveling along the Sivas to Ardahan route may experience various impacts from these activities, which necessitate ensuring accessibility, safety, and comfort, particularly for vulnerable groups. Clear communication about changes is essential. Special attention should be given to the specific impacts on vulnerable groups during the land preparation and construction of siding. Details of the relevant impacts and mitigation measures are defined under ESIA document. Specific measures to eliminate communication handicaps are also described within the Project-specific SEP document.

## 6.5 Grievance Mechanism, Workers' Grievance Mechanism, and GBVH-SEA/SH

The AYGM PIU is tasked with documenting and overseeing grievances, assisted by on-site social specialists who record and manage complaints. The AYGM PIU specialists are responsible for timely responses and implementing solutions following thorough investigations. The resolution process adheres to legal requirements and the World Bank standards, with complainants being informed of potential legal obligations. The Contractor's social experts, in line with the SEP guidelines, will also be on-site, tasked with recording and managing complaints.

In the implementation of public GM 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.

Identified risks on labor condition within ESIA can be summarized as following:

- The lack of nearby housing presents a challenge for personnel
- Sites outside municipal services require waste management
- Infrastructure deficiencies like water systems
- Severe conditions, especially in Erzurum, Erzincan, and Sivas regions, exacerbate access, weather, and communication issues.

Detailed explanations are given under the Project-specific SEP.

## 6.6 3<sup>rd</sup> Party Environmental and Social Monitoring Activities

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

3<sup>rd</sup> Party Environmental and Social Monitoring Consultant will provide AYGM with an independent third party environmental and social monitoring services to ensure that all site construction activities are efficiently monitored, non-conformities versus the ESIA obligations

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 42 / 96              |

are detected and managerial decisions are developed adequately to mitigate these deficiencies and give recommendations to overcome the identified deficiencies.

Environmental and social monitoring (E&S) is an important part of the project management which provides insight into whether mitigation measures are implemented as planned. In addition, the intended results of the implementation can be verified by E&S monitoring. E&S monitoring is also part of project management in relation to the context of sustainable development. These studies determine the possible environmental and social effects of the project and suggest necessary mitigation measures to prevent environmental pollution.

This ESMP includes a Monitoring Plan with key performance indicators (KPIs). The 3<sup>rd</sup> party E&S Monitoring Consultant will review the E&S performance according to these KPIs during their monitoring studies. The monitoring studies will cover all this ESMP, Resettlement Plan, its appendices, and any other additional documents that are referenced within this ESMP report. The construction works conducted by the Contractor, should take all mitigation measures stated in this ESMP.

As a result of that, in the light of E&S assessments in the ESIA Report and E&S mitigation plan along with monitoring requirements outlined in this ESMP, it could be stated that the AYGM and Construction Contractor(s) will fulfill all their obligations. Finally, 3<sup>rd</sup> Party Environmental and Social Monitoring Consultant and Design and Supervision Consultant will monitor the environmental and social activities of the Contractor(s).

Terms of reference (ToR) will be prepared for the 3<sup>rd</sup> party monitoring consultant by AYGM, which will be subject to the lending banks' reviews and consent. ToR will be prepared after the completion of final design studies.

## 6.7 Monitoring, Reporting and Evaluation

Regular internal audits and environmental and social monitoring will be carried out by AYGM and the Contractor in order to evaluate the implementation of the ESMP and related Sub-Management Plans. In line with the general framework of audits and monitoring, the following issues should be controlled:

- Implementation of environmental and social management plans and Contractor implementation plans by all personnel,
- Ensuring compliance with the national legislation, the WB ESF and relevant WBG guidelines, which form the project standards, and
- Project activities are carried out in a way that meets ESCP commitments and are in compliance with the ESMP.

AYGM PIU 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 AYGM. In addition, Environmental and Social Monitoring reports will be prepared twice a year regarding the work carried out by the 3<sup>rd</sup> 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. The framework of the environmental and social monitoring program, which needs to be detailed with additional works before construction, is given in Chapter 7.

## 6.8 Capacity Increase for ESMS Implementation

To ensure effective implementation of the Environmental and Social Management System (ESMS), capacity building is crucial for all stakeholders involved in the project. This includes

training and development programs tailored to the needs of project staff, contractors, and local communities.

To support the ongoing implementation of the ESMS, it is essential to establish robust institutional frameworks and provide continuous support through expert consultation and technical assistance. This includes developing clear guidelines and protocols for environmental and social management, ensuring adequate staffing levels with qualified personnel, and fostering a culture of continuous improvement and learning.

Especially considering the projects currently being carried out by AYGM and its responsibilities, increasing the environmental and social capacity of the project-specific PIU team may be advisable. Since the ETMIC sub-unit of the PIU will carry out additional E&S assessments and studies once the details of relevant and/or auxiliary facilities—such as energy transmission lines, material quarries, crushing and screening plants, and ready-mixed concrete plants—are determined, PIU staff are required to participate in the training program. Moreover, it is essential to provide the necessary training to ensure that the contractors effectively implement the requirements outlined in this ESMP and the C-ESMP to be prepared.

Training will focus on enhancing understanding and practical skills related to environmental and social risk assessment, mitigation measures, monitoring, and compliance with relevant standards and regulations. Additionally, specialized workshops on specific topics such as biodiversity conservation, community engagement, health and safety protocols, and grievance redress mechanisms can further strengthen the competency of the project team. Capacity building initiatives should also emphasize the importance of integrating climate resilience into project planning and execution. The training program will include but will not be limited to the outline described in Table 6.

**Table 6. Training Program**

| Topic   | Trainer  | Participant  | Timeframe  |
|---|--|--|--|
| ESMP Requirements   | Environmental Management and Monitoring Team within third-party consultant | AYGM PIU<br>Design and Supervision Consultant<br>Contractor(s) staff | During construction (to be repeated once a year) |
| Pollution Prevention and Waste Management (including water/wastewater management) | Environmental Management and Monitoring Team within third-party consultant | AYGM PIU<br>Design and Supervision Consultant<br>Contractor(s) staff | During construction (to be repeated once a year) |
| Cultural heritage management and awareness  | Environmental Management and Monitoring Team within third-party consultant | AYGM PIU<br>Design and Supervision Consultant<br>Contractor(s) staff | During construction (to be repeated once a year) |
| World Bank Group E&S Requirements   | Environmental Management and Monitoring Team within third-party consultant | AYGM PIU<br>Design and Supervision Consultant<br>Contractor(s) staff | During construction (to be repeated once a year) |
| Biodiversity & Habitat (including BMP requirements)                               | Environmental Management and Monitoring Team within third-party consultant | AYGM PIU<br>Design and Supervision Consultant                        | During construction (to be repeated once a year) |

| Topic  | Trainer   | Participant  | Timeframe  |
|--|---|--|--|
|  |   | Contractor(s) staff  |  |
| Stakeholder Management (including interaction requirements with local communities)       | Community Relations Management and Monitoring Team within third-party consultant            | AYGM PIU<br>Design and Supervision Consultant<br>Contractor(s) staff | During construction (to be repeated once a year) |
| Induction training on CoC, GM, WGM and awareness on GBV, SEA/SH adherence to project LMP | Social and Community Relations Management and Monitoring Team within third-party consultant | AYGM PIU<br>Design and Supervision Consultant<br>Contractor(s) staff | Before construction and for newly hired staff    |
| Livelihood Impact Management   | Community Relations Management and Monitoring Team within third-party consultant            | AYGM PIU<br>Design and Supervision Consultant<br>Contractor(s) staff | During construction (to be repeated once a year) |
| OHS management (including emergency preparedness and response) and awareness             | OHS Management and Monitoring Team within third-party consultant                            | AYGM PIU<br>Design and Supervision Consultant<br>Contractor(s) staff | During construction (to be repeated once a year) |
| CHS management (including traffic management) and awareness                              | Community Relations Management and Monitoring Team within third-party consultant            | AYGM PIU<br>Design and Supervision Consultant<br>Contractor(s) staff | During construction (to be repeated once a year) |

Regular audits and reviews of ESMS practices, along with feedback mechanisms, can help identify areas for improvement and ensure adherence to best practices. Moreover, fostering strong communication channels among all stakeholders will facilitate better coordination and transparency, thereby enhancing the overall effectiveness of environmental and social management throughout the project lifecycle.



## 7 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 (see Table 7, Table 8 and Table 9 for E&S mitigation plans related to the pre-construction, land preparation & construction, and operation phases, respectively).

**Table 7. Environmental and Social Mitigation Plan – Pre-Construction**

| Impact Description                      | Mitigation Measures  | Implementation Plan | Responsibility                                  | Cost  |
|---|--|---------------------|---|---|
| Operational safety issues in the future | <ul style="list-style-type: none"> <li>Signing a protocol with TCDD officials by AYGM, including them in the design and supervision process, and/or organizing monthly technical meetings with the operating teams of the existing line to exchange ideas about current issues and potential problems that may arise.</li> </ul>                           | ESMP                | AYGM (PIU)                                      | No additional cost  |
| <b>Land Use, Soils and Geology</b>      |  |                     |   |   |
| Impacts on arable lands                 | <ul style="list-style-type: none"> <li>When temporary restrictions are imposed on land usage, the local community will be informed, and alternative access roads will be identified.</li> <li>Project-specific SEP including GM will be used to follow E&amp;S risks related complaints of affected communities. ensure any complaints/comments</li> </ul> | SEP                 | Contractors and/or AYGM (PIU)                   | Included in Stakeholder Engagement Plan Budget:<br>USD 320,000          |
| Impacts on Pastures                     | <ul style="list-style-type: none"> <li>Project-specific SEP including GM will be used to follow E&amp;S risk related complaints of affected communities.</li> </ul>  | SEP                 | Contractors and/or AYGM (PIU)                   | Included in Stakeholder Engagement Plan Budget:<br>USD 320,000          |
| Seismicity                              | <ul style="list-style-type: none"> <li>All engineering structure and superstructures to be established within the scope of the project will be designed and constructed taking into account the earthquake resistant design parameters and criteria.</li> </ul>  | ESMP<br>EPRP        | AYGM (PIU)<br>Design and Supervision Consultant | Included in Design and Supervision Consultancy services:<br>USD 500,000 |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 46 / 96              |

| Impact Description                               | Mitigation Measures  | Implementation Plan    | Responsibility                                      | Cost   |
|--|--|------------------------|---|--|
| <b>Noise</b>                                     |  |                        |   |  |
| Noise levels                                     | <ul style="list-style-type: none"> <li>Project-specific SEP including GM will be used to follow E&amp;S risk related complaints of affected communities.</li> </ul>  | SEP<br>PPWMP<br>CHSMP  | AYGM (PIU)  | Included in Stakeholder Engagement Plan Budget             |
| <b>Air Quality</b>                               |  |                        |   |  |
| Air Quality                                      | <ul style="list-style-type: none"> <li>Project-specific SEP including GM will be used to follow E&amp;S risk related complaints of affected communities.</li> </ul>  | SEP<br>PPWMP<br>CHSMP  | AYGM (PIU)  | Included in Stakeholder Engagement Plan Budget             |
| <b>Water Resources and Wastewater Management</b> |  |                        |   |  |
| Impacts on Groundwater                           | <ul style="list-style-type: none"> <li>Necessary permits will be granted with relevant authorities (municipalities) for water supply</li> </ul>  | ESMP<br>PPWMP<br>CHSMP | Contractors and/or AYGM (PIU)                       | Included in pre-construction cost                          |
| <b>Cultural Heritage</b>                         |  |                        |   |  |
| Cultural Heritage                                | <ul style="list-style-type: none"> <li>The area where the work will be carried out will be thoroughly analyzed and relevant stakeholders will be consulted.</li> <li>Cultural Heritage Management Plan (CHMP) which includes the Chance Find Procedure (annexed as Appendix-6) will be applied.</li> </ul> | ESMP<br>CHMP           | AYGM (PIU)<br><br>Design and Supervision Consultant | Included in pre-construction cost<br><br>USD 500,000       |
| <b>Biodiversity</b>                              |  |                        |   |  |
| Habitat loss / fragmentation                     | <ul style="list-style-type: none"> <li>The Project personnel will be informed on the sensitivity of critical and natural habitats and species, conservation priorities, and also nesting areas that will be identified through pre-construction surveys.</li> </ul>  | ESMP<br>BMP            | AYGM (PIU)  | Additional study on biodiversity pre-construction surveys: |

| Impact Description                | Mitigation Measures   | Implementation Plan | Responsibility   | Cost  |
|-----------------------------------|---|---------------------|--|---|
|                                   | <ul style="list-style-type: none"> <li>▪ Trainings will be organized for the Project personnel to inform them about the biodiversity and sensitivity of endemic species.</li> <li>▪ Preconstruction surveys for invertebrates, amphibians, reptiles, birds and mammals will be conducted (as specified in Section 4.7.2 of ESIA) and BMP will be updated.</li> <li>▪ Prior to construction works commenced, critical habitats will be marked along the railway corridor.</li> <li>▪ No Project related activities will be carried out in the Critical habitats.</li> <li>▪ Endemic species seeds will be collected in vegetation period (May-September) (see Table 85 of ESIA) and seeds will be delivered to the Türkiye Gene Bank. These surveys will be performed with a Botanist Specialist by the Contractor under the control of AYGM.</li> <li>▪ 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 the Stakeholder Engagement Plan (SEP).</li> <li>▪ To minimize animal mortality, locations along the route where animal passage will be prevented and methods that will be used to prevent passage of target species (fencing, sound signals, chemical repellents, lights and reflectors, etc.) will also be identified.</li> </ul> |                     | <p>Design and Supervision Consultant</p> <p>Contractors (Implementation)</p> | <p>USD 350,000</p> <p>Included in the pre-construction cost</p> |
| <b>Socio-Economic Environment</b> |   |                     |  |   |
| Working conditions                | <ul style="list-style-type: none"> <li>▪ Collaborate with local authorities and communities to identify suitable locations for labor camps and housing, prioritizing the preservation of historical structures.</li> <li>▪ Partner with local governments and businesses to ensure sustainable access to basic amenities.</li> <li>▪ Collaborate with local utility providers to minimize interruptions and enhance communication reliability.</li> <li>▪ Plan for adequate heating solutions in regions with severe winter conditions, exploring alternatives to wood and coal stoves.</li> <li>▪ Collaborate with local municipalities to address waste collection issues and establish waste management plans.</li> <li>▪ Tailor solutions to the unique challenges of each region, considering access problems, weather conditions, and communication issues.</li> </ul>  | LMP<br>SEP          | <p>AYGM (PIU)</p> <p>Contractors (Implementation)</p>                        | <p>Included in pre-construction cost</p> <p>USD 500,000</p>     |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 48 / 96              |

| Impact Description            | Mitigation Measures  | Implementation Plan | Responsibility            | Cost                              |
|-------------------------------|--|---------------------|---------------------------|-----------------------------------|
|                               | <ul style="list-style-type: none"> <li>▪ Prioritize the assessment and improvement of tunnel structures to ensure safety and functionality for employees and freight transportation.</li> <li>▪ The contractor is required to prepare their own Labor Management Plan (LM Plan) according to the Project's Labor Management Procedure (LMP). This document should include a CoC. CoC, legal obligations concerning Gender-based Violence and Harassment (GBVH) and Sexual Exploitation and Abuse/ Sexual Harassment (SEA/SH) incidents should be included. Workers will be trained on CoC at the orientation. This training will be applied on camp sites to avoid harassment issues and cultural conflict with local people.</li> <li>▪ Relevant documents should be binding for direct workers, and contracted workers, community workers, and primary supply workers.</li> <li>▪ Borrower will identify potential risks of child labor, forced labor and serious safety issues which may arise in relation to primary suppliers. May require the primary supplier to take appropriate steps to remedy</li> <li>▪ A Workers' Grievance Mechanism (WGM) must be established ensuring it is open to anonymous reporting for GBVH, SEA/SH.</li> </ul> |                     |                           |                                   |
| Residences                    | <ul style="list-style-type: none"> <li>▪ Avoid damage to houses and other structures.</li> <li>▪ Keep consultation processes active for impacts such as noise and vibration.</li> <li>▪ Consider vulnerable individuals within households.</li> <li>▪ A grievance mechanism including handling of the SEA/SH grievances will be established and maintained</li> <li>▪ Awareness-raising and training for project personnel and contractor staff on the prevention of GBV, SH, and SEA should be provided.</li> </ul>   | SEP                 | Contractors<br>AYGM (PIU) | Included in pre-construction cost |
| Passenger and local residents | <ul style="list-style-type: none"> <li>▪ Develop a comprehensive schedule for construction activities to minimize service disruptions, considering off-peak travel times whenever possible.</li> <li>▪ Provide alternative transportation options or temporary arrangements to ensure continuity in passenger services during construction.</li> <li>▪ Implement a robust communication strategy that prioritizes clear, transparent, and timely information dissemination to keep passengers informed about construction-related changes.</li> <li>▪ Establish a dedicated communication team responsible for updating passengers on construction-related updates and changes.</li> </ul>   | SEP                 | Contractors<br>AYGM (PIU) | Included in pre-construction cost |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 49 / 96              |

| Impact Description | Mitigation Measures   | Implementation Plan | Responsibility | Cost |
|--------------------|---|---------------------|----------------|------|
|                    | <ul style="list-style-type: none"> <li>▪ Utilize multiple communication channels such as announcements, signage, and digital platforms to ensure information accessibility for all passengers.</li> <li>▪ Prioritize passenger comfort by minimizing disruptions during peak travel hours and providing amenities and facilities to enhance the passenger experience during construction.</li> <li>▪ Schedule regular updates and informative announcements to keep passengers informed about changes in platforms, schedules, and potential delays.</li> <li>▪ Establish accessible channels for passenger inquiries and feedback, such as a dedicated helpline, online customer service platforms, and information booths at key stations.</li> <li>▪ Collaborate with tourism agencies, local authorities, and affected businesses to develop alternative strategies during the disruption, considering adjusting the timing or rerouting of tourist activities to minimize economic losses in the affected regions.</li> <li>▪ Engage with local communities, passengers, and businesses through regular forums and consultation sessions to gather feedback on the impacts and effectiveness of mitigation measures.</li> <li>▪ Establish a monitoring and evaluation framework to assess the effectiveness of mitigation measures and regularly review and update strategies based on feedback, changing circumstances, and evolving construction timelines.</li> </ul> |                     |                |      |



**Table 8. Environmental and Social Mitigation Plan – Land Preparation & Construction**

| Impact Description                 | Mitigation Measures   | Implementation Plan | Implementation and Monitoring Responsibility                                      | Cost   |
|------------------------------------|---|---------------------|---|--|
| <b>Land Use, Soils and Geology</b> |   |                     |   |  |
| Impacts on arable lands            | <ul style="list-style-type: none"> <li>▪ Land preparation and construction works will be conducted at designated sites that will be visibly and appropriately marked. Also, the worksites will be minimized as much as possible.</li> <li>▪ Training will be provided to the construction personnel so that they maintain the pre-established construction boundaries.</li> <li>▪ Implement Project Grievance Mechanism. If any comment related with arable lands is received through the Grievance Mechanism, evaluate the complaint and where necessary plan and implement corrective actions.</li> <li>▪ Contractors will take necessary corrective measures 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.</li> </ul>   | RF<br>ESMP<br>SEP   | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in Stakeholder Engagement Plan Budget:  |
| Impacts on Pastures                | <ul style="list-style-type: none"> <li>▪ Agricultural / meadow underpasses and culverts will be present or constructed on the entire Project route to reduce fragmentation impacts.</li> <li>▪ Land preparation and construction activities will be carried out in designated areas that will be visible and properly marked. Also, the worksites will be minimized as much as possible.</li> <li>▪ Training will be provided to the construction personnel so that they maintain the pre-established construction boundaries.</li> <li>▪ Implement Project Grievance Mechanism. If any comment related with pastures is received through the Grievance Mechanism, evaluate the complaint and where necessary plan and implement corrective actions.</li> <li>▪ Trainings and information sharing with community members who are using pastureland during land preparation before construction.</li> <li>▪ In case of direct or indirect damage to adjacent properties that are state or private property due to the activities related to the project, Contractors will take necessary corrective measures from their own budget.</li> </ul> | RF<br>ESMP<br>SEP   | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | USD 320,000 and<br>Additional Training Cost:<br>USD 10,000<br><br>Included in the construction costs |
| Topsoil stripping                  | <ul style="list-style-type: none"> <li>▪ Strip fertile topsoil along the Project area (where required) including the new sidings and existing sidings extension areas, electrification systems installation areas at sufficient depth suitable for local soil conditions prior to construction activities.</li> </ul>   | ESMP<br>PPWMP       | AYGM PIU (for Supervision and Monitoring)   | Assignment of a Soil Expert at site:<br>USD 85,000   |

| Impact Description | Mitigation Measures  | Implementation Plan | Implementation and Monitoring Responsibility                                      | Cost                                    |
|--------------------|--|---------------------|---|---|
|                    | <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Do not carry out stripping when soil is wet, so that soil compaction is avoided.</li> <li>▪ Provide drainage at topsoil storage areas by open channels.</li> <li>▪ 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.</li> <li>▪ Apply organic or inorganic materials on the topsoil to improve quality and avoid erosion, desiccation or invasion of wild species.</li> <li>▪ 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.</li> <li>▪ Loosen topsoil to a depth of 15 cm before reinstatement (Increase depth of loosening up to 40-50 cm for compact heavy clay soils)</li> <li>▪ Keep depth of topsoil for areas to be planted suitable for side slopes, shrub plantation areas, tree roots etc.</li> <li>▪ Conduct grading operation in line with the natural slope and drainage conditions following the reinstatement of topsoil.</li> </ul> |                     | Contractors (for Implementation)  | Included in the construction costs      |
| Soil Erosion       | <ul style="list-style-type: none"> <li>▪ Before the onset of land preparation and construction works, erosion control measures like drainage channels, settling structures, etc. will be implemented.</li> <li>▪ 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.</li> <li>▪ Erosion control measures will be implemented following the completion of excavation works, also at the culvert outlets, and slopes will be improved.</li> <li>▪ Around the excavated material stored at designated storage sites, dikes will be established to prevent loss of soil.</li> <li>▪ 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.</li> </ul>  | ESMP<br>PPWMP       | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in soil expert assignment cost |

| Impact Description                | Mitigation Measures  | Implementation Plan   | Implementation and Monitoring Responsibility                                      | Cost                                    |
|-----------------------------------|--|-----------------------|---|---|
| Soil Contamination                | <ul style="list-style-type: none"> <li>Discharge of materials into soil that would cause contamination will be prohibited.</li> <li>Accidental spills and leakages will be managed through implementation of the Emergency Preparedness and Response Plan.</li> <li>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.</li> <li>In case of a location suspected of a contamination before or during construction works, a sampling and analysis study will be carried out.</li> </ul> | ESMP<br>PPWMP<br>EPRP | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in soil expert assignment cost |
| Geological and geotechnical risks | <ul style="list-style-type: none"> <li>Additional durability and structural measures in fills and cuts will be developed and implemented.</li> <li>Excavation and filling slopes will be designed taking into account ground strength parameters (cohesion, friction angle, etc.), groundwater condition and regional earthquake loads.</li> <li>Only the materials that will come out of the formation that comply with the filling material standards will be used as filling material.</li> </ul>   | ESMP                  | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in construction costs          |
| Seismicity                        | In the structures to be constructed within the scope of the project, provisions of "Regulations for the Structures to be Built in Disaster Areas" published in the Official Gazette No. 26582 dated 14.07.2007 and "Türkiye Building Code" of Disaster and Emergency Management Administration published in the Official   | ESMP<br>EPRP          | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) |   |

| Impact Description       | Mitigation Measures   | Implementation Plan    | Implementation and Monitoring Responsibility                                      | Cost   |
|--------------------------|---|------------------------|---|--|
|                          | Gazette No.30364 and dated 18.03.2018 that came into force in 01.01.2019 will be strictly followed.   |                        |   |  |
| Landslide Risk           | <ul style="list-style-type: none"> <li>▪ Natural vegetation on slopes should be maintained and established to stabilize soil.</li> <li>▪ Erosion control measures should be implemented, such as retaining walls and bioengineering techniques, to reduce soil erosion and landslide potential.</li> <li>▪ Retaining structures should be designed and constructed, such as retaining walls or embankments, to stabilize slopes.</li> <li>▪ Drainage systems are implemented to control groundwater and surface water, reducing the risk of soil saturation and landslides.</li> <li>▪ Emergency response plans will be developed and implemented for landslides, including evacuation procedures and communication protocols.</li> </ul>   | ESMP<br>EPRP           | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) |  |
| <b>Noise</b>             |   |                        |   |  |
| Increase in noise levels | <ul style="list-style-type: none"> <li>▪ Pollution prevention and waste management plan will be implemented.</li> <li>▪ Implement Project Grievance Mechanism. If any comment related with noise is received through the Grievance Mechanism, evaluate the complaint, and where necessary plan and implement corrective actions.</li> <li>▪ Carry out construction activities only during the day.</li> <li>▪ Prefer machinery, equipment and vehicles with lower sound power levels and sound reduced models. Use newer models.</li> <li>▪ Conduct maintenance of construction vehicles regularly by means of a regular vehicle maintenance and repair program which is also recommended by the manufacturer.</li> <li>▪ Define and obey speed limitations for construction vehicles. Carry out relevant trainings and provide instructions to drivers of construction vehicles on the driving speed limits.</li> <li>▪ Avoid driving construction vehicles through settlements where possible.</li> <li>▪ Use of designated site access roads. Evaluate construction of access roads where required to avoid traffic through residential areas.</li> <li>▪ Prohibition of construction vehicles entering the construction site and prohibition of keeping them running while waiting on the construction site.</li> </ul> | ESMP<br>PPWMP<br>CHSMP | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in Stakeholder Engagement Plan Budget.<br><br>Assignment of personnel (1 Environmental Expert at site):<br>USD 100,000<br>Additional training budget: USD 5,000<br><br>Included in the construction costs |

| Impact Description      | Mitigation Measures  | Implementation Plan    | Implementation and Monitoring Responsibility                                      | Cost  |
|-------------------------|--|------------------------|---|---|
|                         | <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Provide site personnel with necessary environmental training that aims at reducing noise caused by Project activities.</li> <li>▪ 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 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.</li> <li>▪ In order to keep the noise level to a minimum, the provisions of the Environmental Noise Control Regulation entered into force with the Official Gazette dated 30.11.2022 and No. 32029 will be complied with.</li> <li>▪ Notification of communities/settlements about the noise levels that may be created during construction phase due to heavy machinery use.</li> </ul> |                        |   |   |
| <b>Air Quality</b>      |  |                        |   |   |
| Decrease in Air Quality | <ul style="list-style-type: none"> <li>▪ To minimize the dust and impacts that may occur in soil stripping and cut&amp;fill works during the land preparation and construction phase of the project; measures such as water spraying at emission source, filling and unloading operations without tossing, covering vehicles with tarpaulin during material transportation and keeping the upper part of the material at 10% humidity will be taken.</li> <li>▪ During the whole activity, the project site will be regularly moistened with water trucks.</li> <li>▪ In accordance with the "Exhaust Gas Emission Control and Gasoline and Diesel Quality Regulation" published in the Official Gazette No. 28837 dated 30.11.2013; vehicles with traffic inspections, exhaust gas emission measurements will be used, and vehicles that need maintenance will be taken into maintenance after routine checks and other vehicles will be used until their maintenance is completed.</li> </ul>  | ESMP<br>PPWMP<br>CHSMP | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in Stakeholder Engagement Plan Budget and employment of environmental team.<br><br>Additional training budget: USD 5,000 |



| Impact Description      | Mitigation Measures  | Implementation Plan | Implementation and Monitoring Responsibility | Cost                                      |
|-------------------------|--|---------------------|--|---|
|                         | <ul style="list-style-type: none"> <li>▪ Employees will be ensured to work in accordance with the Traffic Law, and special attention will be paid to make loading according to loading standards.</li> <li>▪ Adopt procedures to limit the drop height of falling materials.</li> <li>▪ Apply dust suppression methods such as watering with water trucks; applying non-toxic antidust chemicals etc. at construction sites, service roads, and material storage sites.</li> <li>▪ Apply water suppression, pressurized distribution or spraying systems to minimize dust where and when necessary, on paved or unpaved road surfaces.</li> <li>▪ Carry out loading and unloading materials without throwing and scattering.</li> <li>▪ Cover excavated materials with nylon canvas or with materials with grain size larger than 10 mm during transportation.</li> <li>▪ Prefer local licensed quarries and material borrow sites for the reduction of transportation distance of materials.</li> <li>▪ Where necessary, place windshields or barriers around material storage sites to prevent spreading of dust emissions where necessary.</li> <li>▪ Upgrade where necessary and ensure maintenance of access roads (both to construction camp sites, construction sites, quarries/material borrow sites and material storage areas).</li> <li>▪ Avoid driving construction vehicles through settlements where possible.</li> <li>▪ Implement Project Grievance Mechanism. If any comment related with dust and air quality is received through the Grievance Mechanism, evaluate the complaint and where necessary plan and implement corrective actions.</li> <li>▪ Pollution prevention and waste management plan and traffic management plan will be implemented.</li> </ul> |                     |  | <p>Included in the construction costs</p> |
| <p>GHG Contribution</p> | <ul style="list-style-type: none"> <li>▪ Construction activities will be carried out in line with good industrial practices.</li> <li>▪ Alternative fuel and energy resources are not applicable for the construction machinery to be used in the scope of the Project. On the other hand, the Contractor will provide trainings to the operators/drivers that cover practices for;                             <ul style="list-style-type: none"> <li>○ reducing unnecessary equipment idling time,</li> </ul> </li> </ul>  |                     |  |   |

| Impact Description                               | Mitigation Measures   | Implementation Plan            | Implementation and Monitoring Responsibility                                      | Cost   |
|--|---|--------------------------------|---|--|
|  | <ul style="list-style-type: none"> <li>○ avoiding unnecessary operator moves/behaviors that increase fuel consumption (e.g., shifting hydraulic levers unnecessarily, use of excess horsepower),</li> <li>○ raising awareness on energy efficiency and best practices.</li> <li>▪ 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.</li> <li>▪ Contractor will ensure proper maintenance of machinery/equipment including systematic equipment inspection, detection of potential failure and prompt correction to ensure fuel savings.</li> <li>▪ Energy/fuel consumption of construction machinery, equipment and vehicles will be monitored.</li> </ul>  |                                |   |  |
| <b>Water Resources and Wastewater Management</b> |   |                                |   |  |
| Impacts on Surface Water Quality                 | <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ No surface water runoff from construction compounds and no untreated wastewater will be discharged to surface waters.</li> <li>▪ The positioning of stockpiles near to water bodies and in the flood risk areas will be avoided.</li> <li>▪ Sediment barriers will be provided between earthworks and the watercourse to avoid contamination of waterbodies with sediment.</li> <li>▪ Works during high flow events and during heavy rainfall will be avoided to reduce the risk of fine sediment release into watercourses, watercourse erosion and increased flood risk.</li> <li>▪ To collect and reduce the flow of surface runoff originated from construction sites, camp sites and other areas of impermeable surfaces; drainage systems and related strategies will be planned and implemented.</li> <li>▪ Implementing erosion control measures, such as the use of vegetation, geotextiles, or retaining walls, can prevent soil erosion and sedimentation, which can degrade surface water quality.</li> </ul> | ESMP<br>PPWMP<br>CHSMP<br>EPRP | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in employment of environmental team.<br><br>Opening and maintaining of the septic tanks USD 1,000<br><br>Included in the construction costs |

| Impact Description                           | Mitigation Measures  | Implementation Plan            | Implementation and Monitoring Responsibility                                      | Cost   |
|--|--|--------------------------------|---|--|
|  | <ul style="list-style-type: none"> <li>Establishing vegetative buffer zones along water bodies adjacent to the railway line can act as a natural barrier, reducing the transport of pollutants into the water during floods.</li> <li>In order to monitor the water quality of the surface waters within the project study area, periodically at least 2 times a year (rainy and dry periods), considering location of the pollution sources during land preparation and construction phase, water samples will be collected and assessment of the water quality of the samples will be performed.</li> <li>Pollution prevention and waste management plan and emergency response and preparedness plan will be implemented.</li> <li>When determining the locations of temporary fuel or oil storage areas, location of water resources will be taken into account. Accidental spill of hazardous materials such as fuel, oil, oil, cement etc. will be taken under control immediately.</li> </ul> |                                |   |  |
| Impacts on Surface Water Flow and Flood Risk | <ul style="list-style-type: none"> <li>Surface waters will be crossed with properly designed engineering structures (bridge, culverts, box culverts) and techniques. Positive opinion of DSI will be granted as well.</li> <li>To collect and reduce the flow of surface runoff originated from construction sites, camp sites and other areas of impermeable surfaces; drainage systems and related strategies will be planned and implemented.</li> <li>By incorporating green infrastructure, such as permeable pavements, green roofs, and vegetated swales, can enhance water absorption and reduce runoff.</li> </ul>  | ESMP<br>PPWMP<br>CHSMP         | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in construction costs and employment of environmental team. |
| Impacts on Groundwater                       | <ul style="list-style-type: none"> <li>When determining the locations of temporary fuel or oil storage areas, location of water resources will be taken into account. Accidental spill of hazardous materials such as fuel, oil, oil, cement etc. will be taken under control immediately.</li> <li>Drip trays and other secondary containment structures will be used for storage of the fuels and potentially hazardous construction materials.</li> <li>Spill kits will be kept on site to be deployed in the event of a spillage, and site staff will be trained in their use.</li> <li>Groundwater resources will not be utilized without the permission for the use of groundwater granted by the State Hydraulic Works (DSI).</li> </ul>  | ESMP<br>PPWMP<br>CHSMP<br>EPRP | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) |  |

| Impact Description   | Mitigation Measures   | Implementation Plan | Implementation and Monitoring Responsibility                                      | Cost  |
|--|---|---------------------|---|---|
|  | <ul style="list-style-type: none"> <li>▪ Emergency preparedness and response plan will be implemented.</li> </ul>   |                     |   |   |
| <b>Resource and Waste Management</b>                                   |   |                     |   |   |
| Possible impacts from storage of excavation material                   | <ul style="list-style-type: none"> <li>▪ Use of excavation material as much as possible in filling works.</li> <li>▪ Storage of excavated material that cannot be used for filling operations in designated storage areas where necessary permissions have been obtained and having sufficient capacity.</li> <li>▪ Proceeding according to the cut and fill program to minimize excavation wastes during excavation operations.</li> </ul>   | ESMP<br>PPWMP       | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) |   |
| Waste Management in Kars Province where no sanitary landfill available | <ul style="list-style-type: none"> <li>▪ Designated and secure temporary waste storage areas will be established at construction site in Kars to prevent uncontrolled/wild dumping. These areas will be equipped with proper signage and waste segregation facilities to encourage responsible disposal practices among construction workers.</li> <li>▪ Regular inspections and monitoring of waste management practices in Kars construction site will be conducted to identify and address any deviations from the prescribed guidelines. Strict penalties for illegal dumping will be implemented to deter such activities and maintain the integrity of the local environment.</li> <li>▪ Specialized training on effective waste management practices will be provided to construction personnel in Kars. This includes guidance on waste segregation, handling, and disposal methods to ensure compliance with environmental standards.</li> <li>▪ Through the implementation of these mitigation measures, the project aims to address the specific challenges associated with waste management in Kars Construction Site, fostering a cleaner and more sustainable local environment.</li> </ul> | ESMP<br>PPWMP       | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in employment of soil expert<br><br>Design and construction of storage area:<br>USD 10,000<br><br>Included in the construction costs |
| Hazardous and Non-Hazardous Solid Waste Management                     | <ul style="list-style-type: none"> <li>▪ Comply with the requirements of applicable waste management regulations for the management of all waste generated as a result of the project activities.</li> <li>▪ Segregate wastes (i.e., hazardous / non-hazardous, recyclable / non-recyclable) and store them temporarily in designated storage areas.</li> <li>▪ Ensure that waste storage areas meet the standards set by the relevant legislation:               <ul style="list-style-type: none"> <li>○ Determining sufficient and appropriate storage areas and ensuring that conditions such as container types, labels and classifications are appropriate in these areas,</li> </ul> </li> </ul>   | ESMP<br>PPWMP       | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in employment of environmental team<br><br>Additional cost on design and construction of waste storage area:                         |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 59 / 96              |

| Impact Description   | Mitigation Measures   | Implementation Plan | Implementation and Monitoring Responsibility | Cost  |
|--|---|---------------------|--|---|
|  | <ul style="list-style-type: none"> <li>○ Ensuring impermeability on the grounds of storage areas against possible contamination of soil and groundwater,</li> <li>○ Sufficient ventilation of the area under conditions where volatile wastes need to be stored,</li> <li>○ Establishing a suitable drainage system against leaks,</li> <li>○ Restriction of physical access to waste storage areas (through gates, fences, etc.); ensuring that only authorized persons can enter the storage areas,</li> <li>○ Placing warning signs and panels with the name and contact number of authorized personnel in storage areas,</li> <li>○ In order to response in case of emergency such as spills and fire immediately, keep absorbent materials, fire extinguishing equipment, etc. ready at a close location,</li> <li>○ Quick identification of any possible spillages / leaks by periodically performing visual checks in hazardous waste storage areas,</li> <li>▪ Ensuring that wastes are not spilled out of areas other than those reserved for this purpose and providing all necessary waste management trainings to all personnel and periodic repetition of these trainings,</li> <li>▪ No waste should be disposed of or burned at the construction site,</li> <li>▪ Marking waste explosives and used explosive containers as explosive waste. Storage of explosive wastes separately in storage areas reserved for this purpose, where only authorized personnel can work. Delivery of these wastes to construction sites should be provided by licensed companies.</li> <li>▪ Ensure that Contractor and its subcontractors implement the relevant management plan(s) and comply with Project Standards and the measures specified in this ESIA.</li> <li>▪ Pollution prevention and waste management plan will be implemented.</li> </ul> |                     |  | <p>USD 10,000</p> <p>Included in the construction costs</p> |
| Additional load on the waste management facilities of the region | <ul style="list-style-type: none"> <li>▪ In line with the waste management hierarchy and good practices, preferring reuse and recycling practices.</li> <li>▪ Ensure related waste disposal agreements done with the municipalities and licensed recovery/disposal firms.</li> </ul>  | ESMP<br>PPWMP       | AYGM PIU (for Supervision and Monitoring)    | Included in employment of environmental team                |



| Impact Description            | Mitigation Measures  | Implementation Plan | Implementation and Monitoring Responsibility                                      | Cost   |
|-------------------------------|--|---------------------|---|--|
|                               |  |                     | Contractors (for Implementation)  | Additional cost on having a licensed firm for waste management: USD 25,000<br><br>Included in the construction costs |
| Material Use                  | <ul style="list-style-type: none"> <li>▪ If the Contractor will have material obtained from licensed borrow pits and quarries, it will be ensured that the areas and quarries have “EIA Positive” or “EIA Not Required” Decisions and relevant environmental permit (as appropriate).</li> <li>▪ The Contractor will identify potential borrow pits and quarries with indication of capacities, while providing measures for site reinstatement within the Aggregate Management Plan (that will include mitigation measures for E&amp;S risks and impacts and monitoring requirements) and supervise the implementation of the plan.</li> <li>▪ In case of the Contractor plans to use its own quarry, the Contractor will provide its own ES assessment, prepared in line with national requirements and WB ESF, and share it with AYGM and WB. The works in quarry will not commence once the ES assessment and relevant mitigation measures are found to be adequate by AYGM and WB.</li> </ul> | ESMP<br>PPWMP       | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in the construction costs   |
| <b>Biodiversity</b>           |  |                     |   |  |
| Habitat and biodiversity loss | <ul style="list-style-type: none"> <li>▪ The Project personnel will be informed on the sensitivity of critical and natural habitats and species, conservation priorities, and also nesting areas that will be identified through pre-construction surveys. Any direct impact on plant and animal species will be prevented.</li> <li>▪ Trainings will be organized for the Project personnel to inform them about the biodiversity and sensitivity of endemic species.</li> <li>▪ Limiting the construction activities to designated work areas and minimizing vegetation clearance by limiting to only required areas.</li> </ul>   | ESMP<br>BMP         | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Assignment of personnel (1 Biodiversity Specialist): USD 85,000  |

| Impact Description | Mitigation Measures   | Implementation Plan | Implementation and Monitoring Responsibility | Cost                               |
|--------------------|---|---------------------|--|------------------------------------|
|                    | <ul style="list-style-type: none"> <li>▪ Prior to construction works commenced, critical habitats will be marked along the railway corridor.</li> <li>▪ Project-related impacts on air, soil and water in natural habitats will be avoided.</li> <li>▪ No Project related activities will be carried out in the Critical habitats.</li> <li>▪ Endemic species seeds will be collected in vegetation period (May-September) (see Table 85 of ESIA) and seeds will be delivered to the Türkiye Gene Bank. These surveys will be performed with a Botanist Specialist by the contractor under the Control of AYGM.</li> <li>▪ Soil management will be implemented.</li> <li>▪ Construction will be monitored via a Botanist between May-September once monthly in Critical Habitats.</li> <li>▪ 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.</li> <li>▪ Project-related impacts on air, soil and water in natural habitats will be avoided.</li> <li>▪ 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.</li> <li>▪ 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 the Stakeholder Engagement Plan (SEP).</li> <li>▪ To minimize animal mortality, locations along the route where animal passage will be prevented and methods that will be used to prevent passage of target species (fencing, sound signals, chemical repellents, lights and reflectors, etc.) will also be identified.</li> <li>▪ Hunting of fauna species will be prohibited. In case of illegal hunting activities, authorities will be notified.</li> <li>▪ Biodiversity management plan and will be implemented.</li> </ul> |                     |  | Included in the construction costs |

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**CNR-ETMIC-ESMP-001**

Final

Date: December 2024

Page 62 / 96

| Impact Description  | Mitigation Measures   | Implementation Plan  | Implementation and Monitoring Responsibility                                      | Cost |
|---|---|----------------------|---|------|
| Use of machinery and equipment  | <ul style="list-style-type: none"> <li>▪ Trainings will be organized for the Project personnel to inform them about the on-site speed limits and also importance of animal passages.</li> <li>▪ Machinery and equipment that arrive in work areas will be checked for presence of invasive alien species.</li> <li>▪ All machinery and equipment will be subject to regular maintenance and will not be used out of purpose.</li> <li>▪ 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.</li> </ul>   | ESMP<br>BMP          | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) |      |
| Invasive alien species  | <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ Instead of using herbicides, which would destroy natural vegetation and enable introduction of invasive alien species, different vegetation management methods will be considered as appropriate spatially and temporally.</li> <li>▪ During the land preparation and construction phase biodiversity monitoring studies, potential for presence of invasive alien species in the area will also be monitored.</li> </ul> | ESMP<br>BMP          | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) |      |
| Indirect impacts (dust, air emissions, noise, waste, and impacts on water and soil quality) | <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ On-site speed limits will be enforced to avoid direct mortality of animals.</li> <li>▪ There will be no direct discharge into water resources.</li> <li>▪ Project-related wastes will be collected at designated waste storage areas, and periodically removed from work areas.</li> <li>▪ 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 (PPWMP etc.).</li> </ul>    | ESMP<br>BMP<br>PPWMP | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) |      |
| <b>Cultural Heritage</b>  |   |                      |   |      |

| Impact Description                        | Mitigation Measures   | Implementation Plan             | Implementation and Monitoring Responsibility                                      | Cost  |
|---|---|---------------------------------|---|---|
| Impacts on Cultural Heritage              | <ul style="list-style-type: none"> <li>▪ All construction works will be carried out under the supervision of an archaeologist.</li> <li>▪ The Chance Find Procedure, based on national laws, international standards and best practices, and presented in the Cultural Heritage Management Plan, will be applied during any chance find.</li> <li>▪ Regardless of the degree of importance, if any archaeological / cultural heritage is encountered, construction activities in the find area should be stopped immediately and the relevant museum expert will be notified.</li> <li>▪ 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.</li> <li>▪ Information on cultural heritage protection measures will be made public with settlements.</li> <li>▪ In case of a chance find, the Chance Find Procedure will be implemented (Appendix-6)</li> </ul>   | ESMP<br>CHMP which includes CFP | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Assignment of personnel (1 Archeologist at site):<br>USD 75,000<br><br>Included in the construction costs |
| <b>Socio-Economic Environment</b>         |   |                                 |   |   |
| E&S risk and impacts on Vulnerable groups | <ul style="list-style-type: none"> <li>▪ Install temporary platforms or alternative boarding arrangements to ensure accessibility for individuals with mobility issues, the elderly, or families with strollers during construction.</li> <li>▪ Clearly communicate changes in boarding arrangements and provide signage that guides passengers to accessible areas. Ensure that information is available in multiple formats, including visual and audible cues.</li> <li>▪ Prioritize the creation of accessible platforms for people with disabilities during construction activities. Ensure that boarding areas have ramps or lifts and meet accessibility standards outlined in relevant regulations.</li> <li>▪ Include the provision of temporary or alternative accessible restroom facilities in construction plans. Ensure that these facilities are well-maintained, clearly marked, and meet the needs of individuals with disabilities.</li> <li>▪ Implement measures to maintain or enhance lighting around stations, especially in areas where vulnerable groups may face safety concerns. Upgrade lighting infrastructure to improve visibility during early mornings or late evenings.</li> </ul> | ESMP<br>SEP<br>RF               | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in the construction costs  |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 64 / 96              |

| Impact Description                      | Mitigation Measures  | Implementation Plan | Implementation and Monitoring Responsibility                                      | Cost  |
|---|--|---------------------|---|---|
|   | <ul style="list-style-type: none"> <li>▪ Identify alternative waiting areas that provide heating solutions for vulnerable groups. Consider temporary heating options in waiting rooms to address temperature-related challenges, ensuring the comfort of passengers.</li> <li>▪ Offer alternative methods for ticket purchase and assistance, especially for individuals with limited digital access or technological literacy. Provide in-person ticketing options, manned counters, or self-service kiosks with clear instructions.</li> <li>▪ Ensure that all communication regarding changes, alternatives, or assistance methods is accessible to individuals with diverse needs. Utilize multiple communication channels, including announcements, signage, and accessible digital platforms.</li> <li>▪ Train staff to be sensitive to the needs of vulnerable groups. Provide guidance on assisting individuals with disabilities and elderly passengers during construction, emphasizing empathy and inclusivity.</li> <li>▪ Establish mechanisms for receiving feedback from vulnerable groups during construction. Actively engage with advocacy organizations, community representatives, and individuals to understand specific needs and address concerns.</li> <li>▪ Ensure that construction activities comply with accessibility standards and regulations, including those outlined by relevant authorities. Regularly assess and audit the project to confirm ongoing adherence to these standards.</li> <li>▪ Collaborate with disability advocacy groups and organizations representing vulnerable populations. Seek their input in the planning and implementation of measures to address accessibility challenges during construction.</li> </ul> |                     |   |   |
| <b>Labor and Working Conditions</b>     |  |                     |   |   |
| Impacts on Labor and Working Conditions | <ul style="list-style-type: none"> <li>▪ All workers, direct, contracted and others in the supply chain should have the right to organize. In this regard, grievance mechanism has an important part. A secure grievance mechanism system should be established that workers of all levels can benefit from. A fair and transparent employment procedure should be adopted. Positive discrimination should be practiced for disadvantaged groups. In case all measures are taken, remaining impact would be negligible.</li> </ul>   | ESMP<br>SEP<br>LMP  | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in Stakeholder Engagement Plan.<br><br>Assignment of personnel (HS Expert at site):<br>USD 100,000 |



| Impact Description | Mitigation Measures  | Implementation Plan | Implementation and Monitoring Responsibility | Cost                               |
|--------------------|--|---------------------|--|------------------------------------|
|                    | <ul style="list-style-type: none"> <li>▪ All project workers will receive written contracts containing job description, working hours, wages, rights and duties, CoC etc. prior to start of work.</li> <li>▪ The contractor is required to prepare their own Labor Management Plan (LM Plan) according to the Project's Labor Management Procedure (LMP). All contracts will incorporate specific requirements regarding, work safety issues.</li> <li>▪ As per Turkish law, commitments to ILO conventions, and in alignment with ESS2, the minimum working age for employees on this project will be 18 years old. Employment of Child Labor is strictly prohibited.</li> <li>▪ To ensure compliance, all personnel files and identity information of employees will be maintained according to the Project's Labor Management Plan (LMP) and Contractor's LM Plan. Contracts with workers and subcontractors will explicitly state the prohibition of child labor.</li> <li>▪ The Project LMP will oversee the implementation of these measures, ensuring strict adherence to regulations.</li> <li>▪ Additionally, a workers' grievance mechanism will be established to address any concerns or comments regarding the Project promptly. This mechanism will provide avenues for solutions and corrective actions as needed, emphasizing the importance of a safe and ethical working environment.</li> <li>▪ Induction training will provide related to CoC, GM, WGM and awareness on GBV, SEA/SH adherence to project Labor Management Procedure (LMP). This training should also cover punitive measures in case of violation in line with LMP, and CoC</li> <li>▪ 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, gender-based accommodation facilities, etc.)</li> <li>▪ Ensure compliance with Workers' accommodation: processes and standards for onsite facilities (canteen, sanitary facilities, adequate amenities for socialization and resting, etc.).</li> <li>▪ To eliminate the risks that may arise from interaction between project workers and local communities, the contractor will prepare a Labor Influx Management Plan and a Workers' Camp</li> </ul> |                     |  | Included in the construction costs |

| Impact Description     | Mitigation Measures   | Implementation Plan  | Implementation and Monitoring Responsibility | Cost                               |
|------------------------|---|----------------------|--|------------------------------------|
|                        | <p>Management Plan prior to commencement of works based on the Good International Industry Practice. These plans will involve sensitization and awareness campaigns among the project workers and the local community, including but not limited to Code of Conduct (CoC) and grievance mechanism.</p> <ul style="list-style-type: none"> <li>▪ Survey accommodation facilities to be provided off-site (if any) and ensure they are also in compliance with Project standards.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ Provide trainings to personnel on general waste management, housekeeping, first aid practices and communicable diseases.</li> <li>▪ Conduct visual checks on site to ensure proper housekeeping.</li> <li>▪ Ensure proper first aid equipment is kept on site, at various related locations.</li> <li>▪ Conduct periodic medical checks for personnel and provide vaccination and/or other mitigating measures when required.</li> <li>▪ Establish adequate medical rooms at the camp sites, provide sufficient human resources and keep a suitable patient transport vehicle on site.</li> <li>▪ Ensure construction phase personnel's retrenchment is conducted in compliance with all applicable legal requirements and WB ESS2.</li> <li>▪ Ensure contractual requirements are fulfilled during the process.</li> <li>▪ Ensure the personnel are aware of the process and dates (through appropriate and transparent information dissemination).</li> <li>▪ To the extent possible, ensure personnel that may also be employed during the operation phase (e.g., security personnel) are not included in the scope of retrenchment at the end of construction phase.</li> </ul> |                      |  |                                    |
| General OHS Management | <ul style="list-style-type: none"> <li>▪ A site-specific OHS risk assessments will be carried out and a site-specific OHS Management Plan will be developed and implemented.</li> </ul>   | ESMP<br>OHSMP<br>LMP | AYGM PIU (for Supervision and Monitoring)    | Included in the construction costs |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 67 / 96              |

| Impact Description | Mitigation Measures   | Implementation Plan | Implementation and Monitoring Responsibility | Cost |
|--------------------|---|---------------------|--|------|
|                    | <ul style="list-style-type: none"> <li>▪ Risk assessment study within the scope of every activity to be conducted for the project will be conducted before commencing the works.</li> <li>▪ Employees will be made aware of any possible OHS risks and will be trained to deal with them properly.</li> <li>▪ Contractor must ensure immediate response to and timely reporting, analysis and communication of all incidents to AYGM.</li> <li>▪ 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.</li> <li>▪ Contractor is committed to return workers to meaningful and productive employment at the earliest possible time.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ Where personnel are required to work alone, the activities and conditions shall be risk assessed and a safe system of work developed.</li> <li>▪ Contractor must ensure that all personnel and visitors wear or use personal protective equipment provided if it is necessary to protect them from harm.</li> <li>▪ Contractor must ensure that sufficient safety signs are posted in workplaces and travel ways to prevent incidents, identify hazards.</li> <li>▪ 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.</li> <li>▪ Task specific hazard identification will be done for each activity.</li> <li>▪ 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.</li> <li>▪ Site inductions will be carried out by the contractor.</li> <li>▪ Inspections of the project site should be carried out weekly. Contractor will undertake weekly inspections of the whole work site.</li> </ul> | SEP                 | Contractors (for Implementation)             |      |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 68 / 96              |

| Impact Description | Mitigation Measures  | Implementation Plan | Implementation and Monitoring Responsibility | Cost |
|--------------------|--|---------------------|--|------|
|                    | <ul style="list-style-type: none"> <li>▪ Contractor is obliged to provide adequate personal protective equipment free of charge to workers,</li> <li>▪ Engineering solutions should be applied for regular support and reinforcement of excavation walls.</li> <li>▪ Geotechnical assessments should be conducted prior to excavation, with continuous monitoring of ground conditions.</li> <li>▪ Workers should be trained on signs of potential collapses and evacuation procedures.</li> <li>▪ Regular maintenance and inspections should be conducted for safe and efficient machine operation.</li> <li>▪ Comprehensive training programs should be organized and certification provided for machine operators.</li> <li>▪ Designation and marking of pedestrian and vehicle traffic areas can help prevent collisions and accidents.</li> <li>▪ Relevant authorities should be contacted for detection and marking of underground services before excavation. Prior to excavation and other land preparation activities, it is essential to identify and mark the locations of underground electrical cables and other infrastructure.</li> <li>▪ Improper installation or protection of temporary electrical lines on the construction site can lead to electric shock. To mitigate this risk, temporary electrical lines should be properly insulated and safeguarded to prevent accidental damage. Moreover, workers involved in land preparation must be educated about potential electrical hazards, trained in the safe use of electrical equipment, and equipped with appropriate PPE.</li> <li>▪ Workers should receive training on safe excavation techniques and use of hand tools in case of accidental damage.</li> <li>▪ Reporting underground infrastructure damage and development of emergency response plans are necessary.</li> <li>▪ Dust control measures such as watering systems or dust suppressants should be employed.</li> <li>▪ Workers should be provided with appropriate respiratory protective equipment (masks, filters) and encouraged to use them.</li> <li>▪ Air quality should be regularly monitored and dust levels maintained within permissible limits.</li> <li>▪ Noise isolation and vibration reduction measures should be implemented on machines.</li> </ul> |                     |  |      |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 69 / 96              |

| Impact Description                 | Mitigation Measures   | Implementation Plan | Implementation and Monitoring Responsibility | Cost |
|------------------------------------|---|---------------------|--|------|
|                                    | <ul style="list-style-type: none"> <li>▪ Workers should receive training on the use of hearing protective equipment and undergo regular health checks.</li> <li>▪ Worker rotation or scheduling adjustments may be necessary to avoid prolonged exposure to high noise and vibration levels.</li> <li>▪ Mechanical lifting equipment (cranes, hoists) should be used to prevent manual handling where possible.</li> <li>▪ Training should be provided to workers on proper lifting techniques and ergonomic practices.</li> <li>▪ Task rotation or scheduling adjustments should be considered to reduce repetitive heavy lifting tasks.</li> <li>▪ Safety guardrails, safety nets, and personal fall protection systems should be used in assembly areas.</li> <li>▪ Regular inspection of fall protection equipment and connection points should be conducted.</li> <li>▪ Detailed training on fall prevention and rescue procedures should be provided to workers.</li> <li>▪ Procedures should be established for safe storage, use, and disposal of chemicals.</li> <li>▪ Workers should receive training on safe working methods with chemicals and provided with personal protective equipment.</li> <li>▪ Encouragement of the use of less hazardous chemicals whenever possible should be promoted.</li> <li>▪ Designated areas and appropriate containers should be used for the safe storage of flammable and explosive materials.</li> <li>▪ Fire prevention and extinguishing equipment (fire extinguishers, alarm systems) should be installed and regularly checked.</li> <li>▪ Regular inspection of storage areas should ensure compliance with safety standards.</li> <li>▪ Clearly defined traffic routes and pedestrian crossing areas should be established on the construction site.</li> <li>▪ Traffic management plans and speed limits should be implemented and regularly reviewed.</li> <li>▪ Vehicle operators should receive training on construction site-specific traffic rules and hazards.</li> </ul> |                     |  |      |
| <b>Community Health and Safety</b> |   |                     |  |      |



| Impact Description  | Mitigation Measures   | Implementation Plan  | Implementation and Monitoring Responsibility                                      | Cost   |
|---|---|----------------------|---|--|
| Risk on traffic and pedestrian safety due to construction traffic | <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Implement access restriction at construction areas and access routes, by specifying restricted zones, (i.e. dangerous routes), fencing, barriers, etc.</li> <li>▪ Install signs, signals, markings and other appropriate traffic regulation devices, including reflective and flashing signage for nighttime traffic safety, at all required sites.</li> <li>▪ Avoid passage of construction traffic through the settlements, whenever alternative roads are present.</li> <li>▪ 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 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.</li> <li>▪ Allow only drivers/operators with valid licenses specific to each construction phase vehicle to drive/operate vehicles.</li> <li>▪ Provide driving skills improvement trainings in consideration of the requirements of specific vehicles, machinery, etc.</li> <li>▪ Implement speed limits at all construction sites.</li> <li>▪ Conduct periodic medical checks for drivers/operators.</li> <li>▪ Conduct periodic vehicle maintenance.</li> <li>▪ Initiate construction only after relevant permits are obtained and all required measures such as signage, barriers, fencing, lighting, etc. are taken.</li> <li>▪ Prioritize selection of material borrow sites and quarries in the areas that does not interact with public.</li> <li>▪ Use only licensed firms for explosives delivery to ensure safety along the existing roads to be used for transport of explosives.</li> <li>▪ Provide information and awareness raising activities with</li> </ul> | ESMP<br>CHSMP<br>TMP | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Assignment of personnel (CLO at site):<br>USD 85,000<br><br>Included in the construction costs |

| Impact Description | Mitigation Measures   | Implementation Plan | Implementation and Monitoring Responsibility                                      | Cost                               |
|--------------------|---|---------------------|---|------------------------------------|
|                    | <p>stakeholders, communities including women, children and also disabled.</p> <ul style="list-style-type: none"> <li>▪ Enforce strict speed limits within the construction zone and monitor vehicle speeds regularly.</li> <li>▪ Establish safe and well-marked pedestrian walkways separated from vehicular traffic.</li> </ul>  |                     |   |                                    |
| Vulnerable Groups  | <ul style="list-style-type: none"> <li>▪ Install temporary platforms or alternative boarding arrangements to ensure accessibility for individuals with mobility issues, the elderly, or families with strollers during construction.</li> <li>▪ Clearly communicate changes in boarding arrangements and provide signage that guides passengers to accessible areas. Ensure that information is available in multiple formats, including visual and audible cues.</li> <li>▪ Prioritize the creation of accessible platforms for people with disabilities during construction activities. Ensure that boarding areas have ramps or lifts and meet accessibility standards outlined in relevant regulations.</li> <li>▪ Include the provision of temporary or alternative accessible restroom facilities in construction plans. Ensure that these facilities are well-maintained, clearly marked, and meet the needs of individuals with disabilities.</li> <li>▪ Implement measures to maintain or enhance lighting around stations, especially in areas where vulnerable groups may face safety concerns. Upgrade lighting infrastructure to improve visibility during early mornings or late evenings.</li> <li>▪ Identify alternative waiting areas that provide heating solutions for vulnerable groups. Consider temporary heating options in waiting rooms to address temperature-related challenges, ensuring the comfort of passengers.</li> <li>▪ Offer alternative methods for ticket purchase and assistance, especially for individuals with limited digital access or technological literacy. Provide in-person ticketing options, manned counters, or self-service kiosks with clear instructions.</li> <li>▪ Ensure that all communication regarding changes, alternatives, or assistance methods is accessible to individuals with diverse needs including for non-Turkish speaker. Utilize multiple communication channels, including announcements, signage, and accessible digital platforms.</li> </ul> | ESMP<br>SEP         | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in the construction costs |

| Impact Description                  | Mitigation Measures  | Implementation Plan | Implementation and Monitoring Responsibility                                      | Cost   |
|-------------------------------------|--|---------------------|---|--|
|                                     | <ul style="list-style-type: none"> <li>▪ Train staff to be sensitive to the needs of vulnerable groups. Provide guidance on assisting individuals with disabilities and elderly passengers during construction, emphasizing empathy and inclusivity.</li> <li>▪ Establish grievance mechanism for public to receive feedback from vulnerable groups during construction. Actively engage with advocacy organizations, community representatives, and individuals to understand specific needs and address concerns.</li> <li>▪ Ensure that construction activities comply with accessibility standards and regulations, including those outlined by relevant authorities. Regularly assess and audit the project to confirm ongoing adherence to these standards.</li> <li>▪ Collaborate with disability advocacy groups and organizations representing vulnerable populations. Seek their input in the planning and implementation of measures to address accessibility challenges during construction.</li> </ul>  |                     |   |  |
| Emergency Preparedness and Response | <ul style="list-style-type: none"> <li>▪ Develop and implement a project-specific Emergency Preparedness and Response Plan for the construction phase covering the risks on local communities.</li> <li>▪ Develop measures/systems for collaboration with the local communities and other external parties including local governmental agencies, media, etc. where necessary.</li> <li>▪ 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.</li> <li>▪ Where necessary, communicate the details of the nature of the emergency, protection options, etc. through trained community liaison officer(s).</li> <li>▪ AYGM will cooperate with related authorities both for prevention of emergencies and during emergency situations, where necessary.</li> <li>▪ Communicate to the media through qualified, trained persons and/or by using appropriate tools (i.e., press releases), where necessary.</li> </ul> | ESMP<br>EPRP        | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) | Included in the construction costs                   |
| Security Personnel                  | <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Provide trainings on code of conduct, gender sensitivities and local cultural sensitivities to security personnel or ensure that the</li> </ul>  | ESMP<br>CHSMP       | AYGM PIU (for Supervision and Monitoring)   | Assignment of personnel (CLO at site):<br>USD 85,000 |

| Impact Description                    | Mitigation Measures  | Implementation Plan | Implementation and Monitoring Responsibility                                      | Cost                               |
|---------------------------------------|--|---------------------|---|------------------------------------|
|                                       | <p>company the security service is procured from provides its personnel with similar trainings. The trainings will ensure force is used only for preventive and defensive purposes and in proportion to the threat.</p> <ul style="list-style-type: none"> <li>▪ Provide necessary identification, communications devices, and any other equipment required for the job to the security personnel to ensure maximum efficiency. The security personnel will not be allowed to carry firearms.</li> <li>▪ Investigate any grievance from local communities regarding inappropriate conduct of security forces immediately.</li> <li>▪ Ensure appropriate conduct of security personnel through document and incident report reviews, as well as review of grievances received.</li> <li>▪ When the Borrower hires workers for security, it will assess risks to people and property both on and off-site. It will follow proportionality, GIIP, and laws for hiring, conduct rules, training, equipping, and monitoring. Force won't be allowed unless for necessary defense, in proportion to the threat.</li> <li>▪ Ensure all measures are included in contractual agreements.</li> <li>▪ Ensure security personnel are adequately trained and certified to handle security responsibilities effectively.</li> </ul> |                     | Contractors (for Implementation)  | Included in the construction costs |
| Community exposure to health problems | <ul style="list-style-type: none"> <li>▪ In order to avoid the spread of diseases among the workforce of the project, air conditioning and ventilation will be provided in accordance with the current climate conditions, minimum space requirement, etc. ensuring compliance with the processes and standards related to the housing of workers involving issues.</li> <li>▪ Training of all staff on health and general hygiene and cleaning.</li> <li>▪ Conduct periodic medical checks of staff, provide vaccination and / or develop other mitigation measures developed, when required.</li> <li>▪ Carrying out health awareness raising activities involving local communities.</li> <li>▪ Provide education programs for local residents on how to minimize exposure to construction-related health hazards and promote healthy living practices</li> </ul>   | ESMP<br>CHSMP       | AYGM PIU (for Supervision and Monitoring)<br><br>Contractors (for Implementation) |                                    |

**Table 9. Environmental and Social Mitigation Plan – Operation**

| Impact Description                 | Mitigation Measures   | Implementation Plan* | Responsibility | Cost                                       |
|------------------------------------|---|----------------------|----------------|--|
| <b>Land Use, Soils and Geology</b> |   |                      |                |  |
| Seismicity                         | <ul style="list-style-type: none"> <li>▪ By carrying out periodic control and maintenance activities along the routes, additional durability and structural measures will be developed and implemented in cuts and fills when necessary. (cracks, breaks, slips, deformations etc. of engineering structures that could happen especially after natural disasters)</li> <li>▪ Emergency response plans for railway operations in the event of an earthquake will be developed and implemented.</li> </ul>   | ESMP<br>EPRP         | TCDD           | Yearly maintenance cost:<br>USD<br>100,000 |
| Landslide Risk                     | <ul style="list-style-type: none"> <li>▪ Early warning systems that can detect ground movement and trigger alarms should be installed to stop train operations in the event of an impending landslide.</li> <li>▪ Emergency response plans will be developed and implemented for landslides, including evacuation procedures and communication protocols.</li> </ul>  | ESMP<br>EPRP         | TCDD           | Included in annual maintenance cost        |
| General Geotechnical Risks         | <ul style="list-style-type: none"> <li>▪ Conducting periodic inspections and maintenance activities along the routes, particularly after natural disasters such as earthquakes and post-flood events by focusing on addressing issues such as cracks, ruptures, sliding, settling, deformation, etc., that may occur in fills and cuts.</li> </ul>  | ESMP                 | TCDD           | Included in annual maintenance cost        |
| <b>Noise</b>                       |   |                      |                |  |
| Increase in noise levels           | <ul style="list-style-type: none"> <li>▪ Physical barriers, such as sound walls or acoustic fencing, along the railway corridor will be installed to block or absorb sound waves if needed. Locations and capacity of the noise barriers will be decided by TCDD if deemed necessary after a grievance or stakeholder engagement.</li> <li>▪ The use of natural barriers like earth berms or vegetation should be considered to help reduce noise transmission.</li> <li>▪ Tracks should be maintained regularly to minimize irregularities that can contribute to increased noise levels.</li> <li>▪ The use of noise-reducing track materials, such as noise-dampening rail pads, should be explored to mitigate vibrations and sound propagation.</li> <li>▪ Measures should be implemented to reduce wheel and rail friction, such as applying friction modifiers or using lubricated track.</li> </ul> | ESMP<br>PPWMP        | TCDD           | Included in annual maintenance cost        |



|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 75 / 96              |

| Impact Description                                    | Mitigation Measures  | Implementation Plan* | Responsibility | Cost                                |
|---|--|----------------------|----------------|-------------------------------------|
|   | <ul style="list-style-type: none"> <li>▪ It should be ensured that wheels and rails are regularly inspected and maintained to prevent excessive noise due to wear and tear.</li> <li>▪ 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.</li> <li>▪ Engagement with local communities will be performed to understand their concerns and gather feedback on noise-related issues.</li> <li>▪ Collaboration will be made with regulatory authorities to address noise-related concerns and seek approval for noise mitigation measures.</li> <li>▪ Noise monitoring will be conducted once in a three month in the first year of the operation, after one year, monitoring will be done every two years. Noise monitoring will also be conducted upon complaint.</li> </ul> |                      |                |                                     |
| <b>Air Quality</b>                                    |  |                      |                |                                     |
| Decrease in Air Quality                               | <ul style="list-style-type: none"> <li>▪ In the operation phase, following measures will be taken in accordance with RCIAP; <ul style="list-style-type: none"> <li>○ having the locations where stacked materials, the connection area where materials are discharged and conveyors and other carriers covered,</li> <li>○ unloading operations without tossing,</li> <li>○ covering vehicles with tarpaulin during material transportation, and</li> <li>○ keeping the upper part of the material at 10% humidity.</li> </ul> </li> <li>▪ The Project Grievance Mechanism will be implemented. If any comment/grievance/complaint related with dust and air quality is received through the Grievance Mechanism, the complaints will be evaluated and necessary corrective preventive actions will be taken.</li> </ul>   | ESMP<br>PPWMP        | TCDD           | Included in annual maintenance cost |
| <b>Water Resources and Wastewater Management</b>      |  |                      |                |                                     |
| Wastewater Generation (including railcar maintenance) | <ul style="list-style-type: none"> <li>▪ The domestic wastewater to be generated during operation phase will be transferred to the nearest licensed municipal WWTP via the existing sewerage network.</li> <li>▪ 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,</li> </ul>  | ESMP<br>PPWMP        | TCDD           | Included in annual maintenance cost |

| Impact Description                                 | Mitigation Measures  | Implementation Plan* | Responsibility | Cost                                |
|--|--|----------------------|----------------|-------------------------------------|
|  | <ul style="list-style-type: none"> <li>minimize, or control the industrial effluents generated in the rail car maintenance areas;               <ul style="list-style-type: none"> <li>○ 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;</li> <li>○ Discharge of industrial wastes to septic systems, drain fields, dry wells, cesspools, pits, or separate storm drains or sewers will be prevented.</li> </ul> </li> <li>▪ Raise awareness about water conservation, pollution prevention, and responsible land use. Educate staff on the importance of protecting water sources and their role in maintaining water quality.</li> </ul>                             |                      |                |                                     |
| Impacts on Groundwater                             | <ul style="list-style-type: none"> <li>▪ Drip trays and other secondary containment structures will be used for storage of the fuels and potentially hazardous construction materials.</li> <li>▪ Spill kits will be kept on site to be deployed in the event of a spillage, and site staff will be trained in their use.</li> <li>▪ Groundwater resources will not be utilized without the permission for the use of groundwater granted by the State Hydraulic Works (DSI).</li> <li>▪ Emergency preparedness and response plan will be implemented.</li> </ul>  | ESMP<br>PPWMP        | TCDD           |                                     |
| <b>Resource and Waste Management</b>               |  |                      |                |                                     |
| Hazardous and Non-Hazardous Solid Waste Management | <ul style="list-style-type: none"> <li>▪ Visual control of waste and garbage spilled along the railway route and periodic collection of these garbage, separation of these wastes according to their recyclability, storage of separated wastes in separate containers and disposal according to the Waste Management Regulation.</li> <li>▪ Using lead-free paints for maintenance work.</li> <li>▪ Collecting the garbage that will occur at the stations from the collection areas to be placed in the station and forwarding them to the related sanitary landfill and/or solid waste storage facility with the licensed collection trucks of the relevant Municipality.</li> <li>▪ In line with the waste management hierarchy and good practices, preferring reuse and recycling practices.</li> </ul> | ESMP<br>PPWMP        | TCDD           | Included in annual maintenance cost |
| <b>Biodiversity</b>                                |  |                      |                |                                     |

| Impact Description                      | Mitigation Measures   | Implementation Plan* | Responsibility | Cost                                |
|---|---|----------------------|----------------|-------------------------------------|
| Habitat and biodiversity loss           | <ul style="list-style-type: none"> <li>Natural habitat will be restored upon completion of construction activities, enabling species to re-inhabit these areas.</li> <li>Statuses of habitats and associated species populations will be monitored during operation period. Where necessary, habitat and species-specific measures will be developed and implemented with an adaptable management approach.</li> <li>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. Animal mortality will be kept under control through implementation of methods to prevent animal passage and strategies related to use of existing passages / construction of new ones, based on habitat use of target species.</li> <li>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.</li> </ul> | ESMP<br>BMP          | TCDD           | Included in annual maintenance cost |
| Invasive alien species                  | <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>During the operation phase biodiversity monitoring studies, potential for presence of invasive alien species in the area will also be monitored.</li> </ul>  | ESMP<br>BMP          | TCDD           | Included in annual maintenance cost |
| <b>Labor and Working Conditions</b>     |   |                      |                |                                     |
| Impacts on Labor and Working Conditions | <ul style="list-style-type: none"> <li>Equitable treatment of employees, non-discrimination and equal opportunity,</li> <li>All project workers will receive written contracts containing job description, working hours, wages, rights and duties, CoC etc . prior to start of work.</li> </ul>  | LMP<br>ESMP          | TCDD           | Included in annual maintenance cost |

| Impact Description     | Mitigation Measures   | Implementation Plan* | Responsibility | Cost                                |
|------------------------|---|----------------------|----------------|-------------------------------------|
|                        | <ul style="list-style-type: none"> <li>▪ All contracts will incorporate specific requirements regarding child labor, forced labor, and work safety issues.</li> <li>▪ Induction training will include CoC, GM, WGM and awareness on GBV, SEA/SH adherence to project LMP. This training should also cover punitive measures in case of violation in line with LMP, and CoC.</li> <li>▪ To maintain and improve the employee-management relationship,</li> <li>▪ To protect sensitive employees such as child labor, migrant workers, personnel supplied by third parties,</li> <li>▪ To provide safe and healthy working conditions,</li> <li>▪ To meet necessary health requirements,</li> <li>▪ Preventing forced labor,</li> <li>▪ All workers, direct, contracted and others in the supply chain should have the right to organize. In this regard, grievance mechanism has an important part. A secure grievance mechanism system should be established so that workers of all levels can benefit from it. A fair and transparent employment procedure should be adopted. Positive discrimination should be practiced for disadvantaged groups. In case all measures are taken, remaining impact would be negligible.</li> </ul> |                      |                |                                     |
| General OHS Management | <ul style="list-style-type: none"> <li>▪ A site specific OHS risk assessment will be carried out and an OHS Management Plan will be developed and implemented.</li> <li>▪ Establishing occupational health and safety policies and implementing them at operation sites.</li> <li>▪ Providing regular training to employees on occupational safety and risk management.</li> <li>▪ Developing emergency plans and ensuring all employees are familiar with them.</li> <li>▪ Conducting regular maintenance and safety checks of machinery and equipment.</li> <li>▪ Providing training and certification for operators on the safe use of equipment.</li> <li>▪ Installing safety equipment (e.g., reverse cameras, warning systems) on machines and ensuring proper labeling.</li> <li>▪ Major railway failures that can lead 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.</li> </ul>  | ESMP<br>EPRP         | TCDD           | Included in annual maintenance cost |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 79 / 96              |

| Impact Description | Mitigation Measures  | Implementation Plan* | Responsibility | Cost |
|--------------------|--|----------------------|----------------|------|
|                    | <ul style="list-style-type: none"> <li>▪ Suitability of the signalization system will be controlled in a daily manner.</li> <li>▪ Regular cleaning and organizing of work areas.</li> <li>▪ Ensuring employees work on non-slip surfaces.</li> <li>▪ Use of personal protective equipment against falls and providing safety training.</li> <li>▪ Installation of safety barriers and guardrails at platform edges.</li> <li>▪ Implementation and regular testing of emergency warning systems.</li> <li>▪ Providing passengers with safety information and awareness.</li> <li>▪ No personnel will be working without having necessary trainings.</li> <li>▪ Level crossings will be controlled daily.</li> <li>▪ Operation will be stopped immediately if any factor that may lead accidents is reported.</li> <li>▪ Establishing procedures for safe storage and use of chemicals.</li> <li>▪ Providing training to teams on handling chemicals safely and using personal protective equipment.</li> <li>▪ Regular maintenance of electrical lines and ensuring compliance with safety standards.</li> <li>▪ Continuous monitoring of signaling systems and timely replacement when necessary.</li> <li>▪ Establishing alternative plans for power outages during maintenance and operations.</li> <li>▪ Use of appropriate insulation and protection equipment during work on electrical lines.</li> <li>▪ Providing training on electrical safety and adherence to safety procedures</li> <li>▪ Regular inspection and maintenance of rails.</li> <li>▪ Stabilization of railway infrastructure and regular inspection of retaining walls.</li> <li>▪ Regular inspection and cleaning of rainwater drainage systems during operation.</li> <li>▪ Establishment of safety corridors in work areas and development of traffic management plans.</li> <li>▪ Provision of appropriate markings and barriers at railway crossings and intersections.</li> <li>▪ Regulation of working hours and monitoring of noise levels.</li> </ul> |                      |                |      |



|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 80 / 96              |

| Impact Description                  | Mitigation Measures   | Implementation Plan* | Responsibility | Cost                                |
|-------------------------------------|---|----------------------|----------------|-------------------------------------|
|                                     | <ul style="list-style-type: none"> <li>▪ Regular maintenance and safety checks of equipment.</li> <li>▪ Providing training to personnel on the safe operation of equipment and raising awareness.</li> </ul>  |                      |                |                                     |
| <b>Community Health and Safety</b>  |   |                      |                |                                     |
| Pedestrian safety                   | <ul style="list-style-type: none"> <li>▪ Putting clear and clear warning signs at the entry points (e.g., stations and level crossings),</li> <li>▪ Installation of fences or other barriers at the ends of the station and other areas and preventing unauthorized access to the rails,</li> <li>▪ Providing trainings about not entering the area without permission, especially for local youth,</li> <li>▪ Ensuring that the specified route is safe, clearly determined and easy to use,</li> <li>▪ 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.</li> <li>▪ Establish safe and well-marked pedestrian walkways separated from vehicular traffic.</li> </ul> | ESMP<br>CHSMP<br>TMP | TCDD           | Included in annual maintenance cost |
| Emergency Preparedness and Response | <ul style="list-style-type: none"> <li>▪ Develop and implement a project-specific Emergency Preparedness and Response Plan for the operation phase of the railway,</li> <li>▪ Regular controls of the route safety,</li> <li>▪ Cooperation with related authorities (for emergency prevention and during emergencies),</li> <li>▪ 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 via TCDD protocols.</li> </ul>   | EPRP<br>ESMP         | TCDD           | Included in annual maintenance cost |
| General railway operational safety  | <ul style="list-style-type: none"> <li>▪ Implement railway operational safety procedures, such as a positive train control (PTC) system, aimed at reducing the likelihood of train collisions.</li> <li>▪ Unless the full PTC system is considered practical, where manual trusses are located, reporting is made when the train passes from the mainline to the side road in the absence of signaling, and that this information is returned to all employees and train officers on the train.</li> <li>▪ Regular inspection and maintenance of railway lines and facilities to operate in accordance with national and international railway line safety and standards.</li> </ul>  | ESMP<br>CHSMP<br>TMP | TCDD           | Included in annual maintenance cost |

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 81 / 96              |

| Impact Description    | Mitigation Measures   | Implementation Plan* | Responsibility | Cost                                |
|-----------------------|---|----------------------|----------------|-------------------------------------|
|                       | <ul style="list-style-type: none"> <li>▪ Implement a general safety management program equivalent to internationally recognized railway safety programs.</li> </ul>   |                      |                |                                     |
| Level crossing safety | <ul style="list-style-type: none"> <li>▪ 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 risks of road traffic.)</li> <li>▪ Regular inspection / maintenance to ensure automatic doors installation and smooth operation in all level crossings.</li> </ul> | ESMP<br>CHSMP<br>TMP | TCDD           | Included in annual maintenance cost |

\* Site and project specific management plans should be prepared by the Contractors.

|   |                     |                           |
|---|---------------------|---------------------------|
| <b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b> |                     | <b>CNR-ETMIC-ESMP-001</b> |
| Final   | Date: December 2024 | Page 82 / 96              |

## 8 MONITORING PLAN

The overall objective of environmental and social monitoring is to qualitatively and quantitatively measure effectiveness of mitigation measures, and develop appropriate responses to non-compliances with Project standards, and emerging environmental and social issues. A framework 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 is to verify that ESMP is properly implemented and to monitor whether it has the intended effect of mitigating impacts. The main objectives of developing a monitoring program and defining parameters are to:

- Control that all mitigation measures are in place,
- Measure effectiveness of the mitigation measures,
- Provide mechanisms for taking timely action when unexpected environmental and social incidents are encountered, and
- Identify training requirements at all levels of the organizational structure.

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

In case of an unforeseen change in the implementation or an additional environmental and social work obligation arises, the WB and the AIIB will be informed about the issue and the ESMP will be revised after the management of change process described in Chapter 6.3 is completed and environmental and social studies are carried out. Implementation plans prepared by the contractors will be reviewed and updated at least quarterly periods to reflect the changing conditions or the requirements of AYGM, the WB and the AIIB. Any revisions to be made in the ESMP and related management plans will be submitted to the approval of the AYGM first, and the Contractors' personnel will be provided with access to the updated versions of the ESMP.

**Table 10. Monitoring Plan\***

| Parameter   | Implementation Responsibility | Location          | Frequency / Timing | Monitoring Method  | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard  | Key Performance Indicators (KPIs) /Records to check   | Reporting                                   | Reporting responsibility                            | Implementation Cost               |
|---|-------------------------------|-------------------|--------------------|--|--|---|---|---|-----------------------------------|
| <b>Pre-Construction</b>   |                               |                   |                    |  |  |   |   |   |                                   |
| Stakeholder Engagement Activities   | AYGM                          | All project areas | Project life cycle | Documentation<br>SEP, Monitoring Report  | <ul style="list-style-type: none"> <li>▪ ESS10: Stakeholder Engagement and Information Disclosure</li> </ul>   | <ul style="list-style-type: none"> <li>▪ SEP is prepared prior to construction</li> <li>▪ Stakeholder List is prepared prior to construction</li> </ul> | 1 <sup>st</sup> Quarterly Monitoring Report | Design and supervision consultant<br>AYGM to review | Included in SEP budget            |
| Technical consultation meetings with TCDD officials   | AYGM                          | All project areas | Pre-Cons.          | Documentation<br>SEP, Monitoring Report  | <ul style="list-style-type: none"> <li>▪ Detailed engineering design and feasibility studies</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Inclusion of TCDD officials in the design and supervision process</li> </ul>                                   | 1 <sup>st</sup> Quarterly Monitoring Report | Design and supervision consultant<br>AYGM to review | Negligible                        |
| Permission Regarding Non-Agricultural Use of Agricultural Areas   | Contractors and/or AYGM       | All project areas | Pre-Cons.          | Documentation:<br>Permits/official letters obtained  | <ul style="list-style-type: none"> <li>▪ Soil Conservation and Land Use Law</li> </ul>   | <ul style="list-style-type: none"> <li>▪ All the permits are obtained prior to construction</li> </ul>  | 1 <sup>st</sup> Quarterly Monitoring Report | Design and supervision consultant<br>AYGM to review | Included in pre-construction cost |
| Determination of the camp site, access roads and excavation storage areas and obtaining the necessary permissions | Contractors and/or AYGM       | All project areas | Pre-Cons.          | Documentation:<br>Camp site, access roads and excavation storage areas design and permits<br><br>Visual observations at site | <ul style="list-style-type: none"> <li>▪ ESIA Report</li> <li>▪ Expropriation Law</li> <li>▪ ESS1: Assessment and Management of Environmental and Social Risks and Impacts</li> <li>▪ ESS3: Resource Efficiency and Pollution Prevention and Management</li> <li>▪ ESS10: Stakeholder</li> </ul> | <ul style="list-style-type: none"> <li>▪ Designs and permits are obtained for camp site, access roads and excavation storage areas</li> </ul>           | 1 <sup>st</sup> Quarterly Monitoring Report | Design and supervision consultant<br>AYGM to review | Included in pre-construction cost |

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**CNR-ETMIC-ESMP-001**

Final

Date: December 2024

Page 84 / 96

| Parameter   | Implementation Responsibility   | Location                                     | Frequency Timing | Monitoring Method   | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard  | Key Performance Indicators (KPIs) /Records to check   | Reporting  | Reporting responsibility                            | Implementation Cost               |
|---|---|--|------------------|---|--|---|--|---|-----------------------------------|
|   |   |  |                  |   | Engagement and Information Disclosure  |   |  |   |                                   |
| Ensuring Ground Safety  | Contractors   | Project Route and all Engineering Structures | Pre-Cons.        | Documentation: Geotechnical Report<br><br>Visual observations at site   | <ul style="list-style-type: none"> <li>Regulation on Structures to be Built in Disaster Areas</li> </ul>   | <ul style="list-style-type: none"> <li>Geotechnical studies that should be done prior to zoning plan permission process are obtained.</li> </ul>  | 1 <sup>st</sup> Quarterly Monitoring Report  | Design and supervision consultant<br>AYGM to review | Included in pre-construction cost |
| Environmental Management (Waste Contracts, Site-specific sub-management plans and procedures, 3 <sup>rd</sup> Party Environmental and Social Monitoring Activities, HSE team) | Contractors to provide sub-management plans and establish an HSE team<br><br>AYGM to approve sub-management plans and appoint Design & Supervision Consultant to provide monitoring | Office                                       | Pre-Cons.        | Documentation: Protocols with waste firms, site specific sub-management plans, employee records of HSE team, contract with 3 <sup>rd</sup> Party E&S Monitoring Consultant<br><br>Visual observations at site | <ul style="list-style-type: none"> <li>Environmental Law</li> <li>ESS1: Assessment and Management of Environmental and Social Risks and Impacts</li> <li>ESS3: Resource Efficiency and Pollution Prevention and Management</li> <li>PPWMP</li> </ul> | <ul style="list-style-type: none"> <li>An adequate ES system has been established (a 3<sup>rd</sup> Party ES Consultant has been appointed, Contractor has built an HSE Team and site-specific sub-management plans prepared and approved)</li> </ul> | 1 <sup>st</sup> Quarterly Monitoring Report<br><br>Site-specific management plans and procedures | Design and supervision consultant<br>AYGM to review | Included in pre-construction cost |
| Cultural Heritage Training will be given to each personnel  | Environmental and Social Consultant and AYGM  | Office                                       | Pre-Cons.        | Documentation: Training Records   | <ul style="list-style-type: none"> <li>ESS8: Cultural Heritage</li> <li>CHMP and Chance Find Procedure</li> </ul>  | <ul style="list-style-type: none"> <li>Trainings are given to all personnel prior to construction</li> </ul>  | 1 <sup>st</sup> Quarterly Monitoring Report  | Design and supervision consultant<br>AYGM to review | Included in pre-construction cost |
| Permits will be granted for each cultural site to be affected   | Contractors and/or AYGM   | Office                                       | Pre-Cons.        | Documentation: Permits  | <ul style="list-style-type: none"> <li>ESS8: Cultural Heritage</li> <li>CHMP and Chance Find Procedure</li> </ul>  | <ul style="list-style-type: none"> <li>Permits are obtained for all cultural sites to be affected prior</li> </ul>  | 1 <sup>st</sup> Quarterly Monitoring Report  | Design and supervision consultant<br>AYGM to review | Included in pre-construction cost |



| Parameter   | Implementation Responsibility | Location   | Frequency Timing /                        | Monitoring Method   | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard  | Key Performance Indicators (KPIs) /Records to check  | Reporting                             | Reporting responsibility                              | Implementation Cost  |
|---|-------------------------------|--|---|---|--|--|---------------------------------------|---|--|
|   |                               |  |   |   |  | to construction  |                                       |   |  |
| <b>Construction Phase</b>   |                               |  |   |   |  |  |                                       |   |  |
| Soil Contamination (Parameters defined in Dutch Pollution standards will be used See the ESIA Report Chapter 4.1) | Contractors                   | Points to be selected to represent near stations which were selected during ESIA Report<br>Additional sampling points will be selected with the assistance of 3 <sup>rd</sup> Party ES Consultant, if needed | Post construction                         | Soil sampling and analysis (by accredited and competent firms)                            | <ul style="list-style-type: none"> <li>Regulation on Soil Pollution Control and Point Source Contaminated Sites</li> <li>ESS3: Resource Efficiency and Pollution Prevention and Management</li> <li>PPWMP</li> </ul> | <ul style="list-style-type: none"> <li>No contamination observed after construction</li> </ul> | Quarterly Monitoring Reports          | 3 <sup>rd</sup> Party ES Consultant<br>AYGM to review | Included in construction cost<br>Additional cost on Soil Sampling and Analysis:<br>USD 5,000                   |
| Noise   | Contractors                   | Baseline measurement points determined within the scope of ESIA Studies / Closest settlement in case of complaint  | Every 6 months or if there is a complaint | Noise level measurements (by accredited and competent firms)                              | <ul style="list-style-type: none"> <li>Regulation on Environmental Noise Control</li> <li>ESS3: Resource Efficiency and Pollution Prevention and Management</li> <li>PPWMP</li> </ul>                                | <ul style="list-style-type: none"> <li>No exceedance observed in each 6 months</li> </ul>      | Monthly & Biannual Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant<br>AYGM to review | Included in construction cost<br>Additional cost on Noise Measurement and Analysis:<br>USD 10,000 / Year       |
| Dust Emission<br>PM <sub>10</sub><br>PM <sub>2.5</sub>  | Contractors                   | Baseline measurement points determined within the scope of ESIA Studies / Closest settlement in case of complaint  | Every 6 months or if there is a complaint | Dust, PM <sub>10</sub> and PM <sub>2.5</sub> sampling (by accredited and competent firms) | <ul style="list-style-type: none"> <li>Regulation on Control of Industrial Source Air Pollution</li> <li>IFC - WHO - Outdoor Air Quality Guidelines</li> <li>ESS3: Resource Efficiency and Pollution</li> </ul>      | <ul style="list-style-type: none"> <li>No exceedance observed in each 6 months</li> </ul>      | Monthly & Biannual Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant<br>AYGM to review | Included in construction cost<br>Additional cost on Air Quality Measurement and Analysis:<br>USD 15,000 / Year |

| Parameter   | Implementation Responsibility | Location   | Frequency Timing                            | Monitoring Method   | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard   | Key Performance Indicators (KPIs) /Records to check  | Reporting                              | Reporting responsibility                           | Implementation Cost   |
|---|-------------------------------|--|---|---|---|--|--|--|---|
|   |                               |  |   |   | <ul style="list-style-type: none"> <li>Prevention and Management</li> <li>PPWMP</li> </ul>  |  |  |  |   |
| Vehicle Emissions   | Contractors                   | Construction Site  | During the periodic maintenance of vehicles | Maintenance Records                                       | <ul style="list-style-type: none"> <li>Regulation on Control of Exhaust Gas Emission and Gasoline and Diesel Oil Quality</li> <li>PPWMP</li> <li>TMP</li> </ul>   | <ul style="list-style-type: none"> <li>All the maintenance done annually</li> </ul>                          | Quarterly Monitoring Reports           | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost   |
| Wastewater  | Contractors                   | Construction Site  | Daily                                       | Visual observations at site<br>Sewage truck receipts      | <ul style="list-style-type: none"> <li>Implementing Regulation on Pits to be Made in Sedimentation Areas Where Construction is Not Possible</li> <li>Water Pollution Control Regulation</li> <li>PPWMP</li> </ul> | <ul style="list-style-type: none"> <li>Wastewater transferred to the relevant municipality weekly</li> </ul> | Monthly & Quarterly Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost   |
| Surface Water Quality (Parameters defined in Surface Water Management Regulation) | Contractors                   | Baseline measurement points determined within the scope of ESIA Studies          | Every 6 months                              | Sampling and analysis (by accredited and competent firms) | <ul style="list-style-type: none"> <li>Surface Water Quality Regulation</li> <li>ESS3: Resource Efficiency and Pollution Prevention and Management</li> <li>PPWMP</li> </ul>                                      | <ul style="list-style-type: none"> <li>No exceedance observed in each 6 months</li> </ul>                    | Quarterly Monitoring Reports           | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost   |
| Groundwater Quality (Parameters defined in WHO drinking water quality standards)  | Contractors                   | The points determined by contractor before the construction and approved by AYGM | Every 6 months                              | Sampling and analysis (by accredited and competent firms) | <ul style="list-style-type: none"> <li>ESS3: Resource Efficiency and Pollution Prevention and Management</li> <li>PPWMP</li> </ul>  | <ul style="list-style-type: none"> <li>No exceedance observed in each 6 months</li> </ul>                    | Quarterly Monitoring Reports           | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost<br>Additional cost on Water Quality Measurement and Analysis:<br>USD 5,000 / Year |

| Parameter  | Implementation Responsibility | Location                                       | Frequency Timing            | Monitoring Method   | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard  | Key Performance Indicators (KPIs) /Records to check   | Reporting                              | Reporting responsibility                           | Implementation Cost           |
|--|-------------------------------|--|-----------------------------|---|--|---|--|--|-------------------------------|
| Seismicity   | Contractors                   | Project route and all engineering structures   | After a possible earthquake | Visual observations at all routes and structures              | <ul style="list-style-type: none"> <li>Regulation on Structures to be Built in Disaster Areas</li> <li>Türkiye Building Earthquake Regulation</li> <li>ESS4: Community Health and Safety</li> <li>EPRP</li> </ul>    | <ul style="list-style-type: none"> <li>No significant impact observed on the buildings after an earthquake</li> </ul>                           | Quarterly Monitoring Reports           | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost |
| Excavation and Demolition Waste                        | Contractors                   | Project Route and Excavation Storage Areas     | Daily                       | Documentation (waste records) and visual observations at site | <ul style="list-style-type: none"> <li>Regulation on Control of Excavation Soil, Construction and Debris Wastes</li> <li>ESS3: Resource Efficiency and Pollution Prevention and Management</li> <li>PPWMP</li> </ul> | <ul style="list-style-type: none"> <li>Excavation waste transferred to the designated storage areas weekly</li> </ul>                           | Monthly & Quarterly Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost |
| Topsoil  | Contractors                   | Project Route and Excavation Storage Areas     | Daily during excavations    | Documentation (waste records) and visual observations at site | <ul style="list-style-type: none"> <li>Regulation on Control of Excavation Soil, Construction and Debris Wastes</li> <li>ESS3: Resource Efficiency and Pollution Prevention and Management</li> <li>PPWMP</li> </ul> | <ul style="list-style-type: none"> <li>Topsoil is stripped and stored and no visual impact will be visible (to be monitored monthly)</li> </ul> | Monthly & Quarterly Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost |
| Non-Hazardous Wastes (organic, recyclable, electronic) | Contractors                   | Project working areas during construction work | Daily                       | Documentation (waste records) and visual observations at site | <ul style="list-style-type: none"> <li>Waste Management Regulation</li> <li>ESS3: Resource Efficiency and Pollution</li> </ul>   | <ul style="list-style-type: none"> <li>All types of non-hazardous wastes transferred to the relevant facility weekly</li> </ul>                 | Monthly & Quarterly Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost |

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**CNR-ETMIC-ESMP-001**

Final

Date: December 2024

Page 88 / 96

| Parameter        | Implementation Responsibility | Location                                       | Frequency Timing | Monitoring Method   | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard  | Key Performance Indicators (KPIs) /Records to check  | Reporting                              | Reporting responsibility                           | Implementation Cost           |
|------------------|-------------------------------|--|------------------|---|--|--|--|--|-------------------------------|
|                  |                               |  |                  |   | <ul style="list-style-type: none"> <li>Prevention and Management</li> <li>PPWMP</li> </ul>   |  |  |  |                               |
| Waste Batteries  | Contractors                   | Project working areas during construction work | Monthly          | Documentation (waste records) and visual observations at site | <ul style="list-style-type: none"> <li>Waste Management Regulation</li> <li>ESS3: Resource Efficiency and Pollution Prevention and Management</li> <li>PPWMP</li> </ul>  | <ul style="list-style-type: none"> <li>Waste batteries transferred to the relevant facility weekly</li> </ul>  | Monthly & Quarterly Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost |
| Hazardous Wastes | Contractors                   | Project working areas during construction work | Daily            | Documentation (waste records) and visual observations at site | <ul style="list-style-type: none"> <li>Waste Management Regulation</li> <li>Regulation on Control of Vegetable Waste Oils</li> <li>ESS3: Resource Efficiency and Pollution Prevention and Management</li> <li>PPWMP</li> </ul> | <ul style="list-style-type: none"> <li>Hazardous wastes transferred to the relevant facility weekly</li> </ul> | Monthly & Quarterly Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost |
| Medical Wastes   | Contractors                   | Infirmary                                      | Daily            | Documentation (waste records) and visual observations at site | <ul style="list-style-type: none"> <li>Medical Waste Control Regulation</li> <li>ESS3: Resource Efficiency and Pollution Prevention and Management</li> <li>PPWMP</li> </ul>   | <ul style="list-style-type: none"> <li>Medical wastes transferred to the relevant facility weekly</li> </ul>   | Monthly & Quarterly Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost |
| Vegetable Oils   | Contractors                   | Camp Site (Kitchen)                            | Daily            | Documentation (waste records) and visual observations at site | <ul style="list-style-type: none"> <li>Regulation on Control of Vegetable Waste Oils</li> <li>ESS3: Resource Efficiency and</li> </ul>   | <ul style="list-style-type: none"> <li>Vegetable oils transferred to the relevant facility weekly</li> </ul>   | Monthly & Quarterly Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost |

| Parameter                  | Implementation Responsibility | Location                     | Frequency Timing | Monitoring Method   | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard  | Key Performance Indicators (KPIs) /Records to check  | Reporting   | Reporting responsibility                              | Implementation Cost   |
|----------------------------|-------------------------------|------------------------------|------------------|---|--|--|---|---|---|
|                            |                               |                              |                  |   | <ul style="list-style-type: none"> <li>• Pollution Prevention and Management PPWMP</li> </ul>  |  |   |   |   |
| End of Life Tires          | Contractors                   | Construction Site            | Daily            | Documentation (waste records) and visual observations at site | <ul style="list-style-type: none"> <li>• Regulation on Control of End-of-Life Tires</li> <li>• ESS3: Resource Efficiency and Pollution Prevention and Management PPWMP</li> </ul>  | <ul style="list-style-type: none"> <li>• End of life tires transferred to the relevant facility weekly</li> </ul>      | Monthly & Quarterly Monitoring Reports  | 3 <sup>rd</sup> Party ES Consultant<br>AYGM to review | Included in construction  |
| Status of Critical Habitat | Contractors                   | Determined Critical Habitats | Biannually       | Monitoring at site  | <ul style="list-style-type: none"> <li>• Biodiversity Management Plan</li> <li>• ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</li> </ul> | <ul style="list-style-type: none"> <li>• Determined critical habitats monitored and habitat loss prevented.</li> </ul> | Biannually Monitoring in line with the Biodiversity Monitoring and Evaluation Program (to be submitted with the relevant quarterly reports) | 3 <sup>rd</sup> Party ES Consultant<br>AYGM to review | Included in construction cost<br>Additional cost on ecological survey: USD 50,000 |
| Endemic/Rare Flora Species | Contractors                   | All project working areas    | Biannually       | Monitoring at site  | <ul style="list-style-type: none"> <li>• Biodiversity Management Plan</li> <li>• ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</li> </ul> | <ul style="list-style-type: none"> <li>• Biodiversity conserved</li> </ul>   | Biannually Monitoring in line with the Biodiversity Monitoring and Evaluation Program (to be submitted with the                             | 3 <sup>rd</sup> Party ES Consultant<br>AYGM to review | Included in construction cost<br>Additional cost on ecological survey             |



| Parameter   | Implementation Responsibility | Location                                       | Frequency Timing | Monitoring Method   | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard  | Key Performance Indicators (KPIs) /Records to check  | Reporting   | Reporting responsibility                           | Implementation Cost   |
|---|-------------------------------|--|------------------|---|--|--|---|--|---|
|   |                               |  |                  |   |  |  | relevant quarterly reports)   |  |   |
| Presence of invasive alien species                              | Contractors                   | All project working areas                      | Biannually       | Monitoring at site  | <ul style="list-style-type: none"> <li>Biodiversity Management Plan</li> <li>ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</li> </ul> | <ul style="list-style-type: none"> <li>No invasive alien species observed</li> </ul>               | Biannually Monitoring in line with the Biodiversity Monitoring and Evaluation Program (to be submitted with the relevant quarterly reports) | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost<br>Additional cost on ecological survey |
| Status of post-construction restoration areas                   | Contractors                   | Restoration areas                              | Biannually       | Monitoring at site  | <ul style="list-style-type: none"> <li>Biodiversity Management Plan</li> <li>ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</li> </ul> | <ul style="list-style-type: none"> <li>Biodiversity conserved</li> </ul>                           | Biannually Monitoring in line with the Biodiversity Monitoring and Evaluation Program (to be submitted with the relevant quarterly reports) | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost   |
| Storage and transportation of fuel, oil and hazardous materials | Contractors                   | Project working areas during construction work | Daily            | Documentation (storage are design and permit) and visual observations at site | <ul style="list-style-type: none"> <li>Labor Law and Regulation on Classification, Labeling and Packaging of</li> </ul>  | <ul style="list-style-type: none"> <li>The material storage permit obtained from MoEUCC</li> </ul> | Monthly & Quarterly Monitoring Reports  | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost   |

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**CNR-ETMIC-ESMP-001**

Final

Date: December 2024

Page 91 / 96

| Parameter                    | Implementation Responsibility | Location                  | Frequency Timing | Monitoring Method   | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard   | Key Performance Indicators (KPIs) /Records to check  | Reporting                              | Reporting responsibility                              | Implementation Cost           |
|------------------------------|-------------------------------|---------------------------|------------------|---|---|--|--|---|-------------------------------|
|                              |                               |                           |                  |   | <ul style="list-style-type: none"> <li>▪ Substances and Mixtures</li> <li>▪ ESS4: Community Health and Safety</li> <li>▪ EPRP</li> <li>▪ PPWMP</li> </ul>   | <ul style="list-style-type: none"> <li>▪ No spillage or leak reported in a month</li> </ul>  |  |   |                               |
| Labor and Working Conditions | Contractors                   | All project working areas | Monthly          | Documentation, Training records, Percentage of local people, women etc. groups among employees<br>Workers' GM | <ul style="list-style-type: none"> <li>▪ Labor Law</li> <li>▪ Regulation on Classification, Labeling and Packaging of Substances and Mixtures</li> <li>▪ ESS2: Labor and Working Conditions</li> <li>▪ LMP</li> </ul> | <ul style="list-style-type: none"> <li>▪ Monthly implementation reports of the construction contractors</li> <li>▪ Monthly non-compliance reports of the supervision consultants</li> <li>▪ Number of workers engaged in the Project activities</li> <li>▪ Activities and workers of subcontractors</li> <li>▪ Trainings provided</li> <li>▪ Statistics about Workers' Grievance Mechanism, OHS incidents including near-misses</li> </ul> | Monthly & Quarterly Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant<br>AYGM to review | Included in construction cost |
| OHS Management               | Contractors                   | All project working areas | Daily            | Documentation   | <ul style="list-style-type: none"> <li>▪ Labor Law</li> <li>▪ Regulation on Classification,</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Incident reports can be monitored</li> </ul>  | Monthly & Quarterly                    | 3 <sup>rd</sup> Party ES Consultant                   | Included in construction cost |

| Parameter                   | Implementation Responsibility | Location                                       | Frequency Timing | Monitoring Method   | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard  | Key Performance Indicators (KPIs) /Records to check  | Reporting                              | Reporting responsibility                              | Implementation Cost           |
|-----------------------------|-------------------------------|--|------------------|---|--|--|--|---|-------------------------------|
|                             |                               |  |                  | (OHS training records, HS Audits, accident statistics and records, OHS Board Meeting notes, incident reports) and visual observations at site | <ul style="list-style-type: none"> <li>▪ Labeling and Packaging of Substances and Mixtures</li> <li>▪ ESS2: Labor and Working Conditions</li> <li>▪ LMP</li> </ul> | <ul style="list-style-type: none"> <li>▪ in line with "Registration and Notification of Work Accidents and Occupational Diseases".</li> <li>▪ Data and statistics related to labor and working conditions and OHS,</li> <li>▪ Number of workers engaged in the Project activities</li> <li>▪ Trainings provided</li> <li>▪ Statistics about Workers' Grievance Mechanism, OHS incidents including near-misses</li> </ul> | Monitoring Reports                     | AYGM to review  |                               |
| Community Health and Safety | Contractors                   | Project working areas during construction work | Monthly          | Monitoring at site, Training Records<br>Number of accidents<br>Number of near misses<br>Grievance Records                                     | <ul style="list-style-type: none"> <li>▪ ESS4: Community Health and Safety</li> <li>▪ EPRP</li> <li>▪ CHSMP</li> </ul>   | <ul style="list-style-type: none"> <li>▪ One Community Health and Safety (Number of community safety activities to</li> </ul>  | Monthly & Quarterly Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant<br>AYGM to review | Included in construction cost |

| Parameter                      | Implementation Responsibility | Location   | Frequency Timing | Monitoring Method  | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard                               | Key Performance Indicators (KPIs) /Records to check  | Reporting                              | Reporting responsibility                           | Implementation Cost           |
|--------------------------------|-------------------------------|--|------------------|--|---|--|--|--|-------------------------------|
|                                |                               |  |                  | Number of community safety activities implemented; number of community safety trainings performed) |   | <ul style="list-style-type: none"> <li>be done quarterly</li> <li>Low number on ongoing grievances</li> <li>High proportion of mutual agreement on redress process.</li> <li>No accident with fatality or serious injury to be recorded in a year</li> </ul> |  |  |                               |
| Traffic (Transport) Management | Contractors                   | Office, project working areas during construction work | Monthly          | Documentation (Accident Reports, Grievances)   | <ul style="list-style-type: none"> <li>ESS4: Community Health and Safety</li> <li>CHSMP</li> <li>TMP</li> </ul>   | <ul style="list-style-type: none"> <li>No traffic incidents with lost time annually</li> <li>No complaints to be reported quarterly</li> <li>Number of traffic training provided to workers</li> </ul>   | Monthly & Quarterly Monitoring Reports | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost |
| Cultural Heritage Monitoring   | Contractors                   | Along the route  | Quarterly        | Chance Find Report Monitoring Reports  | <ul style="list-style-type: none"> <li>ESS8: Cultural Heritage</li> <li>CHMP and Chance Find Procedure</li> </ul> | <ul style="list-style-type: none"> <li>Chance find procedure is followed in case of a chance find</li> <li>Number of chance finds, Percentage of adherence to procedures</li> </ul>  | Quarterly Monitoring Reports           | 3 <sup>rd</sup> Party ES Consultant AYGM to review | Included in construction cost |

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**CNR-ETMIC-ESMP-001**

Final

Date: December 2024

Page 94 / 96

| Parameter  | Implementation Responsibility | Location  | Frequency Timing /  | Monitoring Method  | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard   | Key Performance Indicators (KPIs) /Records to check  | Reporting                 | Reporting responsibility      | Implementation Cost  |
|--|-------------------------------|---|---|--|---|--|---------------------------|-------------------------------|--|
| <i>Operation*</i>                                    |                               |   |   |  |   |  |                           |                               |  |
| Noise  | TCDD                          | Baseline measurement points determined within the scope of ESIA Studies / Closest settlement in case of complaint | 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)           | <ul style="list-style-type: none"> <li>Regulation on Environmental Noise Control</li> <li>Site specific Pollution Prevention Plan to be prepared</li> </ul>   | <ul style="list-style-type: none"> <li>No exceedance observed in each 6 months</li> </ul>                                      | Annual Monitoring Reports | TCDD to prepare Annual report | Additional cost on Noise Measurement and Analysis: USD 10,000 / Year |
| Seismicity   | TCDD                          | Project route and all engineering structures  | After a possible earthquake   | Visually in all routes and engineering structures                      | <ul style="list-style-type: none"> <li>Regulation on Structures to be Built in Disaster Areas</li> <li>Türkiye Building Earthquake Regulation</li> <li>EPRP</li> </ul>                                    | <ul style="list-style-type: none"> <li>No significant impact observed on the buildings after an earthquake</li> </ul>          | Annual Monitoring Reports | TCDD to prepare Annual report | No additional cost   |
| Non-Hazardous Wastes (organic, electronic, mixed)    | TCDD                          | Stations  | Daily   | Monitoring at site, waste records and reporting Waste Transfer Records | <ul style="list-style-type: none"> <li>Waste Management Regulation</li> <li>Site specific Pollution Prevention Plan to be prepared</li> <li>Site specific Waste Management Plan to be prepared</li> </ul> | <ul style="list-style-type: none"> <li>All kinds of non-hazardous waste transferred to the relevant facility weekly</li> </ul> | Annual Monitoring Reports | TCDD to prepare Annual report | No additional cost   |
| Special wastes (paper cardboard, glass, metal scrap) | TCDD                          | Stations  | Quarterly   | Monitoring at site, waste records and reporting Waste Transfer Records | <ul style="list-style-type: none"> <li>Waste Management Regulation</li> <li>Site specific Pollution Prevention Plan to be prepared</li> <li>Site specific Waste Management Plan to be prepared</li> </ul> | <ul style="list-style-type: none"> <li>Special wastes transferred to the relevant facility weekly</li> </ul>                   | Annual Monitoring Reports | TCDD to prepare Annual report | No additional cost   |



**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**CNR-ETMIC-ESMP-001**

Final

Date: December 2024

Page 95 / 96

| Parameter                           | Implementation Responsibility | Location          | Frequency Timing | Monitoring Method   | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard   | Key Performance Indicators (KPIs) /Records to check   | Reporting                 | Reporting responsibility      | Implementation Cost |
|-------------------------------------|-------------------------------|-------------------|------------------|---|---|---|---------------------------|-------------------------------|---------------------|
| Hazardous Wastes                    | TCDD                          | Stations          | Daily            | Monitoring at site, waste records and reporting<br>Visual control of waste and garbage spilled along the railway route and periodic collection of these garbage, separation | <ul style="list-style-type: none"> <li>Waste Management Regulation</li> <li>Site specific Pollution Prevention Plan to be prepared</li> <li>Site specific Waste Management Plan to be prepared</li> <li>Regulation on Control of Waste Batteries</li> </ul> | <ul style="list-style-type: none"> <li>Hazardous wastes transferred to the relevant facility weekly</li> </ul>  | Annual Monitoring Reports | TCDD to prepare Annual report | No additional cost  |
| Emergency Preparedness and Response | TCDD                          | All project areas | Weekly           | Regular controls of Route Safety<br>Regular inspection / maintenance to ensure automatic doors installation and smooth operation in all level crossings                     | <ul style="list-style-type: none"> <li>ESS4: Community Health and Safety</li> <li>Site specific CHSMP to be prepared</li> <li>Site specific TMP to be prepared</li> </ul>   | <ul style="list-style-type: none"> <li>A drill to be carried out every six months</li> <li>Railway maintenance done annually</li> <li>No incident observed in a year</li> </ul> | Annual Monitoring Reports | TCDD to prepare Annual report | No additional cost  |
| OHS Management                      | TCDD                          | All project areas | Daily            | Documentation, (Training records, HS Audits<br>Accident statistics and records) and visual observations at project areas  | <ul style="list-style-type: none"> <li>Labor Law</li> <li>Regulation on Classification, Labeling and Packaging of Substances and Mixtures</li> <li>ESS2 Labor and Working Conditions</li> <li>Labor Management Plan</li> </ul>                              | <ul style="list-style-type: none"> <li>No incident with death or serious injury observed in a year</li> </ul>   | Annual Monitoring Reports | TCDD to prepare Annual report | No additional cost  |

| Parameter                            | Implementation Responsibility | Location   | Frequency Timing / | Monitoring Method  | Management Plan detailing Monitoring Requirements / Relevant Legislation - Standard  | Key Performance Indicators (KPIs) /Records to check   | Reporting                 | Reporting responsibility      | Implementation Cost  |
|--------------------------------------|-------------------------------|--|--------------------|--------------------|--|---|---------------------------|-------------------------------|--|
| Biodiversity Conservation Management | TCDD                          | All project areas for Alien Invasive Species, critical habitats and natural habitats for endemic flora species | Yearly             | Monitoring at site | <ul style="list-style-type: none"> <li>▪ Biodiversity Management Plan</li> <li>▪ ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</li> </ul> | <ul style="list-style-type: none"> <li>▪ Impacts on Critical Habitats avoided</li> <li>▪ No IAS observed</li> </ul> | Annual Monitoring Reports | TCDD to prepare Annual report | Additional cost for Botanic specialist:<br>USD 15,000 / Year |