Republic of Serbia
Ministry of European Integration

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#ЕУ ЗА ТЕБЕ

RAILWAY LINE BELGRADE–NIŠ, SECTION III PARAĆIN TO TRUPALE (NIŠ) ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

EU PPF
PROJECT PREPARATION FACILITY

Republic of Serbia
Ministry of European Integration

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LIST OF ABBREVIATIONS AND ACRONYMS

BMP	Biodiversity Management Plan
CER	Community of European Railway and Infrastructure Companies
CESMP	Construction Environmental and Social Management Plan
CESMS	Contractors Environmental and Social Management System
CH	Critical Habitat
CLO	Community Liaison Officer
ESM	Environmental & Social Manager
E&S	Environmental and Social
EAAA	Ecologically Appropriate Area of Analysis
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ESAP	Environmental and Social Action Plan
ESHS	Environmental, Social, Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ETF	European Transport Workers' Federation
EU	European Union
EUD	European Union Delegation
GHG	Greenhouse Gases
GM	Grievance Mechanism
H&S	Health and Safety
IFC	International Finance Corporation
ILO	International Labour Organization
MCTI	Ministry of Construction, Transport and Infrastructure of the Republic of Serbia
OESMP	Operational Environmental and Social Management Plan
OHSMP	Occupational Health and Safety Management Plan
OHS	Occupational Health and Safety
PBF	Priority Biodiversity Feature

PIU	Project Implementation Unit
PR	Performance Requirements
RAP	Resettlement Action Plan
RoS / RS	Republic of Serbia
SEETO	South East Europe Transport Observatory
SEO	Site Environmental Officers
SEP	Stakeholder Engagement Plan
SO	Social Officer
SRI	Serbian Railway Infrastructure (Public Enterprise Railways Infrastructure of the Republic of Serbia)
TEN-T	Trans-European Transport Network
TMP	Traffic Management Plan
TSI	Technical Specifications for Interoperability
WFD	Water Framework Directive

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1. INTRODUCTION

This Environmental and Social Management Plan (ESMP) represents a commitment by Serbian Railway Infrastructure (SRI) to environmental and social sustainability, and this commitment will also apply to their Contractors, sub-contractors and supply chain. It is essential that the future design & build Contractor, and their sub-contractors, ensure they are fully aware of, and understand the requirements of, this ESMP and the obligations thereof.

This ESMP has been developed as a part of the overall Environmental and Social Impact Assessment (ESIA) Package and should be read in conjunction with other Environmental and Social (E&S) safeguard documentation i.e. the ESIA Report, Stakeholder Engagement Plan (SEP), Resettlement Policy Framework (RPF), Biodiversity Management Plan (BMP) and Environmental and Social Action Plan (ESAP).

1.1. Purpose and Scope

The purpose of the ESMP is to:

- Provide an overview of the applicable environmental, social and health & safety (ESHS) standards and specifications that the Project must comply with (including Serbian law, EU/international requirements, the European Bank of Reconstruction and Development (EBRD) Performance Requirements and European Investment Bank (EIB) Environmental and Social Standards).
- Document, and direct Project personnel on how identified ESHS risks must be managed and mitigated to conform with applicable Project ESHS standards and specifications.
- Outline key roles and responsibilities associated with ESHS management on the Project.

The objectives of this ESMP are to:

- Set out the key environmental and social (E&S) risks and impacts of the Project (as identified through previous E&S assessment studies and the ESIA).
- Identify the Management Plans, Programs and Procedures that must be developed and implemented by the future design and build Contractor (during construction) and the SRI (during operation and maintenance).
- Facilitate a continual review of Project activities based on ESHS performance data and consultation feedback;
- Set out how the effectiveness of the mitigation measures and management procedures will be monitored.

This ESMP is applicable to all Project activities undertaken during the following Project phases:

- preparation of the main design,

- pre-construction and construction, and
- operation and maintenance.

This ESMP is intended for use by:

- the future design & build Contractor during the construction phase of the Project.
- The SRI Project Implementation Unit (PIU) and Supervising Engineer to ensure appropriate and effective E&S management during the construction phase.
- The SRI during the operation and maintenance phase.

The PIU will be responsible for ensuring their Contractor incorporates the construction related measures from this ESMP into a Construction Environmental and Social Management Plan (CESMP) for the Project. The SRI shall incorporate the operation and maintenance related measures into a Project-specific Operation Environmental and Social Management Plan (OESMP).

1.2. Background

The Belgrade to Niš Railway Corridor Rehabilitation Project is being proposed to facilitate the provision of a modern, high speed, double-track railway line for both passenger and freight rail traffic between Belgrade and Niš. After years of poor maintenance and a lack of investment, the condition of existing railway infrastructure on this route is unsatisfactory, operational speeds are significantly limited, and electrical equipment is outdated.

The Corridor Rehabilitation Project is under the direct management of the Ministry of Construction, Transport and Infrastructure of the Republic of Serbia (MCTI), while operational management is being carried out by the Public Enterprise Railways Infrastructure of the Republic of Serbia (Serbian Railways Infrastructure - SRI). The European Union Delegation (EU-D) has provided technical assistance, in the form of consultancy support, for developing the Project. The entire Corridor Rehabilitation Project is classified as an "A" category project. It is expected to be co-financed by European Investment Bank (EIB), European Bank for Reconstruction and Development (EBRD), and the European Union (EU) through the Western Balkans Investment Framework or other EU mechanism.

The key objectives of the Corridor Rehabilitation Project are to:

- Increase rail speeds from a maximum of 160 km/h to up to 200 km/h, whilst enhancing the quality of passenger and freight rail services.
- Enhance the sustainability and safety of the national transport system;

- Improve the efficiency of the existing rail transport system;
- Facilitate a shift to sustainable, accessible and inclusive modes of public transport at the national level.

The Corridor Rehabilitation Project has been divided into three Sections for the purposes of further project development:

- **Section 1:** Belgrade (Resnik) to Velika Plana,
- **Section 2**: Velika Plana to Paraćin,
- **Section 3**: Paraćin to Trupale (Niš), excluding the section from Stalać to Đunis which is being addressed separately and is in a more advanced stage of project preparation.

1.3. Project Description

This ESMP covers the Paraćin to Trupale (Niš), Section (Section 3) of the Belgrade to Niš Railway Corridor (the Project). Spatially, the Project can be viewed as two sub-sections. Paraćin-Stalać and Đunis-Trupale (Niš). Chapter 2 of the ESIA Report provides a detailed Project description, which is summarised below.

1.3.1. Paraćin-Stalać sub-section

The Paraćin–Stalać sub-section runs from km 153+380 to km 174+170.79, with a total length of 20.8 km and will include the construction/re-construction of the following infrastructure:

- Two existing stations (Paraćin and Ćićevac) will be retained but reconstructed and modernized. The existing Sikirica–Ratare stop will be upgraded to become a station. Two existing stops, Drenovac and Lučine, will be decommissioned.
- 6 replacement bridges will be built at the same locations as existing bridges over the River Crnica (at km 155+908), Slatinski stream (at km 160+349), Planski stream (at km 163+861), River Jovanovačka (at km 169+425), Kočanski stream (at km 172+051) and the Akalavica stream (at km 173+709).
- 13 existing road level crossings (12 level crossings + 1 grade-separated crossing) will be abolished and replaced with 8 new underpasses (at km 155+991.45, km 156+851.81, km 158+955.08, km 162+505.32, km 164+502.60, km 166+669.98, at km 171+793.08, km 173+134.14 and 4 new overpasses (at km 153+941.53, km 169+150.51, km 170+132.23 and km 172+515.95).
- Based on the rail traffic forecast for 2060, 19 noise barriers (of between 200 and 4,272 m in length) will be installed in urban areas near sensitive receptors.
- 11 culverts will be demolished and replaced with new ones, and 6 completely new culverts will be constructed.

The Project route within the does not deviate significantly from the existing railway alignment. On parts of the route where the existing alignment allows for high-speed trains, no changes will be required to the

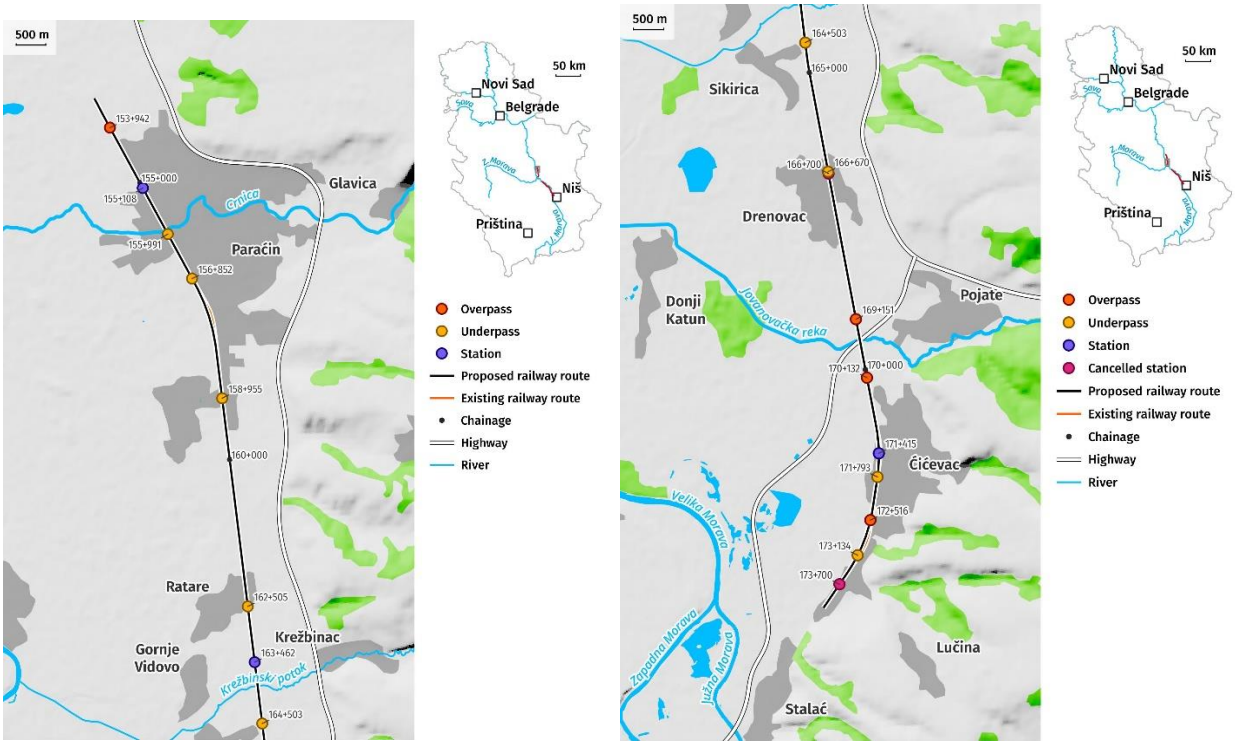
curvature of the railway. Where the existing alignment does not allow for the proposed design speed of up to 200 km/h, minor deviations may be necessary to increase the length of curves in the track.

The deviations are as follows:

No.	Chainage (km)	Approx. Length (m)	Description / Reason for Deviation
1	157+100 - 158+000	900	Paraćin, curve correction, 20 m shift to the south, no structures affected.
2	171+000 - 171+650	650	Ćićevac, curve correction at the entrance point of the railway station, shift 40 m to the west of existing line
3	172+350 - 173+300	950	Ćićevac, curve correction, shift 50 m to the west of existing line, no structures affected

The existing and proposed railway alignments within this sub-section, and the locations of overpasses, underpasses and stations are shown on Figure 1 below.

Figure 1: Overview of the Paraćin–Stalać Sub-Section



1.3.2. Đunis–Trupale (Niš) sub-section

The Đunis–Trupale (Niš) sub-section runs from km 191+937.96 to km 229+642, with a total length of 37.7 km and will include the construction/re-construction of the following infrastructure:

- Five existing stations (Korman, Adrovac, Aleksinac, Lužane, and Trupale) will be retained but reconstructed and modernized. The existing Tešica stop will be upgraded to became a station. Eight existing stops, Vitkovac, Donji Ljubeš, Gornji Ljubeš, Trnjane, Norzina, Supovački most, Mezgraja and Vrtište will be decommissioned. The existing Grejač station will be decommissioned.
- 6 replacement bridges will be built at different locations than the existing bridges (due to the Project route being realigned) over the Simin Stream (at km 193+426 – moved to the left by ~2.20m), Srezovačka river (at km 196+848 – moved to the left by ~30m), Radevačka river (at km 201+255 – moved to the right by 0.8m), Suvi stream (at km 205+958 – moved to the right by ~3.2m), River Turija (at km 217+642 – moved to the left by ~17m) and the Dašnička river (at km 219+097 – moved to the left by ~19m). A new bridge will be built over the Južna Morava (at km 223+054).
- The 580m long Đunis tunnel will be newly constructed. The entrance portal is at km 192+274, and the exit portal is at km 192+854.
- Two new viaducts will be constructed at km 220+544.70 and km 223+205.49.
- 29 existing road level crossings (24 level crossings + 5 grade-separated crossings) will be abolished and replaced with 11 new underpasses (at km 194+665.63, km 196+164.67, km 197+383.93, km 200+277.95, km 202+340.17, km 205+802.46, km 206+821.81, km 208+746.36, km 217+044.45, km 223+500.00 and km 229+419.58) and 7 new overpasses (at km 193+051.67, km 210+360.94, km 212+668.35, km 214+249.68, km 219+404.75, km 221+359.49 and km 227+126.66)
- Based on the rail traffic forecast for 2060, 28 noise barriers (of between 80 and 5,036m in length) will be installed in urban areas near sensitive receptors.
- 12 culverts will be demolished and replaced with new ones, and 6 completely new culverts will be constructed.

On the majority of the Đunis–Trupale (Niš) sub-section of the Project route, the radius of the curves does not meet the requirements for a design speed of 200 km/h. The alignment has therefore been revised in places to allow for increasing the radius of curves and milder turning angles.

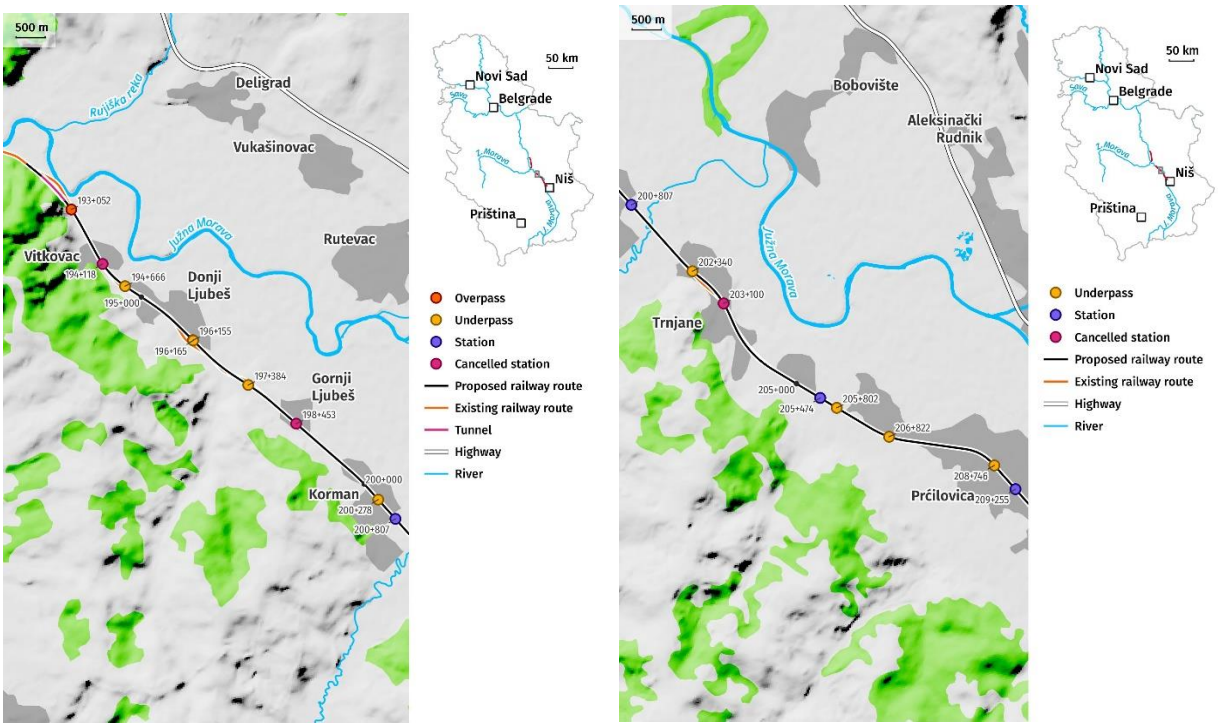
The deviations are as follows:

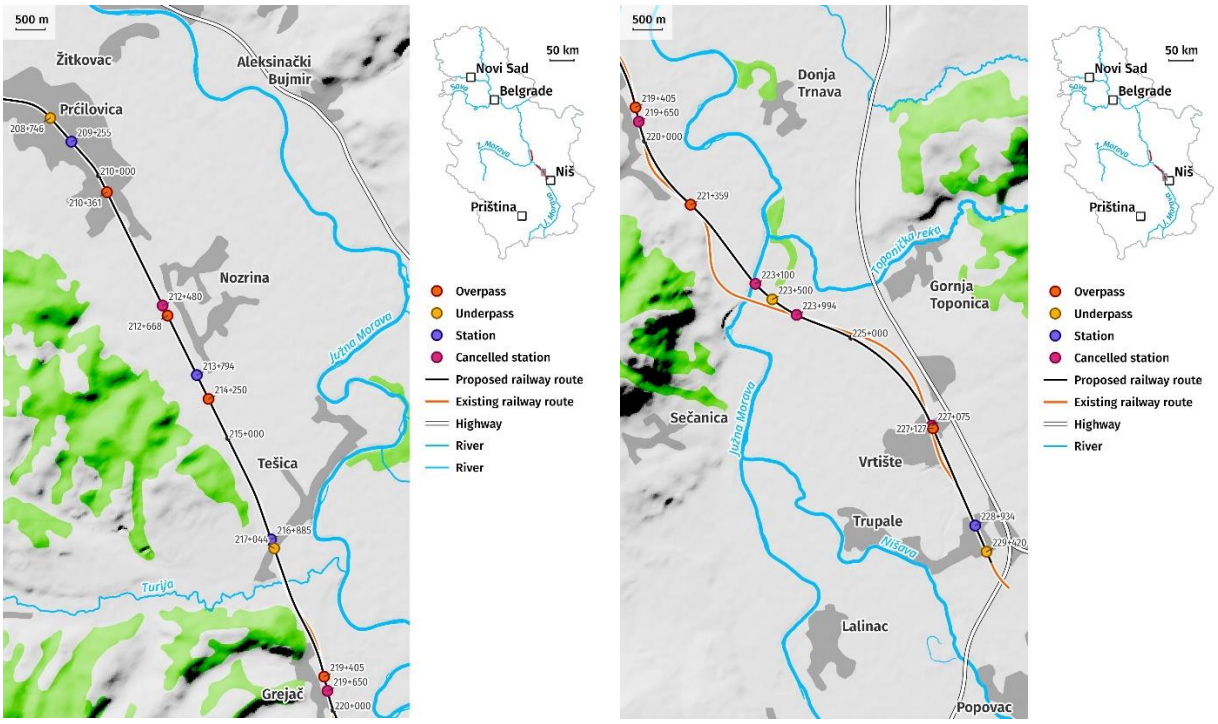
No.	Chainage (km)	Approx. Length (m)	Description / Reason for Deviation
1	192+100.00 – 193+200.00	1,100	New tunnel (580 m) and associated alignment adjustment between Đunis and Trupale to ensure minimum curve radius and maintain design speed.
2	194+150.00 – 195+100.00	950	Vitkovac, curve correction, shift 40 m northeast of the existing line, 1 residential building affected.
3	195+700.00 – 196+500.00	800	Donji Ljubeš, curve correction, shift 70 m northeast of the existing line, 4 residential buildings affected.

4	196+700.00 – 197+750.00	1,050	Srezivac, correction of two curves: 30 m shift northeast of the existing line in the first curve, 50 m shift south of the existing line in the second curve; 2 houses affected.
5	202+150.00 – 203+050.00	900	Trnjane, curve correction, 60 m shift northeast of the existing line, 10 houses
6	218+150.00 – 219+150.00	1,000	Tešica, curve correction, 20 m shift northeast, no structures affected.
7	220+000.00 – 221+300.00	1,300	Grejač, curve correction, 50 m shift south of existing line, no structures affected.
8	221+650.00 – 228+200.00	6,550	Grejač / Mezgraja / Vrtište, set of curves corrected, up to 600 m shift of the existing line; over 20 structures to be demolished.

The existing and proposed railway alignments within this sub-section, and the locations of overpasses, underpasses and stations are shown on Figure 2 below.

Figure 2: Overview of the Đunis–Trupale Sub-Section





Additionally in relation to the whole of the Project:

- A 1.80 m high (minimum) fence will be installed on both sides of the entire railway line, at a distance of 1.0m from the toe of the embankment.
- Drainage channels to remove stormwater will be located on one or both sides of the railway, depending on the terrain. Drainage systems will also be installed within railway stations and on sections of the railway with more than two tracks.
- The railway track centre line and track levels are defined in such a way as to enable train traffic to continue to operate on one track of the existing railway during the reconstruction works.

All privately owned land needed for the construction and reconstruction of the railway line, as well as all related facilities, will be acquired through expropriation. Most of the land will be permanently acquired, while some smaller areas along the railway line may be temporarily occupied during construction, for construction camps, materials storage areas etc. These areas will preferably be within the Project's right-of-way land, or on any other unused public land in nearby locations. If this is not possible, land will be purchased and/or rented from private landowners, based on voluntary agreements.

2. APPLICABLE POLICY AND LEGAL FRAMEWORK

The following E&S requirements are applicable to the Project:

- **National Legal Framework**

The Project has been and will be during future stages structured to comply with all applicable national legislation, including the Law on Environment1, other relevant national environmental and social legislation and transport strategies as defined in Chapter 3 of the ESIA.

- **EU Directive Requirements and International Conventions**

The Project ESIA also complies with the requirements of The EU Directive on Environmental Impact Assessment (Directive 2011/92 EC as amended by EIA Directive 2014/52/EU), other relevant EU directives and international conventions as transposed into national law as further detailed in Chapter 3 of the ESIA.

- **Lender E&S Requirements**

The Project has also been structured to comply with Lenders E&S requirements and standards (Table 2-1):

- EBRD: EBRD E&S Policy (2019) and associated Performance Requirements (PRs) 1-6, 8 and 10.
- EIB: Environmental and Social Policy (February 2022) and associated Environmental and Social Standards (ESSs) 1-10.

Table 2-1 – Lenders E&S Requirements

[1] Official Gazette 135/04, 36/09, 72/09, 43/11, 14/16, 76/18 and 95/18

1	EBRD PR 1: Assessment and Management of Environmental and Social Impacts and Issues EIB ESS 1: Environmental and Social Impacts and Risks
2	EBRD PR 2: Labour and Working Conditions EIB ESS 8: Labour Rights
3	EBRD PR 3: Resource Efficiency and Pollution and Prevention Control EIB ESS 3: Resource Efficiency and Pollution Prevention
4	EBRD PR 4: Health, Safety and Security EIB ESS 9: Health, Safety and Security
5	EBRD PR 5: Land Acquisition, Involuntary Resettlement and Economic Displacement EIB ESS 6: Involuntary Resettlement
6	EBRD PR 6: Biodiversity and Living Natural Resources EIB ESS 4: Biodiversity and Ecosystems
7	EIB ESS 7: Vulnerable Groups, Indigenous People and Gender
8	EBRD PR 8: Cultural Heritage EIB ESS 10: Cultural Heritage
9	EIB ESS 5: Climate Change EBRD PR 3: Resource Efficiency and Pollution and Prevention Control
10	EBRD PR 10: Information Disclosure and Stakeholder Engagement EIB ESS 2: Stakeholder Engagement

3. ROLES AND RESPONSIBILITIES

The broad roles of each party involved in the Project in relation to this ESMP are identified in this Section, in addition to the minimum ESHS resources they will be required to appoint to ensure the effective implementation of Project ESHS requirements.

All Environmental and Social instruments, including this document, shall be implemented by the Serbian Railway Infrastructure (SRI). SRI will appoint a Supervision Engineer to provide support in monitoring the implementation of these requirements by contractors.

This document defines specifications and commitments to be met by the Contractor, Project Implementation Unit (PIU)/SRI, Supervision Engineer and Operator/SRI regarding occupational health and safety (OHS), environmental, and social risks and impacts during the design, pre-construction construction and operations phases of the Project.

3.1. Ministry of Construction, Transport and Infrastructure

The SRI (see Section 3.2 below) is under the jurisdiction of the Serbian Ministry of Construction, Transport and Infrastructure (MCTI). As such, the MCTI are the legal owner of the Project and will oversee the execution of the Project by SRI; in a supervisory capacity.

MCTI should participate as appropriate/necessary in stakeholder engagement meetings with local municipality representatives, and communities, where details of the Project design are being presented, and explanations provided of how stakeholder concerns have been/are being addressed.

3.2. Serbian Railway Infrastructure / Project Implementation Unit

SRI will have ultimate responsibility for the Project, and will ensure the implementation of the Lenders requirements during the construction phase by overseeing the construction contractor and any sub-contractors, and their involved third parties. SRI have created a PIU to implement the Project.

Table 3-1 – Outline of Serbian Railway Infrastructure / Project Implementation Unit role and responsibilities

Role/Position	Responsibility
Serbian Railways Infrastructure/ Project Implementation Unit	The Serbian Railways Infrastructure (SRI) will assume ultimate responsibility for environmental, social, health and safety performance and compliance with national regulations, permitting conditions, EBRD requirements and international standards. The Project is expected to be co-financed by the European Investment Bank (EIB) and the European Union (EU) through the Western Balkans Investment framework or other EU mechanisms. SRI will be responsible for the implementation of mitigation measures and management procedures specified within the disclosure package of the Project. SRI are responsible for ensuring that the PIU has adequate roles and responsibilities allocated to fulfil the ESHS requirements of the Project. PIU must fulfil the roles and responsibilities allocated to it by the SRI, and are responsible for ensuring roles and responsibilities are clearly identified and allocated for ESHS aspects of the Project within the workforce provided by the Contractor, their sub-contractors, supply chain and other involved third parties. SRI/ PIU shall ensure that the selected Contractor has the appropriate experience and resources to adequately manage the ESHS risks associated with the project. SRI / PIU shall make appropriate contractual provisions with the Contractor, to ensure all relevant environmental, social, health and safety responsibilities are appropriately allocated to the Contractor, and that through effective monitoring, all contracted responsibilities are upheld. SRI / PIU shall ensure the provision of any environmental and social and H&S records and/or reporting upon request from the EBRD and the appropriate regulatory authorities. The SRI/PIU are responsible for the implementation and update as necessary of the SEP. This includes that the SRI will be responsible for the overall implementation of the Project-level grievance mechanism (GM) to ensure that all grievances and/or objections (raised by affected stakeholders or communities) are received, acknowledged and addressed as per the grievance mechanism (GM) set out in the SEP. The Contractor will support this implementation. SRI has established the PIU for the implementation of the Project. PIU will review its own capacity and on regular basis (quarterly) and flag to SRI if it feels it has inadequate resources available, especially as other sections of the Belgrade- Niš Railway progress, both in terms of number of personnel and the capacity to effectively manage environmental, social and health and safety issues. PIU will ensure that a Health and Safety Specialist is hired to be an integral part of the PIU, who should ensure that gaps between local legislation and Lenders' requirements regarding H&S are addressed. As required, PIU will seek E&S support from the Technical Assistance (TA) team to complement available resources.

3.3. Supervision Engineer

SRI/PIU will appoint a Supervision Engineer, with a range of ESHS expertise, to supervise the activities of the Contractor on a day-to-day basis.

Table 3-2 - Outline of Supervision Engineer roles and responsibilities

Role/Position	Responsibility
Supervision Engineer	A Supervision Engineer will be engaged by the SRI / PIU and shall have appropriate environmental, social, and health & safety responsibilities allocated under contractual provision. The Supervision Engineer will appoint the following, as a minimum:

	• Supervision Contract Manager - Responsible for supervising the Contractor to ensure that recommendations and requirements, as set out in the disclosure package, are applied. • Environmental and Social (E&S) Manager – responsible for ensuring all requirements in this ESMP are implemented by the contractor; the E&S manager will coordinate a team of environmental, social and health and safety experts. The E&S manager can be a part-time position and will oversee the implementation of E&S and H&S measures for all sections, including this Section 3. • Environmental Expert(s) - Responsible for supervising the Contractors, and their subcontractors, regarding the management of environment related matters. Including regular site inspections and reporting to the PIU. At least one environmental expert will have a full-time position for Section 3. • Health and Safety Expert(s) - Responsible for supervising the Contractors, and their subcontractors, regarding the management of H&S. Including regular site inspections and reporting to the PIU. At least one Health and Safety expert will have a full-time position for Section 3. • Social Specialist(s) - Responsible for supervising and monitoring the Contractors management of social matters and compliance with social requirements, including stakeholder engagement by CLOs and land related activities, including where the temporary acquisition of privately owned land is required for construction purposes, as will be defined in the RAP (to be developed). Also responsible for the overall monitoring of social performance, management of social risks and supporting the SRI in the resolution of public grievances. At least one social specialist will have a full-time position for Section 3. • Biodiversity Supervisor(s) – Responsible for supervising the Contractors, and their subcontractors regarding the implementation of the mitigation measures outlined in the BMP. Including regular site inspections and reporting to the PIU. For more details, refer to the BMP. • Labour Specialist - responsible for undertaking independent labour audit(s) of the Contractors at regular intervals (every 4 months) during construction. This role can be a qualified specialist within the Supervision Engineer's team or engaged externally by the Supervision Engineer.

3.4. Contractor

The Contractor will be responsible for ensuring that all their work and staff activities are compliant with applicable legislation, policies and standards for ESHS, the permits provided by national (and local) regulators, and Project ESHS requirements including implementation of the construction related requirements of this ESMP.

Table 3-3 - Outline of Contractor's role and responsibilities

Role/Position	Responsibility
Contractor	The Contractor will be responsible for the main design of the Project, and management of environmental, social, and health and safety performance related to all construction activities. These responsibilities will be defined in the contract with the SRI. The Contractor will implement all construction related requirements of this ESMP. The Contractor must develop and implement a comprehensive Construction Environmental and Social Management System (CESMS), which will include the development and implementation of a Construction Environmental and Social Management Plan, and all relevant sub-plans and procedures. The Contractor shall establish and agree with the PIU/ Supervision Engineer a list of key ESHS personnel to lead and manage ESHS issues during all construction work activities (based on the requirements outlined in Table 3-4, noting that this is not exhaustive). This list shall identify key individuals by name and role and be

	subject to review and approval before mobilization and work commencement. The Supervision Engineer and PIU must approve the organization chart before mobilization and work commencement. The Contractor shall perform a pre-screening of subcontractors in relation to their ESHS qualifications and capacities prior to the selection process. The Contractor shall then ensure that all subcontractors comply with the project's ESHS standards during Project implementation. The Contractor shall continuously review its own ESHS performance and that of its subcontractors in relation to the ESHS provisions under the contract/sub-contracts. The Contractor must hire an Ecology Clerk of Works as well as other qualified biologists/ecologists (botanist, entomologist, ichthyologist, herpetologist, ornithologist, mammalogist) as needed; who will be responsible for implementing relevant activities as defined in the BMP, either directly or through engaging suitably qualified consultants.

The Contractor shall engage ESHS staff, as outlined in the table below. The Contractor shall engage additional resources as necessary to implement the requirements of this ESMP and the Contract with the SRI. All management positions must have an understanding of an experience with EBRD/EIB ESHS requirements.

Table 3-4 - Outline of the Contractor's ESHS personnel roles and responsibilities (prescriptive and non-exhaustive)

Role/Position	Responsibility
Environmental & Social Manager (ESM)	• The Contractor shall appoint a qualified and experienced Environmental and Social Manager (ESM) who will be responsible for ensuring that the Project and contractor/subcontractor(s) operate in accordance with the applicable ESHS legal and policy framework, permits, Lenders' standards and the requirements of this ESMP. • The ESM shall be responsible for the development and implementation of a CESMS. • The ESM shall be responsible for preparing all documents and reports in accordance with the Legislation of the Republic of Serbia, EBRD/EIB requirements and international best practice. • The ESM shall monitor the implementation of environmental, social, health and safety management and mitigation measures and conformance with applicable standards. • The ESM shall ensure that any ESHS incidents during construction works are reported, investigated and documented, and that lessons learned are identified and enacted. The ESM shall develop an effective reporting and incident investigation process. • The ESM shall prepare additional documents and other supporting plans of the CESMP and Occupational Health and Safety Management Plan (OHSMP) as required. The ESM and H&S Managers shall be both involved in the development of Method Statements for specific activities to ensure their considerations are included. • The ESM shall ensure effective communication with all stakeholders. • The ESM shall ensure adequate training is delivered on environmental, and social, matters to the E&S team and project-related staff (Contractor and Subcontractors)
Site Environmental Officers (SEO)	• The Contractor Site Environmental Officers shall ensure the implementation of the requirements of environmental management plans and procedures in close collaboration with the ESM.

	• The SEO shall monitor all construction activities on-site to ensure the correct implementation of environmental plans and procedures. • The SEO shall support the ESM in preparing weekly, monthly, quarterly, semi-annual and annual reports for all project activities, based on Legislation of the Republic of Serbia, EBRD/EIB requirements and international best practice. • The SEO shall implement environmental management and mitigation measures in accordance with the ESIA commitments, EBRD/EIB standards, CESMP specifications, etc., • The SEO shall deliver training on environmental and cultural heritage matters to project-related staff and workers. • External experts may be required to provide specialized expertise on environmental aspects such as biologist, ecologists, and ornithologists, as appropriate, in case of specific work activities, and/or monitoring required by environmental authorities. • External experts may be required to provide specialized expertise on topics of cultural heritage, in case of specific work activities, and/or monitoring is required by authorities.
Social Officer (SO)	Responsibilities of the Social Officers (SO) will be: • Ensure the implementation of the requirements of social management plans and procedures in close collaboration with the ESM. • The SO shall support the ESM in preparing reports as necessary for all project activities, based on Legislation of the Republic of Serbia, EBRD/EIB requirements and international best practice. • The SO shall implement social management and mitigation measures in accordance with the ESIA commitments, EBRD/EIB standards, CESMP specifications, etc. • Deliver training on social matters to project-related staff. • Liaise and facilitate communication with local communities and residents, stakeholders and government regulators on the Project's behalf. • Implement environmental and social awareness programmes with local communities. • Provide the management team and Social Specialist(s) with full access to all documents and information regarding the stakeholder engagement process; • Collaborate with SRI as needed to ensure the effective resolution of public grievances in line with the Stakeholder Engagement Plan.; • Follow strictly defined timeframes for the acknowledgement of receipt and subsequent resolution of all complaints; • Keep written records in the interests of all parties, employer and workers, including of grievances raised, any evidence and witness statements, findings and actions taken, appeals and decisions; • Implement practical arrangements for maintaining confidentiality, reviewing and resolving grievances, including resources and organizational arrangements; • Provide information on the grievance mechanism and how to raise complaints to potentially affected communities and other stakeholders;
Health and Safety Manager (HSM)	• Liaise with other key stakeholders (authorities) when needed and as per legal requirements, in coordination with ESM. • Directly notify the ESM of any circumstances that warrant notification or management action to ensure effective health and safety compliance.

	• Conduct regular field inspections and audits of construction activities for compliance with existing method statements and risk assessments. • Prepare a health and safety inspection report and highlight the summary of findings from the health and safety inspections on the field during construction works and inform ESM and Project Management Team either for compliance or corrective actions to be taken. • Supervise H&S training procedures for construction personnel and prepare training materials and guideline sheets to facilitate compliance and communication. • Facilitate and/or take the lead in conducting H&S accident/incident investigations. • Together with the ESM, develop Method Statements for specific activities to ensure all relevant measures are defined and implemented. • Advise management on safety issues and developing health and safety policies and procedures in accordance with the relevant legislation. • Monitoring and controlling safety and compliance in the organization as per the law and the organization's policy, reviewing existing H&S policies, management and mitigation measures, and updating accordingly in compliance with national legislation and EBRD/EIB requirements.
Health and Safety Officer(s) (HSO)	A Health and Safety Officer's primary responsibilities will be to ensure compliance with the Law on Occupational Safety and Health ("Official Gazette of RS", No. 35/2023) and the Regulation on Occupational Safety and Health at Temporary or Mobile Construction Sites ("Official Gazette of RS", No. 14/2009, 95/2010-98/2018 and 35/2023). The key duties of the Health and Safety Officer will include: • Carrying out safety inspections and internal audits, and reporting to management with suggestions for improvements, • Ensuring preventive measures, administrative controls, and personal protective equipment are implemented and used properly, • Investigating and reporting accidents and near misses, and maintaining records of all safety-related events, to determine causes and handle worker's compensation claims, • Providing training to employees on safety and health-related issues, • The Health and Safety Officer will need to have a strong working knowledge of the applicable occupational safety and health regulations, as well as experience in implementing and enforcing safety measures in the workplace. • The Health and Safety Officer shall provide advice and instructions on various H&S related topics, conduct a risk assessment and enforce management-mitigation measures on-site. • Monitor construction works on-site daily, and if necessary, stop any unsafe acts or processes that seem dangerous, unhealthy or pose risks to staff and the environment.
Labour relations Officer(s)	• Facilitate weekly labour meetings with representatives of the workforce to discuss labour issues and provide feedback to Contractor management. • Provide guidance to, and monitor, subcontractors on implementation of EIB/EBRD labour requirements. • Manage the Contractor's worker grievance mechanism, including access by subcontractor employees. • A sufficient number of officers who are able to communicate with the workforce (including in the main working language of the Contractor and the local language) should be appointed. • Manage labour relations within the contractor workforce.

	• Act as a point of contact for subcontractor workers in the event of Project labour issues and monitor subcontractor labour performance against applicable requirements.
Gender and inclusion specialist	• During detailed design, define gender-responsive and inclusive design solutions, as well as control and mitigation measures, building on those already included in the preliminary design.
Qualified Ecology Clerk of Works and other biologist/ecologists (botanist, entomologist, ichthyologist, herpetologist, ornithologist, mammalogist) as needed	• Coordinate the implementation of biodiversity mitigation measures during construction • Monitor the effective implementation of the BMP. • Provide relevant monitoring data and reports to the ESM. • Prepare a manual for construction workers and other personnel on important species and habitats. • Design and deliver training on biodiversity for workers and other personnel • May propose changes to the mitigation measures and monitoring activities proposed in the BMP.

3.5. Subcontractor(s)

During the construction phase of the project, the Contractor may hire one or more sub-contractors to carry out various on-site activities. The Contractor is responsible for ensuring that all its sub-contractors implement the ESHS requirements contained within the CESMP and sub-plans and E&S Procedures, and in accordance with the legislative requirements of the Republic of Serbia, throughout the construction phase. Sub-contractors are obliged to apply the same ESHS standards as the Contractor. Contractual provisions relating to the CESMP will be required by the Contractor within sub-contracts with subcontractors, to ensure compliance. The Contractor has ultimate accountability for its sub-contractors' compliance with ESHS requirements and practices.

Table 3-5 – Outline of the Subcontractor(s) role and responsibilities

Role/Position	Responsibility
Subcontractors	• Comply with the Project's ESHS requirements as defined in the CESMP and sub-plans and Procedures. • Adhere to the same ESHS standards as the Contractor. • Appoint officers/specialists as required (as per Table 5).

4. RISKS AND IMPACTS ADDRESSED BY THIS ESMP

4.1. Construction Environmental and Social Management Plan

The following Construction Phase E&S Management Plans are to be owned and implemented by the SRI and are prepared in advance of the Contractor tendering process. As such, the specific requirements of these Plans must be taken into account by the prospective Contractors in the development of their proposals.

- Stakeholder Engagement Plan (incorporating a Grievance Mechanism)
- Resettlement Policy Framework
- Resettlement Action Plan

In order to address the construction phase ESHS risks and impacts identified through the ESIA process, the Contractor will develop and implement a Construction Environmental and Social Management Plan (CESMP) including the Sub-Plans/Procedures listed in Table 4-1 and incorporating as a minimum the mitigation measures listed in Section 5 below, and other good international practice (GIP) measures as appropriate.

Table 4-1: CESMP Sub-Plans and Procedures

Topic(s)	Sub-Plan / Procedure	E&S Risks/Impacts to be Addressed
Sub-Contractors / Suppliers	Sub-Contractor/Supplier Management Plan	• Lack of application of the same ESHS standards and requirements by sub-contractors and suppliers.
Construction Traffic	Construction Traffic Management Plan	• Decreased air quality • Disruption to users of the local road networks • Increased risk of road traffic accidents • Damage to the local road network • Lack of access to local community services and facilities
		•
Workforce	Workers' Accommodation Management Plan	• Below standard living conditions for workers • Importation of external workforce into the Project area • Impacts of workers' housing facilities on surrounding communities • Provision of medical services
Workforce Community	Construction Workers' Code of Conduct	• Risks associated with the introduction/presence of significant numbers of non-local workers and their interaction with the local population. • Gender-based violence and harassment, discrimination and bullying risks
Community	Construction Community Health,	• Unauthorised access to construction sites by local residents.

	Safety and Security Plan	• Lack of awareness of, and construction related health and safety hazards, including from construction traffic on local roads. • Potential for damage to local community utilities (water supply, sewage, etc.) and local roads. • Conflict between workers and/or security staff and local residents. • Spread of disease/illness
Workforce	Construction Occupational Health and Safety Management Plan	• Risk of Accidents and Injuries Due to Heavy Machinery and Equipment Use • Risks Related to Working at Heights • Electrical Hazards from Overhead Lines and Power Supply Systems • Risk of Rockfalls and Gully Erosion • Collision with Utilities (Gas Pipelines, Electrical Cables, Water Mains, etc.) • Noise and Vibration Exposure • Risks related to Exposure to Hazardous Materials • Risk of Confined Space Incidents • Fire and Explosion Risks • Manual Handling and Ergonomic Risks • Risk of Traffic and Worksite Collisions • Psychological and Social Risks • Risks from Exposure to Extreme Weather Conditions
Community/ Workforce	Grievance ManagementPlan	Covers the most of the risks identified within the different topic: • Noise and vibration from construction activities • Dust generation and air quality impacts • Traffic disruptions and restricted access to roads, homes, or businesses • Property damage (e.g., buildings, fences, crops) caused by construction • Water supply contamination or disruption • Safety risks to community members near construction zones • Lack of information, transparency, or community engagement • Social conflicts between workers and local residents • Gender-Based Violence and Harassment (GBVH) involving workers and community members • Delayed or non-payment of wages and overtime • Unsafe or unhealthy working conditions • Discrimination or unequal treatment in the workplace • Unfair or abusive disciplinary practices • Adverse consequences for reporting grievances • Workplace-related GBVH (sexual harassment or assault) • Adverse consequences for reporting grievances • Lack of awareness or access to grievance mechanisms
Environmental Protection Workforce Community	Construction Compound and Camp Management Plan	• Complaints that land has not been re-instated to its pre-construction condition at the end of the rental period. • Inadequate provision of utilities • Inadequate site drainage that results in environmental degradation • Conflict between on site security and local communities

Biodiversity	Construction Biodiversity Management Plan	• Permanent loss of natural and semi-natural habitats within the railway footprint, • Habitat degradation • Habitat fragmentation • Proliferation of invasive plant species • Removal of vegetation from terrestrial and aquatic habitats • Disturbance of fauna from construction noise, vibration and light.
Air Quality	Construction Air Quality and Dust Management Plan	• An increase in dust levels (PM_{10} and $PM_{2.5}$) • An increase in gaseous pollutants (NO_2) • An increase in Benzene and benzo(a)pyrene pollutants
Noise and Vibration	Construction Noise and Vibration Management Plan	• Increased noise levels near residential buildings due to excavation works • Increased vibration levels near residential buildings due to ground - borne vibration from heavy vehicles movement • Damage to structures, particularly those in poorer condition, resulting from increased vibration • Negative impacts as a result of increased noise levels generated from concrete batch plants, heavy vehicles and mixer truck movements • Negative impact on workers from increased levels of noise during construction activities and use/movement of construction equipment • Increased construction-related noise and vibration will affect local fauna
Soil Groundwater Surface Water Geology	Construction Water and Soil Management Plan	• Topsoil removal • Soil contamination • Soil compaction • Soil erosion • Changes in land use • Increased risk of rockfalls • Increased risk of gully erosion • Terrain instability at the Đunis tunnel site • A reduction in groundwater quality • A reduction in groundwater source yield • Slope instability • A reduction in surface water quality (due to spills/leaks of hazardous materials, accidents, contaminated site run-off, untreated wastewater discharges, increased sedimentation and the application of herbicides)
Surface Water	River Crossing and Works Management Plan	• Changes to hydro morphological characteristics of surface watercourses due to river regulation works and the construction of permanent structures. • Reduction in surface water quality due to soil erosion and/or the introduction of contaminants.
Waste	Construction Waste and Materials Management Plan	• Impacts on the environment from waste arisings and poor waste management • Nuisance and health impacts on humans from loose waste, odour, dust, visual intrusion and vermin.
Spoil	Construction Spoil Management Plan	• Poor storage/ disposal arrangements of excess spoil

Landscape Visual Biodiversity	Construction Planting Management Plan	• Loss of vegetation due to site clearance during construction • Increased risk of soil erosion • Degradation of landscape and views
Cultural Heritage	Construction Cultural Heritage Management Plan including a Chance Finds Procedure	• Encountering undiscovered cultural heritage assets within the Project area • Siting construction related infrastructure in proximity to known cultural heritage sites or areas of sensitivity.
Labour	Construction Labour, Employment and Local Procurement Plan	• Labour and employment related risks (for both Contractor's and sub-contractors' workers) including the risk of non-compliance with Lenders' requirements for a grievance mechanism for workers. • Foster local development through local employment and procurement to the extent possible, and in accordance with Project employment and procurement rules and regulations.
Health and Safety Environmental Protection	Construction Emergency Preparedness and Response Plan	• Adverse impacts on the workforce, local communities and the environment as a result of an emergency situation caused by human actions or natural events.
Workforce	Training Plan	• Lack of ESHS awareness • Lack of knowledge of how to prevent or minimise negative impacts on the environment and local communities. • Lack of awareness of OHS procedures and requirements. • Lack of awareness of GBVH issues
Environmental Protection Health and Safety Community	Construction Monitoring Plan	• Measures detailed in the individual Sub-Plans under the CESMP are not effectively mitigating/controlling identified ESHS risks and impacts.
Landscape Visual	Construction Landscape and Visual Management Plan	• Degradation of the landscape through soil erosion • Visual intrusion from construction activities and waste and materials storage • Decreased visual quality due to dust • Degradation of land used for construction

4.2. Operational Environmental and Social Management Plan

In order to address the operation phase ESHS risks and impacts identified through the ESIA process, the SRI/PIU will develop and implement an Operation Environmental and Social Management Plan (OESMP) including the Sub-Plans/Procedures listed in Table 4-2: OESMP Sub-Plans and ProceduresTable 4-2, and incorporating as a minimum the mitigation measures listed in Section 5 below.

Table 4-2: OESMP Sub-Plans and Procedures

Topic(s)	Sub-Plan / Procedure	E&S Risks/Impacts to be Addressed
Biodiversity	Operational Biodiversity Management Plan	• Proliferation of invasive plants • Loss of native flora due to the proliferation of invasive alien plant species • Collision of fauna with trains

		• Disturbance of fauna (noise, vibration and light) • Degradation of aquatic habitats (chemical pollution of water bodies) • Electrocution of fauna
Air Quality	Operational Air Quality Management Plan	• Deterioration in air quality due to maintenance activities
Noise and Vibration	Operational Noise and Vibration Management Plan	• Negative impacts as a result of increased railway noise in the zone with residential receptors in the vicinity of the proposed railway line. • Negative impacts as a result of ground-borne vibration in the zone with residential receptors • Potential disturbance of specific biological functions from railway noise and vibration • Impacts on workers from increased level of noise and vibration from rolling stock and machinery
Soil Groundwater Surface Water Geology	Operational Water and Soil Management Plan	• Soil contamination • Soil erosion • Increased risk of rockfalls • Increased risk of gully erosion • A reduction in groundwater quality • A reduction in surface water quality (due to spills/leaks of hazardous materials, site run-off, wastewater discharges and increased sedimentation) • A reduction in surface water quality of the Južna Morava river due to tunnel water discharge. • Changes to hydro morphological characteristics of surface watercourses due to the construction of permanent structures.
Waste	Operational Waste Management Plan	• Degradation of the natural environment resulting from poor waste management practices
Maintenance	Operational Maintenance Plan	• Safety issues or accidents associated with lack of timely or appropriate maintenance • Rail traffic disruptions due to maintenance and repair activities
Health and Safety	Operational Occupational Health and Safety Plan	• Risk of Collisions and Accidents Involving Railway vehicles • Electrical Hazards from Overhead Catenary Systems • Track and Infrastructure Maintenance Risks • Exposure to Harmful Substances • Fire and Explosion Risks • Risk of Slips, Trips, and Falls in Stations and Work Areas • Psychological and Ergonomic Risks for Train Operators and Staff • Emergency Response and Crisis Management Risks • Exposure to Extreme Weather Conditions
Community	Operational Community Health, Safety and Security Plan	• Operation related health and safety hazards, including from crossing the railway at informal crossing points and electrocution • Conflict between station security staff and the public.
Workforce Community	Gender Plan	• Inadequate safety provisions for women using the railway • Unequal employment opportunities for women • Gender based violence and harassment

Cultural Heritage	Operational Cultural Heritage Management Plan including a Chance Finds Procedure	• Encountering undiscovered cultural heritage assets within the Project area during maintenance activities
Health and Safety	Operational Emergency Preparedness and Response Plan	• Adverse impacts on the workforce, local communities and the environment as a result of an emergency situation caused by human actions or natural events.
Environmental Protection Community Workforce	Contractor Management Plan	• Lack of implementation of the same level of Project standards throughout Project structure • Cascading of E&S requirements down the contracting chain and supply chain (as appropriate)
Environmental Protection Health and Safety Community	Operational Monitoring Plan	• Measures detailed in the individual Sub-Plans under the OESMP are not effectively mitigating/controlling identified ESHS risks and impacts.

5. FINALISATION OF PRELIMINARY DESIGN AND PROCUREMENT

Table 5-1: MEASURES TO BE TAKEN DURING FINALISATION OF THE PRELIMINARY DESIGN AND PRIOR TO PROCUREMENT OF THE CONTRACTOR

No.	E&S aspect/ concern	Mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
Preliminary Design Finalisation and Prior to Procurement					
1	General Requirements	Finalisation of the project design based on feedback received during the ESIA disclosure phase - or include in the contract that the Contractor must incorporate specific changes in the detailed design.	• PPF9 Designer	• PIU	• Finalisation of preliminary design reflects feedback from the ESIA disclosure phase.
2	Noise and Vibration	Prior to finalisation of the preliminary design, the PPF9 Consultant shall • Verify the use and condition (including number of stories) of all potentially affected buildings. • Assess the technical and economic feasibility and visual impacts of proposed noise barriers and optimise their implementation. • Consult with communities on the specific noise mitigation measures proposed in each location, including the design of barriers and the potential impacts. • Update the noise model and finalise preliminary design noise mitigation measures (including barriers, at property mitigation etc) based on the above activities. • Develop a preliminary estimate of number of properties that will need sound insulation and associated ventilation and the associated cost estimate.	• PPF9 Designer and E&S team	• PIU	• Prior to finalisation of preliminary design
3	Stakeholder Engagement	• SRI to ensure that all stakeholders have been adequately informed regarding the preliminary Project design (aligned with the adopted Spatial Plan). This should include holding technical meetings with affected local communities, where the Project design is presented in detail (including the locations of the future stations, overpasses and underpasses, and the routes of any railway deviations), and explaining	• SRI / PPF9 Design Team	• Lenders	• All Stakeholders are adequately informed of the Project design and how their concerns have been addressed.

No.	E&S aspect/ concern	Mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		how concerns raised during the Spatial Planning process have been addressed. • SRI to ensure that all potentially impacted stakeholders are adequately informed regarding the expropriation process. • SRI to ensure that stakeholders are adequately informed of how concerns raised during the ESIA process, and ESIA disclosure feedback will be addressed through the Project design, or if, and why, this cannot be addressed. • In response to stakeholder concerns regarding the closure of the Šumadijska Street level crossing, SRI to formally coordinate with the Municipality of Paraćin to ensure timely execution of the planned bypass road and associated infrastructure (including the overpass at km 153+942 and future bridge over the Crnica River), which are integral to mitigating the severance impacts at this location. To support this process, SRI (with the support of MCTI) will propose the establishment of a joint working group with the Municipality within 60 days of start of ESIA disclosure. This group to be tasked with assessing: 1. Possibilities to advance planning or construction of the critical bypass, together with possibilities to accelerate the design or implementation of the bypass 2. Providing the updated public information to affected residents			

6. CONSTRUCTION ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

To ensure that the potential adverse risks/impacts identified through the ESIA process are avoided or limited as far as possible, and that any benefits from the Project are enhanced, Table 6-1 outlines the recommended minimum mitigation, control and enhancement measures that should be implemented, and/or included in relevant Construction E&S Management Plans. Additionally, the Contractor should seek to ensure that all GIP measures are included in Management Plans to meet Lenders' requirements.

Table 6-1: Pre-Construction and Construction Phase Mitigation/Control and Enhancement Measures

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
Preparation of Detailed Design / Pre-construction					
1	General Requirements	The PIU/Supervising Engineer will regularly review the effectiveness of, and update as required, this ESMP to ensure any changes in Project circumstances are reflected.	• Preparation – SRI/PIU/Supervising Engineer • Approval - SRI	• PIU /Supervision Engineer • Lenders	• ESMP reviewed and updated (if required) prior to finalisation of the detailed design and start of construction.
2	General Requirements	The SRI will regularly review and update the SEP; to ensure any changes in Project circumstances are reflected.	• Preparation SRI • Approval - Lenders	• PIU /Supervision Engineer • Lenders	• SEP reviewed and updated (if required) prior to finalisation of the detailed design and start of construction.
3	Applicable E&S Requirements	The project will be managed, built and operated in a manner that is compliant with applicable national, EU and International law and conventions, and relevant EBRD/EIB, policies and guidance.	• All Project parties	• PIU /Supervision Engineer • Lenders	• E&S Performance Monitoring demonstrates compliance with all

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
					applicable requirements.
4	Applicable Project Documentation	The Contractor will implement and comply with all measures specified within the relevant Project E&S Documentation including, amongst others: • ESIA and ESMP • Biodiversity management plan (BMP) • Environmental and Social Action Plan (ESAP) • SRI Waste Management Plan • Stakeholder Engagement Plan (SEP) • Resettlement Policy Framework (RPF) and Resettlement Action Plan (RAP) when developed and approved (regarding land required to be temporarily leased) • Project contractually binding documents, including the Employer Requirements • Environmental Impact Assessments/Statements and related Decisions from the Competent Ministry/Authority	• Implementation – Contractor • Approval Supervision Engineer / PIU	• PIU /Supervision Engineer	• Performance monitoring demonstrates compliance with all measures specified within Project E&S documentation
5	Management of Change Procedure	The Contractor will establish a Management of Change (MoC) Procedure for any changes required to the Project footprint or design during the detailed design or construction phase that may result in a potential new impact that was not assessed in the ESIA or elevate an impact that was assessed in the ESIA. This includes the requirement for any additional land outside of the expropriation corridor. This will include the detailed process for the management of changes, including how each change will be categorised, notified to relevant parties, and how the potential E&S impacts of the change will be assessed and additional mitigation measures identified to ensure continued compliance with the Project's E&S requirements. The procedure shall build upon the template Management of Change Procedure presented in Appendix 3 to this ESMP.	• Preparation and Implementation – Contractor • Approval – PIU/ Supervision Engineer • Any design changes potentially resulting in significant E&S impacts to be approved by the Lenders.	• PIU /Supervision Engineer	• MoC Procedure in place prior to the detailed design phase.
6	Establish baseline surface water quality, groundwater quality and levels, soil quality, and noise levels in the Project area.	The Contractor will: • Conduct a preconstruction baseline survey of groundwater quality at the locations detailed in Appendix 1, using the overall methodological approach to monitoring for the implementation of Water Framework Directive (WFD) as defined in Guidance Document No. 7 Monitoring under the Water Framework Directive. The minimum parameters to be	• Preparation and Implementation – Contractor • Approval – PIU/ Supervision Engineer	N/A	• Environmental baseline reports on soil quality, surface and groundwater quality, and noise and vibration levels

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		monitored include: pH, turbidity, dissolved oxygen (DO), electrical conductivity, total suspended solids (TSS), chloride, alkalinity, total hardness, calcium, magnesium, zinc and iron. • A pre-construction inventory of users of informal groundwater wells should be carried out in areas identified as being at risk of contamination. This should include the well's location and baseline water quality data. • Where users of informal groundwater wells are identified, baseline groundwater levels should be established prior to the commencement of construction in areas identified as being at risk of water table reductions. • Conduct a preconstruction baseline survey of surface water quality at the locations detailed in Appendix 1. Monitoring will be conducted in line with Guidance Document No. 7 Monitoring under the Water Framework Directive. The minimum parameters to be monitored include: pH, smell, colour, dissolved oxygen (DO), electrical conductivity, suspended solids, chemical oxygen demand (COD), biochemical oxygen demand, ammonia, nitrates, nitrites, total nitrogen – N, total phosphorus – P, sulphates, Cd, Cu, Cr, Zn, Ni, Fe, Pb, Mn, TOC, oils and fats, mineral oils, Hg. • Conduct a preconstruction baseline survey of soil quality in line with details presented in Appendix 1. Minimum parameters to be monitored include: pH, P, K, Na, Fe, Al, Ca, organic matter, clay, Be, V, Cd, Cr, Cu, Ni, Pb, Zn, Hg, As, Ba, Co, Mo, Sb, Se, Ti, Te, Ag, Sn. • Conduct a preconstruction baseline survey of noise levels of the site and the surrounding area, at any location where settlements and housing are located within 200m of the route alignment. Measurements must be conducted by accredited organizations. The measurements must be undertaken in compliance with Serbian legalisation and the standards SRPS ISO 1996-1 and SRPS ISO 1996-2. In settlements, or locations where multiple houses are grouped, measurements will be taken from the house closest to the alignment, facing the alignment.			prepared and approved by the Supervision Engineer prior to construction commencing.
7	Geohazards	• Conduct thorough geotechnical assessments to identify unstable slopes and high-risk areas where rockfalls or soil erosion are most likely,	• Preparation and implementation – Contractor.	• PIU /Supervision Engineer	Geotechnical assessments completed and appropriate

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		before the commencement of any excavations and especially at the tunnel site.	• Approval – PIU/Supervising Engineer		mitigation measures identified.
8	Biodiversity	In accordance with the Biodiversity Management Plan • All habitats classified as Critical Habitat (CH) and Priority Biodiversity Features (PBF) as well as autochthonous forest with EUNIS code E3 Wet or seasonally wet grasslands, which are inhabited by species triggering CH/PBF designation, should be marked as avoidance zones. • Undertake a detailed survey of aquatic habitats in the riparian zone of the Južna Morava River and map their exact locations and boundaries. • Prepare a manual for construction workers and other personnel on important species and habitats and their identification (including no-go and avoidance zones), as well and guidelines for their preservation and actions if encountered during their work. • Add seasonal constraints for biodiversity receptors into the construction schedule and work plan. • Develop an Ecological Pre-Construction Survey Plan and Ecological Chance Finds Procedure. • Develop an Invasive Alien Plant Species Management Plan. • Abutments of the proposed bridges must be designed to retain habitats along the waterways and the associated movement of species. • Include an appropriate structure/crossing for small mammals, amphibians and reptiles in the Detailed Design, based on obtained location conditions from the authorised Institution for Nature Protection of Serbia and following the Rulebook about special technical-technological solutions that enable uninterrupted and secure communication of wild animals (Official Gazette of RS, No. 72/2010) at chainage point km 227+000. • Include the installation of insulator covers and good insulation of conductors on catenary and electrical infrastructure in the detailed design, to prevent the electrocution of birds and bats.	• Preparation and Implementation – Contractor (ECoW and other qualified ecologists as required) • Approval – PIU/Supervising Engineer •	• Biodiversity supervisors	• All required habitats marked as avoidance zone • Riparian zone of the Južna Morava River mapped. • Manual for workers on Biodiversity completed and approved • Ecological Pre-Construction Survey Plan completed and approved • Ecological Chance Finds Procedure completed and approved • Alien Plant Species Management Plan completed and approved • Restoration Plan completed and approved • Biodiversity elements of the detailed design approved

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		• Include the requirement for an amphibian/reptile protection fence in the detailed design, to be installed over a length of 50 m before and after every bridge/culvert to prevent small fauna fatalities caused by amphibians and reptiles entering the RoW. • Develop a Restoration Plan for the re-establishment of all habitats identified as Priority Biodiversity Features and Critical Habitat. • Collect seeds from native E3 habitats immediately adjacent to the Project and preserve and store them based on advice of the E-CoW. • The ECoW must monitor identified species of conservation concern in order to evidence potential locations where such species are nesting.			
9	Design standards and considerations	During the development of the Detailed Design, the Contractor will ensure that the Project complies with applicable national design standards, which will include designing appropriate environmental protection (flood risk, ground stability, climate change adaptation). All design standards defined in the Location Conditions for Section 3 (Paraćin to Trupale (Niš)) must also be met. A full list of design standards is presented within Chapter 2, Section 2.3.1 of the ESIA Report. To enable full compliance with the national Law on Protection against Non-ionising Radiation, it is recommended, where possible, in particular at railway stations, to apply protective film for alternating and permanent magnetic fields (e.g. amorphous cobalt alloy film for protection against low-frequency alternating magnetic field radiation) to protect employees from low-frequency and high frequency electric fields, cobalt tapes or other acceptable solutions. Furthermore, to enable compliance with the national Regulation on Limits of Non-ionising Radiation, it is recommended to plan, in cooperation with the radio communications agency, the installation of at least one sensor at stations to enable continuous monitoring of the levels and limits of non-ionising electromagnetic radiation at these locations. The Contractor will also ensure that the Detailed Design complies with the Technical Specifications for Interoperability (TSIs), including but not limited to the TSI for persons with disabilities and with reduced mobility.	• Preparation and Implementation – Contractor • Approval – PIU/ Supervision Engineer	Supervision Engineer to check the Project design and report to the PIU	• Design complies with all applicable national design standards, Location Conditions, European standards and TSIs. • Design addresses key stakeholder concerns as far as practicable.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		Specifically for the planned underpasses listed in Sections1.3.1 and 1.3.2, the Contractor shall ensure during the final design stage that the underpasses: • Are of adequate width and height for passage of agricultural machinery • Are designed to feel safe (ensuring visibility from one side to the other, allowing maximisation of light penetration etc.) and secure (cameras). • Have adequate lightning both inside and at the entrances of the underpass • Drainage pumps installed in the underpasses are adequate to address expected volumes of groundwater and stormwater ingress and that they can be maintained by the relevant municipalities (and that they have the required financial and human resources for maintaining them) Safety at stations and in underpasses, especially at night, will be enhanced with the development of a gender inclusive detailed design, in consultation with women from local communities who use trains.			
10	Design of temporary access and service roads for the purposes of construction	The Contractor shall plan the construction of new, temporary access and service roads with the aim of minimising E&S impacts, whilst considering the requirements of the Location Conditions. The requirements of the Traffic Management Plan must also be followed in relation to temporary access/service roads (see No. 21). Specifically: • The utilisation of existing access tracks/roads will be prioritised as far as possible. • The construction of temporary access or services roads in the 'Avoidance Zones' defined in Appendix 4 to this ESMP is prohibited. • Land utilised for agricultural purposes will be avoided as far as possible. • The Contractor will conduct an E&S risk assessment of possible locations for new temporary access/service roads to help ensure that the chosen design results in the lowest E&S impact.	• Preparation and Implementation – Contractor • Approval – PIU/ Supervision Engineer	Supervision Engineer to check the Project design and report to the PIU	• Access/service road design complies with the requirements of Location Conditions • E&S risk assessment completed, and lowest negative impact design constructed.

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		• Dedicated, demarcated pedestrian walkways and crossing points must be provided. • The design must include the requirement for traffic management and safety signage.			
11	Design of Operational Noise Protection Structures and Operational Vibration Mitigations	Noise protection measures have been established for all residential and other sensitive areas that will be exposed to noise levels exceeding the limits set by the World Health Organisation (where this is technically and economically feasible) or Serbian legislative limits. Noise barriers are planned to be installed on both sides of the railway line. On the parts of the railway where noise protection is required, the construction of barriers for noise protection is between 1 and 5.5 meters high (in two cases up to 6,0 meters and in one case up to 7,0 meters) for the Paraćin-Stalać subsection and between 2 and 7,5 meters for the Djunis-Trupale subsection. In the Preliminary Design, based on noise modelling, noise protection barriers are planned at the locations presented in Appendix 2 of this document.Prior to the finalisation of the detailed design, under regular traffic conditions, the Contractor must carry out noise, vibration and ground-noise monitoring in accordance with the monitoring program outlined in Appendix 1, update the Project noise and vibration model for this section with the new predicted train movements and act according to the results obtained to develop and implement additional mitigation measures as needed to ensure the Project standards are met. The design of the noise barriers shall comply with provisions of the National and European legislation, as well as corresponding standards: SRPS EN 16272-1, SRPS EN 16272-2, SRPS EN 16272-3-1, SRPS EN 16272-3-2, SRPS EN 16727-1, SRPS EN 16727-2-1, SRPS EN 16727-2-2, SRPS EN 16727-3, SRPS EN 16951-1 and SRPS EN 16951- 2. The acoustic panels that will be used for noise barriers shall have sound absorption of minimum 12 dB (class A4 in accordance with SRPS EN 16272- 1) and soundproofing of minimum 25 dB (class B3 in accordance with SRPS EN 16272-2). All elements of noise barriers shall be grounded. Efficiency of the grounding system for the chosen type of noise barriers shall be verified by professional	• Preparation and implementation – Contractor • Approval by Technical Control (as required by national law)	Supervision Engineer to check the Project design regarding noise and report to the PIU	• Noise mitigation is included in the design. • Noise impacts meet national legislative limits and WHO guidance (where feasible).

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		accredited institution. The lightning charge current test shall be carried out to reach the effective value of 40 kA and pulse duration of 100 ms minimum. The acoustic panels shall have service life of minimum 20 years without major changes in their acoustic and non-acoustic performances. The acoustic panels and/or complete noise barriers shall be suitable for installation next to the railway lines with maximum permitted speeds of 200 km/h. For residential buildings and other sensitive properties, which protection by noise barriers is not economical or technically possible and for buildings where exceeding noise level occurs even after installation of noise barriers, some other protection measures were planned such as replacement of doors and windows with better sound insulation. Decision on the type of sound insulation (sealing glass) will be made separately for each case, with a note that small sound insulation will not resolve the above-mentioned problems while the big sound insulation is not economic due to the very high prices. For each building that is protected by the replacement of doors and windows with those having better sound insulation, a closed fresh air supply system should also be provided. In addition to the replacement of doors and windows on the buildings, the facades should be provided with adequate soundproofing. The replacement of joinery and/or repair of facades will only be carried out if they do not meet the required specifications for acoustic insulation. The Contractor will develop the Study of Technical Measures for Environmental Protection, as part of the Detailed Design (so-called Design for Construction Permit), which will cover noise issues through a separate chapter – Noise Study. The Project will include the noise barriers optimisation (location, height and length), as well as optimization of the other noise protection measures. The Project shall cover the entire railway section (from Paracin to Trupale), with additional site evaluation of the individual properties and further refinement of the noise model. As part of the Design for Construction Permit, the noise model must be updated by the Contractor to account for the updated design, including any changes from the preliminary design. Additionally, this will include an update to the noise co-efficient to account for site-specifiic socil conditions,			

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		with special attention given to urban areas, where the coefficient may be slightly lower than 1.0 due to the presence of numerous paved surfaces. In addition, if not covered by the above, the Contractor will update the operational vibration (including ground borne vibration) assessment and modelling during the detailed design and prior to finalisation of main design. The Contractor shall develop Noise and Vibration (including ground borne noise) Mitigation design studies and include in the design appropriate mitigation measures, to demonstrate that the applicable standards as outlined in the reports and Project Standards will be met. The visual impacts of barriers shall be assessed and the final barrier specification defined including mechanisms to minimise visual impacts such as use of transparent, green or painted (murals) barriers, tailored to the local conditions.			
12	Selection of locations for Construction Compounds and Camps and other additional construction facilities not identified in the ESIA (including quarries, borrow pits, spoil disposal areas, temporary waste storage areas, landfill sites, concrete batching plants etc.)	The Contractor will be responsible for the selection of locations for construction facilities including that: • E&S screening of potential sites will be conducted and only those which are located away from sensitive receptors will be selected, as far as practicable. • Sites shall not be located within any 'Avoidance Zones' as defined in Appendix 4 to this ESMP. • Any temporary landfill must be located on land zoned or approved for such use. Even if the site is agreed between the developer and contractor, it must align with municipal spatial and urban plans • Valid operational licenses and Environmental and Water permits must be obtained for any borrow pits to guarantee that the Contractor complies with Serbian environmental and water regulations (and will be subject to supervision from licensed environmental and water management inspectors). • The selection of construction compounds and camps must be conducted in consultation with affected communities. • Implementation of the Management of Change Procedure in Appendix 3 will be required for any additional land needed outside of the expropriation corridor.	• Preparation and Implementation – Contractor • Approval – PIU / Supervision Engineer	The Contractor and Supervision Engineer to E&S screening reports on the selected sites for the PIU, based on conducted weekly visual inspections	• Plan approved by the PIU / Supervision Engineer, and implemented by the Contractor

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		• Agreements with landowners for the temporary use of land must be negotiated in accordance with the RPF (with preference being given to non-agricultural land). • All sites must be fully restored to their pre-construction condition (including that all waste and materials are removed) upon completion of construction.			
13	Waste disposal	The Contractor will: • Confirm whether the Elixir Prahov plant has the capacity to accept and process the anticipated number of waste railway sleepers that will be generated during construction. • Confirm that the Elixir Prahov plant is equipped to incinerate contaminated wooden sleepers at an appropriate temperature as per Directive 2010/75/EU (depending on the type of contamination this could be 1,100 °C).	• Preparation and Implementation – Contractor • Approval – PIU / Supervision Engineer	• PIU/Supervision Engineer.	• Confirmation that the Elixir Prahov plant can accept the expected volume of waste railway sleepers • Confirmation that the Elixir Prahov plant can meet the requirements of Directive 2010/75/EU
14	Waste Management	SRI to update its Waste Management Plan to include the management of signalling systems, transformers and substations (which are considered to contain hazardous materials), to ensure they are managed according to appropriate legislation.	• Preparation SRI	• PIU/Supervision Engineer	• SRI Waste Management Plan updated to incorporate all expected types of waste
15	Land acquisition, involuntary resettlement and economic displacement;	A Resettlement Action Plan will be prepared when expropriation elaborates become available for Section 3, building on measures already presented in the Section 3 RPF and will be implemented until all impacts have been mitigated adequately. The following key principles will be followed: • Efforts to avoid or at least minimise physical and economic displacement will continue during the RAP development phase. • A socio-economic survey of affected people/households will be carried out, to assess impacts, provide baseline information and design appropriate resettlement and livelihood restoration measures which will be described in the RAP. • A census of persons who have no recognisable legal right or claim to the land they use or assets they occupy will be carried out at the same	• Preparation and Implementation – PIU / SRI • Approval – SRI Management (in consultation with the Lenders)	PIU Independent experts, as agreed with Lenders	• All project affected people have restored (improved if possible) livelihoods and standards of living, upon displacement.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		time as the socio-economic survey. The date of the census will be the cut off date for eligibility for this category of affected people/entities. • Consultations will be organised and information provided to affected people throughout the development and implementation of the RAP. • Compensation for any affected assets will be provided at full replacement cost, regardless of whether they are formally registered or not, based on reports from certified valuators. • In case of physical displacement, compensation will be provided prior to taking possession of acquired assets. In cases of acquisition of only land, as a rule, compensation will be provided when expropriation decisions are legally binding and prior to land entry and any civil works. Exceptions to this may occur in cases where the affected owner cannot be identified, such as in situations involving absentee owners or owners who are deceased but whose probate procedures have not been lawfully concluded, or where probate has not been initiated at all. Other exceptions include refusal to accept a fair compensation offer, failure to respond to invitations by administrative bodies to attend hearings regarding the proposed compensation, or prolonged legal proceedings related to competing claims.In such cases, compensation will be executed after all legal actions have been completed in accordance with the law. Exceptionally, in cases of expropriation of structures, civil works may proceed even prior to compensation payment, provided that the structure is uninhabited, property rights over the structure have not been resolved, the owners are unknown or unreachable, or if the owner is deceased and the probate process has either not been concluded or not been initiated at all. In such cases, civil works may only commence if the compensation amount is deposited in an interest-bearing escrow account until the court or administrative procedure is completed; • Vulnerable individuals and households will be identified and will be assisted based on their specific needs, as agreed with responsible local self-governments. • All compensation and assistance will be provided equally to men and women. • A grievance mechanism will be implemented by SRI through which all affected people can submit their complaints and grievances in relation to compensation and resettlement and expect a timely response. • Monitoring of all compensation, resettlement and livelihood restoration activities will be regularly carried out and reported on to the Lenders.			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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16	Construction Vibration	The Contractor will • Undertake a vibration risk assessment for the construction works and associated traffic movements, identifying all potentially sensitive receptors and defining and implementing a hierarchy of mitigation measures, encompassing design considerations (such as avoiding high vibration processes), source-based mitigation, as well as on-site and off-site mitigation. Such measures will be incorporated into the Construction Noise and Vibration Management Plan.	• Preparation and Implementation – Contractor • Approval – PIU / Supervision Engineer	The Supervision Engineer review risk assessment and survey reports	• Risk assessment and pre-condition surveys complete prior to construction starting in any area
17	Acquisition of any new land (including temporary) for construction facilities, including access roads; camps, laydown areas; quarries; spoil disposal areas etc.	The Contractor will be responsible for the acquisition of temporary land needed during the construction phase, should publicly owned land not be available or cannot be accessed. The Contractor will be responsible for undertaking pre-construction surveys and E&S assessments of selected land options; to ensure that the option with the least E&S impacts is chosen as far as practicable, and additional E&S mitigation measures are defined and implemented as necessary. The acquisition of land for temporary use during for construction facilities in the 'Avoidance Zones' defined in Appendix 4 to this ESMP is prohibited. The Contractor will acquire the right to temporarily use the land through voluntary negotiations and amicable agreements with landowners, pay compensation to formal owners/users at replacement cost, and identify any informal users and compensate them for their assets at replacement cost, and provide any livelihood restoration measures necessary (any further requirements will be defined in the future Resettlement Action Plan (RPF). Preference will be given to non-agricultural land. The Contractor will regularly notify the Supervision Engineer about this process, as defined in the RPF.	• Implementation – Contractor • Approval – PIU / Supervision Engineer	• Supervision Engineer	• Land with the least E&S impacts acquired for temporary use for construction facilities by the Contractor • Amicable agreements reached with landowners/users and relevant compensation paid.
18	Road Condition	The Contractor will undertake, prior to the start of construction, a pre-condition survey of all access roads to be used by construction traffic. The survey will be conducted by a qualified civil engineer and will incorporate photographic and video evidence to document the condition of the roads in survey reports. Surveys will be undertaken together with responsible entities depending on the type of road and be witnessed by local municipality representatives.	• Preparation and Implementation – Contractor • Approval – PIU / Supervision Engineer	• Supervision Engineer	• Survey reports produced prior to the commencement of construction.

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Construction Phase					

19	Construction Environmental & Social Management System (CESMS), and Construction Environmental and Social Management Plan (CESMP) and Sub-Plans	The Contractor will develop and implement a Construction Environmental & Social Management System (CESMS) to support the implementation of the ESMP & SEP and facilitate good environmental & social management practices.
		The CESMS will:
		• Be developed and implemented in line with international standards (e.g. ISO 14001:2014, EU EMAS) and incorporate, but not be limited to:
		  ○ E&S Policy
		  ○ Organizational capacity and competency (including the commitment that identified critical ESHS positions will be continuously filled)
		  ○ Identification of ESHS risks and impacts
		  ○ Management Programme including Procedures/Method Statements/the Construction Environmental and Social Management Plan (CESMP).
		  ○ Monitoring and review
		  ○ Reporting (including to affected communities)
		The Contractor shall appoint an appropriately qualified Environmental & Social Manager (ESM) who will be responsible for the development and implementation of the CESMS and ensuring the provisions of the ESMP are complied with. The ESM shall have appropriate qualifications, training, authority & responsibility and resources. The ESM Manager shall have assigned responsibilities that include but are not limited to those defined in Section 3.4.
		
		In the event, that more than one main Contractor is appointed then one overarching Project CESMS should be established for all Contractors to adopt.
		
		Construction Environmental & Social Management Plan (CESMP) will include the following Sub-Plans and Procedures:
		• Sub-Contractor/Supplier Management
		• Construction Traffic Management Plan
		• Construction Community Health and Safety Programme
		• Workers' Accommodation Management Plan
		• Construction Workers' Code of Conduct
		• Construction Community Health, Safety and Security Plan,
		• Construction Occupational Health and Safety Plan
		• Construction Grievance Management Plan
			• Preparation – Contractor
			• Approval PIU / Supervision Engineer
				• PIU /Supervision Engineer	• CESMS developed and approved prior to construction commencing.
					• CESMP and all supplementary Plans and Procedures finalised prior to construction commencing
					• All Contractor ESHS staff appointed before the start of construction works.
					• Contractor's Team has adequate capacity and resources (people and budget) for the successful implementation of the CESMS and CESMP.

		• Construction Compound Selection and Management Plan • Construction Biodiversity Management Plan • Construction Air Quality and Dust Management Plan • Construction Noise and Vibration Management Plan • Construction Water and Soil Management Plan • River Crossing and Works Plan • Construction Waste Management Plan • Construction Spoil Management Plan • Construction Planting Management Plan • Construction Cultural Heritage Management Plan. • Construction Labour, Employment and Local Procurement Plan, • Construction Emergency Preparedness & Response Plan • Training Plan • Construction Monitoring Plan			

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20	Sub-Contractor/Supplier Management	The Contractor(s) will apply contractual conditions in securing the services of Sub-Contractors and suppliers that ensure the Sub-Contractors and suppliers are obliged to comply with all environmental and social requirements contained within applicable Project documentation and standards. The Contractor will inform their Sub-Contractors and suppliers of their Environmental, Social, Health & Safety (including Labour & Working Conditions) obligations, including relevant requirements within the CESMP. Applicable ESHS requirements shall be contained within contractual agreements, including the requirement for Sub-Contractors to pass such requirements to any of their own Sub-Contractors, and to establish provisions for ESHS reporting.	• Implementation – Contractor • Approval – PIU / Supervision Engineer	• PIU /Supervision Engineer	• Contracts with Sub-Contractors & suppliers contain relevant conditions necessitating that Project ESHS requirements are met.

21	Construction Traffic Management Plan	The Plan will set out mitigation measures to minimise the impacts of construction traffic, including criteria to ensure the Contractor selects suitable access routes. The Contractor will consult local communities in the development of the Plan and disclose it publicly. The Contractor will: • Determine the baseline condition of all public roads planned for use during the construction phase, prior to start of construction work (see No. 18) • Reinstate all roads used by construction traffic to baseline conditions (where it can be reasonably determined that condition was affected by generated Project traffic) • Ensure continued access to all community infrastructure, roads and cemeteries in the Project area – in case of any unavoidable temporary access restrictions, the Contractor will inform the affected local communities, and local municipalities well in advance of works commencing. • Coordinate with the local community and municipalities on the development and location of temporary access roads and routes. • Provide temporary road access around construction sites, where necessary. • Keep every road level crossing open until the underpasses and overpasses intended to replace them are constructed and open for traffic. • Provide dedicated, demarcated pedestrian routes on roads used by construction traffic minimise the risk of accidents. • Install appropriate safety signage, signals and lighting relating to construction vehicle access/exit points, speed limits etc. • Use flag men where necessary (e.g. on bends) to warn oncoming traffic of the presence of construction vehicles. • Should temporary road access be established, roadblocks will be set up to prevent unauthorised access to the areas where construction activities are taking place. • Construct temporary vehicle bridges (if required) with sufficient capacity for the existing vehicle usage. • Construct temporary pedestrian bridges (if required) which will include appropriate safety measures such as railings. • Repair any damage caused by construction vehicles to public roads in a timely manner. • Carry out regular maintenance of construction vehicles and avoid unnecessary use of vehicles. • Schedule deliveries to avoid peak traffic times and congested periods.	• Preparation and implementation – Contractor • Liaison with affected communities – Contractor • Approval – Supervision Engineer / PIU / Relevant authority (Ministry) responsible for traffic management	• PIU / Supervision Engineer • Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction. • No traffic accidents due to construction traffic. • Any damage to local roads repaired in a timely manner.

		According to the sensitivity zones defined for the implementation of mitigation measures in the Air Quality Plan (see No. 29), the specified additional traffic related mitigation measures should be implemented within the relevant sensitivity zones, as indicated. • **(H)** Ensure that the timing of large-scale vehicle movements and the scheduling of deliveries avoids peak traffic times and congested periods on the local road network; • **(H)** Disclose the timetable for the movement of any large construction vehicles, particularly any wide or long loads that may require additional road space to help avoid local congestion; • **(H)** Ensure that all public roads used for the Project are regularly cleaned, removing any debris caused by the movement of vehicles and materials for the Project; • **(H)** Promote shared transportation for the workforce. • **(M, N)** Reduce idle time and minimise stop-and-go traffic patterns • **(M, N)** Ensure that all public roads used for the Project are regularly cleaned, removing any debris caused by the movement of vehicles and materials for the Project; • **(M, N)** Use of alternative transportation methods such as off-peak deliveries, route optimization, and promoting shared transportation		

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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			•	•	•
22	Construction Workers' Accommodation Management Plan	• The Contractor will develop a Workers' Accommodation Management Plan that will also apply to any Subcontractor's worker accommodation in accordance with: • The IFC/EBRD Guidance on Workers' accommodation: processes and standards (2009); and • Minimum standards as defined under national legislation and • All required permits (e.g. water supply, wastewater discharge, electricity, access roads, etc.). Some of the requirements include, but are not limited to: • Transport from living facilities to worksites is safe and free • Housing standards must include special attention to the minimum space allocated per person (a minimum of 10 – 12.5m3 of volume or 4-5.5m2 floor space), and that a separate, dedicated bed is provided for each worker at least 1m from other beds. The use of bunk beds should be minimised and there must be clear space between the upper and lower bunks. The use of triple deck bunks is prohibited. Only 2-8 workers should share one room, and the ceiling should be a minimum of 2.10m in height. Men and women should have separate sleeping areas except in family accommodation. • Housing standards should include that each worker is provided with adequate furniture and facilities for the storage of personal belongings. Separate storage for work boots and other personal protection equipment, as well as drying/airing areas may need to be provided depending on conditions. Each worker should be provided with a comfortable mattress, pillow, cover and clean bedding. All doors and windows should be lockable and provided with mosquito screens where conditions warrant. There should be mobile partitions or curtains to ensure privacy. • An adequate number of sanitary and toilet facilities must be provided dependant on the number of workers and conveniently and easily accessible. They should be designed to provide workers with adequate privacy, including ceiling to floor partitions and lockable doors. • Workers are provided with dedicated social/rest spaces and recreational facilities. Additionally, dedicated places for religious observance must be provided. • The Contractor must ensure the supply of safe water in sufficient quantities, adequate sewage and garbage disposal systems and	• Preparation / Implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan. • Quarterly monitoring by Supervising Engineer according to the checklist on Workers' Accommodation (Appendix I of the IFC/EBRD 2009 Guidance), supported by photographic evidence and submitted to PIU. • Semi-annual Independent Labour Audits by specialised labour expert in the Supervision Engineer's team	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction. • Plan fully implemented by the Contractor and any Sub-Contractors.

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		appropriate protection against heat, cold, damp, noise, fire, floods, and disease-carrying animals and insects. • Adequate medical facilities must be provided including (but not limited to) that a number of adequately stocked first aid kits are available dependent on the number of workers, and a 24/7 first aid service is available. • For facilities located in hot weather zones, adequate ventilation and/or air conditioning systems must be provided. Both natural and artificial lighting must be provided and maintained in living facilities • The canteen, cooking and laundry facilities are kept in a clean and sanitary condition. If workers wish to cook their own meals, kitchen space will be provided separate from sleeping areas. In addition to the above, if the Contractor decides to use local, private accommodation it shall be subject to screening and risk assessment to select facilities which meet these standards and shall not pose significant social impacts to local communities. Results of such screening shall be annexed to this Management Plan.			
23	Construction Workers' Code of Conduct	The Contractor will develop a Construction Workers' Code of Conduct to establish clear guidelines and expectations for workers' behavior. It will be clearly displayed at different Project facilities, site offices and accommodation camps, and copies provided in Contractor's vehicles and machinery driving cabs. All Contractor and subcontractor personnel will be made aware of and acknowledge their understanding of the Code of Conduct by signing it prior to the start of any physical work at any Project site/facility. Compliance with the Code of Conduct shall be a condition in all workers' employment contracts. The Code of Conduct will include provisions intended to combat gender-based violence and harassment, discrimination and bullying. The Code of Conduct will include a list of acts/behaviours that will instigate disciplinary action by the Contractor, or by the Supervision Engineer if the Contractor does not act accordingly. The Contractor will record each case of misconduct, indicating all action taken regarding the incident, and immediately inform the Supervision Engineer.	• Preparation / Implementation – Contractor • Approval – PIU / Supervision Engineer	Supervision Engineer to review records of misconduct and include a summary in the Monthly Progress Report to the PIU.	Code of Conduct developed prior to the commencement of construction and subsequently implemented

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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24	Construction Community Health, Safety and Security Plan	The Contractor will be responsible for developing and implementing a Community Health, Safety and Security Plan, incorporating a Community Health and Safety Programme, which sets out the measures to manage community health and safety and security risks during construction. The Community Health and Safety Programme should be developed by the Contractor to educate, and raise awareness amongst, the local community about construction and construction traffic related hazards. The Programme will focus on minimizing the potential for accidents and injuries. The Programme will include information on the Project's security arrangements and the expected conduct of the workforce. It will be linked to the SEP and will employ various communication methods to ensure the needs of vulnerable groups and children are met. The Programme will include a section detailing the procedures that will be implemented in situations where community utilities (water, sewage, power and local roads) need to be relocated, or are accidentally damaged during construction. The Plan should include the following measures: • Provide advance notification to affected local communities of any expected disruption to public utilities and ensure full and prompt re-establishment of function as soon as practicable. • Create safe pedestrian and traffic corridors throughout the construction sites • Identify sensitive locations and agree prevention measures with the communities • Avoid construction activities during religious holidays, non-working days, as night hours, after 19.00h • Keep every road level crossing open until the underpasses and overpasses intended to replace them, are constructed and open for traffic. • Contractor to carry out prompt repairs of any accidentally damaged public utilities and provide regular information to local communities on how and when services will be re-established.	• Preparation / Implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction. • Community Health and Safety Educational Programme developed, approved and delivered. • No accidents/injuries involving local community residents • Number and nature of community grievances raised during construction phase.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		• Workers must receive training and guidance on how to avoid conflict with local residents • All workers must be required to sign and abide by the Code of Conduct (see No.17) • Any damage to public property or community grievances will be managed through the Grievance Mechanism in the SEP, and any necessary compensation provided in accordance with the specified timelines. • Transportation of the workforce to and from construction sites and accommodation will be organized to minimize negative impacts on the local road network and residents. • Measures must be implemented to prevent unauthorized access to worker accommodation camps, construction compounds and construction sites and access roads. The Contractor must install appropriate lighting, safety signage and barriers. • The design, layout and location of construction facilities should facilitate natural surveillance by the local police and Contractor/Sub-contractor security guards. • Worker accommodation camps will not be located immediately adjacent to local residential housing. • Adequate due diligence will be undertaken regarding the selection of qualified, trained and licensed (if appropriate) security guards. The Voluntary Principles on Security and Human Rights will be applied. Additionally, all measures included in the Emergency Preparedness and Response Plan and Traffic Management Plan must be implemented.			
25	Construction Occupational Health and Safety Management Plan	The Contractor will develop and implement an Occupational Health and Safety Plan that includes the following: • The Contractor shall hold regular toolbox talks focusing on a single health & safety matter applicable to the current site activities or stage of construction. • The Plan will include details of the medical facilities provided on-site. It will also identify the medical facilities in the local area that may be required for more severe incidents, and how to access them, when required. This provision will have been agreed with these facilities in advance.	• Preparation / Implementation – Contractor • Approval – PIU / Supervision Engineer	• PIU /Supervision Engineer • Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan. •	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction. •

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		• Regular health checks of construction workers will be undertaken. A policy for HIV/AIDS related diseases will be developed if deemed necessary by SRI based on the Contractor's assessment. The following mitigation measures must be required by SRI through specific contractual obligations: • Strict enforcement of machine operation protocols and operator training. • Regular routine machinery maintenance and inspections must be undertaken • Clear pathways for machinery and personnel must be established and delineated. • Personal Protective Equipment (PPE), such as high visibility clothing, gloves, safety boots, protective suits, respirators, fall arrest harnesses and hearing protection must be provided to all workers as needed, and its use mandated. • Protective measures must be provided for workers exposed to harsh weather, such as weather-resistant PPE and access to shelters. • Fall protection systems (e.g., guardrails, safety nets) must be installed • Worker training on working-at-height safety protocols must be provided. • Exclusion zones beneath elevated work areas must be established and enforced. • A lockout/tagout (LOTO) procedure will be developed and implemented that complies with the existing SRI LOTO procedures. • Safety briefings and awareness programs must be developed and provided to all workers. • Exclusion zones around energized areas will be established and enforced. • Protective structures (e.g., rockfall barriers, mesh netting, retaining walls) must be installed in erosion-prone or unstable slope areas, particularly near the tunnel portals. • Drainage control measures must be implemented to minimize soil erosion during and after construction. • Vegetation clearance will be limited to essential areas • A Utility Conflict Management Plan will be prepared as an Annex to the OHS Management Plan, including utility mapping, detection, and			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		risk mitigation procedures prior to any excavation or construction near underground or above-ground utilities. • Coordination with utility providers, especially for areas where high-voltage lines (10 kV, 35 kV, 110 kV) and the main gas pipeline (MOP 55 bar) are present is mandatory. • Utility zones must be marked with visible signage and physical barriers. • No-dig zones and alternative work methods must be enforced near high-risk utilities. • Emergency response training for utility-related incidents (e.g., gas leaks, electrical contact) must be provided to workers. • The Contractor must monitor noise and vibration levels experienced by workers, with thresholds enforced by the Supervision Engineer during regular inspections, with special attention during tunnelling works. • Mandatory rest breaks and vibration-reduction measures must be enforced. • Pre-construction site assessments must be conducted, especially asbestos assessments of buildings, by experienced specialists. • Asbestos Management Plans must be prepared before commencement of works on each building or structure containing asbestos materials. • Confined spaces hazard assessments, entry permits, and monitoring are mandatory for any confined spaces work. • Confined spaces safety training must be provided to all workers prior to them entering a confined space and emergency response protocols developed. • Fire prevention and response training must be provided to all • Fire suppression systems must be installed in all buildings and regular inspections of electrical equipment undertaken. • Training on manual handling and ergonomics must be included in the training program. • Mechanical aids, such as lifting equipment, must be incorporated into project plans. • Workstations must be optimized for ergonomic safety. • Contractor will be obliged for preparation of a Railway Interface Safety Management Plan, clearly outlining roles, safe access protocols, work windows, signalling coordination, and emergency procedures, time-restricted work windows, mandatory safety training, real-time communication protocol with railway traffic control			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		• Stress management training and a support program for workers must be provided. • Rotational shifts and manageable work hours must be included in workers contracts. • The Contractor shall implement daily review of forecast data and real-time weather conditions relevant to the construction site. • The HSE Officer must track weather alerts and advise on work scheduling. • Predefined thresholds for suspension or adjustment of high-risk activities under adverse conditions will be set, including lifting and hoisting operations during high winds, earthworks or excavation during heavy rainfall, electrical works during lightning or thunderstorms, extended outdoor work under heatwave or freezing conditions. • Regular maintenance of infrastructure must be undertaken to ensure it can withstand extreme weather impacts. The Contractor will also implement all other measures included in the Waste and Materials Management Plan, Emergency Preparedness and Response Plan, Construction Camp and Compound Management Plan and Workers' Accommodation Management Plan.			
26	Construction Camp and Compound Management Plan	• The Contractor will be responsible for the provision of utilities (water, electricity and plumbing), wastewater and waste management as well as telecommunications for all construction facilities, in accordance with applicable national requirements. • Suitable site drainage must be provided including collection tanks, cut-off valves, ditches or drains and sustainable drainage systems, or equivalent, with suitably sized treatment facilities such as settlement or detention basins. • In case of engagement of security personnel, the Contractor will conduct due diligence investigations for all security personnel to ensure they have the appropriate permits / licencing, training and experience. They will also be given training on site specific issues as set out in the Training Plan. • The Contractor will ensure that construction camps and compounds are cleared of all waste, materials and equipment following the completion of the construction works. • Upon completion, areas used as construction compounds and camps will be re-instated to their pre-construction condition. Handover documentation for land acquired temporarily will be produced and	• Preparation and Implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan,	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		shall be signed by the Contractor and landowner as a confirmation of satisfactory handover. • Workers' accommodation will meet the requirements set out in No 23.			
27	Construction Biodiversity Management Plan	The Contractor will prepare a Construction Biodiversity Management Plan prior to the commencement of construction activities; based on the requirements of, and mitigation measures included in the Biodiversity Management Plan developed as part of ESIA package for the Project and implement the Plan throughout the construction phase. The Plan is intended to be a live document and should be updated to reflect increased certainty regarding the Project programme and design, and any new information obtained during the pre-construction phase. The status of habitats and associated species populations must be monitored throughout land preparation and construction. Where necessary, habitat and species-specific mitigation measures will be developed and implemented with an adaptable management approach.	• Preparation and Implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan. • Supervision Engineer Biodiversity Supervisor confirmation that construction sites have been checked and cleared prior to access.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction.
28	Construction Air Quality and Dust Management Plan	The specified mitigation measures should be implemented within the relevant sensitivity zones, as indicated, at the following locations: **Highly Sensitive Zones (H)**: km 154.500 to km 155.700 and from km 156.000 to km156.500, from km 165.00 to km 165.500, from km 166.500 to km 168.000, from km 171.500 to km 173.000, from km 193.800 to km 194.300, from km 195.000 to km 196.500, from km 197.000 to km 198.700, from km 200.00 to km 201.000, from km 202.000 to km 204.000, from km 206.000 to km 211.000, from km 212.000 to km 2014.000, from km 216.700 to km 217.500, from km 219.000 to km 222.000, from km 224.000 to km 224.200, from km 227.000 to km 228.000, and from km229.000 to km 229.60 **Moderately Sensitive Zones (M):** For human receptors: from km 153.400 to km 154.500, from km 155.700 to km 156.000, from km 156.500 to km 159.300, from km 161.700 to km 162.000, from km 163.700 to km 164.000, from km 170.000 to km 171.500, from km 173.000 to km 174.500, from km 222.000 to km 224.000, from km 224.200 to km 227.000, from km 227.200 to km 229.000.). For sensitive ecological receptors: from km 222.000 to km 224.000, from km 224.200 to km 227.000, from km 227.200 to km 229.000. **Non-Sensitive Zones (N):** from km 159.300 to at km 161.700, from km 162.000 to at km 163.700, from km 164.000 to at km 165.000, from km	• Preparation and implementation – Contractor • Approval – PIU /Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		165.500 to at km 166.500, from km 168.000 to at km 170.500, from km 191.950 to at km 193.800, from km 194.300 to at km 195.000, from km 196.500 to at km 197.000, from km 198.700 to at km 200.000, from km 201.000 to at km 202.000, from km 204.000 to at km 206.000, from km 210.000 to at km 212.000, from km 214.000 to at km 216.700, from km 217.500 to at km 219.000. • **(H)** Siting of construction facilities and equipment (including concrete and asphalt batching plants, rock crushing plants, and construction camps) will be prohibited within 500 m of any residential area or sensitive receptor (school, hospital, church, etc.) and at least two kilometres from protected areas for biodiversity where possible. • **(H)** The siting of construction facilities and equipment must consider the prevailing wind direction. • **(H)** Truck-washing facilities must be provided at all construction sites to prevent the track-out of mud and dust. • **(H)** A community Grievance Mechanism must be maintained to track trends in air quality complaints and additional mitigation implemented where required. This will be incorporated into the Stakeholder Engagement Plan for the Project. • **(H, M, N)** The application of dust suppression measures, including water spaying, will be increased when activities with a high potential to produce dust are being carried out and/or during prolonged dry or windy conditions • **(H, M, N)** Sand and gravel materials need to be transported in covered trucks; vehicles transporting materials will not be overloaded • **(H)** Drop heights from conveyors will be minimised, loading shovels, hoppers and other loading or handling equipment and fine water sprays will be used on such equipment wherever appropriate • **(H, M, N)** Vehicle speeds on construction sites and access roads will be limited to 25 km per hour • **(H, M, N)** Machines and vehicles to be used for construction activities must have valid use/operation permits • **(H, M, N)** Machines and vehicles to be used in construction activities must be regularly maintained • **(H)** Vehicles and equipment that emit smoke will not be used for construction activities or delivering materials to site. • **(H, M, N)** High quality fossil fuels (with a low percentage of sulphur and lead) must be used as fuel for vehicles, machinery and equipment			

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		• **(H, M, N)** All vehicle operators will switch off engines when stationary – no idling vehicles. • **(H, M, N)** Equipment will be maintained to be readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods • **(H, M, N)** Bonfires and the burning of waste is prohibited on all construction sites • **(H)** Where practicable, the site will be fully enclosed with a dust screen where there is a high potential for dust production and the site is active for an extensive period • **(H, M)** Earthworks and exposed areas/soil stockpiles will be revegetated to stabilise surfaces as soon as practicable • **(H, M, N)** Mixing of large quantities of concrete and bentonite will be undertaken in enclosed or shielded areas • **(H, M, N)** Earth stockpile surface areas will be minimised to reduce area of surfaces exposed to wind pick-up • **(H, M)** Where practicable, stockpiles of soils and materials will be located as far as possible from sensitive properties, taking account of the prevailing wind direction • **(H)** During dry or windy weather, material stockpiles and exposed surfaces will be dampened down using a water spray to minimise the potential for wind pick-up • **(H)** Scabbling (roughening of concrete surfaces) will be avoided if possible • **(H, M)** Bulk cement and other fine powder materials will be delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery • **(H, M)** For smaller supplies of fine powder materials bags will be sealed after use and stored appropriately to prevent dust • **(H, M)** In case of demolition operations, effective dust suppression measures will be used to limit dust generation. • **(H, M)** Water-assisted dust sweeper(s) will be used regularly on access roads and local roads, to remove, as necessary, any material tracked out of the site. • **(H)** Dry sweeping of large areas will be avoided • **(H)** On-site haul routes will be regularly inspected for integrity and necessary repairs made to the surface as soon as reasonably practicable			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		• **(H, M, N)** The use of diesel or petrol-powered generators should be minimised whenever feasible, and cleaner alternatives such as mains electricity or battery-powered equipment should be used • **(H)** Any stationary emission sources (e.g., portable diesel generators, compressors, etc.) will be positioned as far as is practical from sensitive receptors • **(H)** Compaction of unpaved road surfaces should be undertaken where possible.			
29	Construction Noise and Vibration Management Plan	The Contractor will develop a Construction Noise and Vibration Management Plan, which will include the following measures to mitigate the negative impacts of railway construction in relation to increased levels of noise and vibration: • Construction working hours will be limited in line with national legislation on working hours/days and holidays. • Training of staff will be prepared and held, with aim of raising awareness of environmental protection, potential problems, solutions and good practices in order to avoid problems occurring; • Local resident will be informed of the planned works and the potential periods of disruption; • All construction equipment will comply with the requirements of EU Directive 2000/14/EC (must have CE marking); • All construction equipment and vehicles will be maintained in good working order; • Noisy construction equipment and equipment generating a lot of vibration will be located as far as possible from sensitive receptors; • Noisy construction equipment must be fitted with noise muffling devices that will reduce sound levels; • Internal construction access roads will be kept well maintained; • External construction access road should avoid passing near residential and other sensitive buildings, where possible; • Restriction of the maximum speed on the internal and external construction access roads; • Transport and construction management will be used to avoid the cumulative effects of noise and/or vibration along construction roads and/or construction site; • Avoid simultaneous use of equipment that generate a lot of noise and/or vibration;	• Preparation and implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction.

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		• Noisy construction works and/or the work that makes a lot of vibration near sensitive receptors will be organized in such a way that the exposure time is as short as possible (schedule and resource planning); • In case where noisy works need to be performed at night or during a longer period than one day in the vicinity of the sensitive objects, a temporary noise barrier shall be used around the working area • Low or non-vibratory piling equipment such as rotary or bored piling will be used; • The requirement for vibratory compaction and using static force compaction, such as smooth-wheeled or sheepsfoot rollers, will be reduced; • Selection of demolition methods not involving vibration impact, where is possible. • During construction, condition surveys of sensitive structures will be undertaken at least bi-monthly, and following the construction activities that generate a high level of vibration at specific location. • If required, crack gauges will be installed to enhance monitoring and construction methodologies will be refined to reduce vibration levels. • Condition surveys will be undertaken post construction, to identify any damage that needs to be repaired by the Contractor, in consultation with the affected people. • Compensate people for damages to structures caused by vibrations (comparison of pre and post construction results), at full replacement cost or repairs of damages. Before and during the Construction works, the Contractor should carry site inspection in order to ascertain information on the condition of the Site and the surrounding area, with regards to the construction works and their impact on the environment and the local population, with special regards to sensitive objects. In case of local residents' and workers' complaints during construction works, periodical measurement of noise and vibration shall be performed to determine whether the generated level exceeds permitted limit values, and by comparing the measurement results with the baseline data, the degree of impact of works.			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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30	Construction Water and Soil Management Plan	The Plan will include at least the following measures relating to Geohazards: • Rock scaling (removing loose and unstable rocks) should be performed along slopes and rock faces adjacent to the railway to reduce the chance of falling debris and ensure that only stable rock remains. • Install gravity retaining walls or anchored walls around areas like tunnel portals and steep cuts and embankments. For sections where space constraints exist, cantilevered walls can be employed to provide additional stability and prevent rockfalls. • In areas with deeper cuts, the sides of the cuts should be protected through appropriate stabilization measures, which may include retaining structures (such as retaining walls or gabions), anchoring systems, rockfall protection nets, drainage solutions, or revegetation techniques, depending on site-specific conditions. The selection of stabilization methods will be guided by the results of detailed geotechnical investigations. • Install rockfall barriers made from high-tensile mesh or rigid barriers to catch or deflect falling rocks, especially around the tunnel portals. • Deploy wire mesh over any exposed rock faces to prevent loose rock from falling. • At embankments reshape steep slopes to a gentler angle to reduce rockfall risk. • During excavation, use a progressive approach, removing material in stages to reduce the exposure of large areas of unstable rock, which can trigger rockfalls. • Use temporary coverings (such as tarps or mesh) to protect areas under active construction from rockfall until permanent stabilization methods can be applied. • Do not undertake unnecessary clearance of vegetation, especially in areas where it helps stabilize slopes. • Plan construction activities to avoid working during periods of heavy rainfall or stormy weather, which can increase the risk of rockfall due to surface water runoff and the destabilizing effect of wet soil and rock. • Ensure proper surface drainage is designed and implemented to divert water away from slopes, reducing water infiltration that could destabilize rock masses. • Surface water drainage systems must be installed around the railway line and tunnel portals, to direct water away from vulnerable slopes and gullies.	• Preparation and implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction.

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		• Limit the amount of vegetation clearance, especially in areas with steep slopes around the tunnel portals. Priority should be given to preserving vegetation to naturally reduce erosion risks. • Avoid excessive excavation or disruption of the soil structure in areas that are not directly needed for construction, particularly near the tunnel portals (entrance portal at km 192+010 to exit portal at km 192+830). • In addition to hydroseeding, directly seed or plant fast-growing vegetation, such as grasses or legumes, on disturbed areas to establish plant roots that will hold the soil together and reduce erosion risks. • Use native plant species to revegetate disturbed areas. These plants are well-suited to the local environment and will develop strong root systems that provide long-term stabilization. • Use temporary slope drains to redirect runoff water from the slopes and reduce erosion during the construction phase. • Schedule construction activities to avoid working in high-risk weather conditions (e.g., heavy rainfall) to reduce the likelihood of soil erosion • At the tunnel portals (at km 192+010 and at km 192+830). • Use geo-grids and geotextiles to reinforce the soil, improve slope stability, and reduce the potential for soil movement and erosion. • The front of the excavation on both sides of the tunnel must be built with a 5:1 slope and protected by a layer of reinforced shotcrete and system anchors. The slopes of the entrance and exit of the pre-section must be protected by a pile structure. • Use hydroseeding techniques to quickly establish vegetation over disturbed slopes at the tunnel portals. • Use erosion control mats (e.g., coir mats, jute mesh) or blankets to cover exposed soil around the tunnel portals. These materials protect against surface erosion, especially in areas with steep slopes or where vegetation is not yet established. • Install appropriate monitoring equipment such as inclinometers in the zone of the pile structure in the zone of tunnel portals (to monitor ground movements) Perform ongoing visual assessments of slopes to detect early signs of instability such as cracking, minor slips, or vegetation movement. • Vegetation should only be cleared to the extent necessary for construction activities, in order to retain root systems that contribute to natural slope stability.			

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		• Surface water drainage systems must be installed around the tunnel portals, to direct water away from vulnerable slopes and gullies. • Excavated soil and rock must not be stockpiled on or near natural slopes to avoid additional loading that could compromise stability. • Excessive excavation and shaping of slopes must be avoided; where reshaping is necessary, stable slope angles must be maintained. • If any signs of instability appear during construction, localized stabilization measures should be implemented, such as geotextiles, mesh, or temporary anchors The following specified mitigation measures relating to Soil should be implemented according to the relevant sensitivity of receptors, as indicated: **Very High Sensitivity Receptors (VH)**: The Dobrič-Nišava IBA-protected area, from km 220+315 to the end of Section 3. **High Sensitivity Receptors (H)**: Fertile agricultural soils, grasslands and forests. **Moderate Sensitivity Receptors (M)**: Urban Soils. In regard to soil quality: • **(VH, H, M)** Establish a Spill Response Team led by a Spill Response Coordinator to oversee spill containment and cleanup. • **(VH, H)** Respond to spills immediately to limit contamination. • **(VH, H, M)** Excavate contaminated soil carefully and store it in sealed containers to avoid further contamination. • **(VH, H)** Transport contaminated soil to licensed disposal sites equipped for hazardous waste. • **(VH, H)** Ensure proper chain of custody documentation for waste disposal and follow regulations for safe transport and handling. • **(VH, H)** Drip trays are to be placed beneath any stationary construction equipment to catch leaks of fuel/oil. • **(VH, H, M)** Appropriately and adequately stocked spill kits are to be available at all construction sites to clear up any accidental spills/leaks of fuel/oil/chemicals. • **(VH)** Work activities must immediately be interrupted in case of an uncontrolled spillage of fuel, engine oil, chemicals, etc., and remediation of the contaminated soil undertaken by removing the contaminated soil layer from the site to be further treated as hazardous waste and restoring the new soil layer.			

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		• **(VH, H)** No servicing, washing, or maintenance, re-fuelling of trucks and construction machines will be carried out on bare ground but in dedicated areas with impermeable surfaces. • **(VH)** Fuel must be stored in designated areas only, in double-skinned containers or tanks placed within a protected separation pit equipped with an oil-resistant cover. The volume of this pit must exceed the maximum capacity of the barrel/tank placed in the pit by at least 10% in case of leakage. • **(VH)** Hazardous liquids (including chemicals and oils) must be stored in designated hazardous materials storage areas only, in clearly labelled containers within secondary containment (110% of the volume of the container). • **(VH, H, M)** Waste must only be stored in designated areas on construction sites/camps with underlying impermeable surfaces and never on bare soil. • **(VH, H)** If monitoring indicates impacts, additional measures and revised plans will be implemented, including on-demand monitoring of heavy metals (Co, Ni) and soil quality in nearby agricultural fields for early contamination detection and remediation. • **(VH, H)** Minimize the areas where heavy machinery operates to reduce the extent of soil compaction. Define and clearly mark construction zones to avoid unnecessary disturbance. • **(VH H, M)** Construction access roads and designated areas for parking/turning of construction vehicles and machinery will be clearly delineated to minimise soil compaction. • **(VH, H)** Where possible, maintain existing vegetation or restore it after construction to protect the soil and reduce compaction. • **(VH)** Where feasible, employ lighter machinery or vehicles to reduce the pressure exerted on the soil, thus reducing the degree of compaction. • **(VH, H, M)** Topsoil stockpiles will be fenced to prevent access and compaction by Project vehicles. • **(M)** Implement soil aeration to alleviate surface compaction. This can be done through techniques like spiking or shallow tilling to improve water infiltration, root penetration, and microbial activity. In more severely compacted areas, use deep ripping to break up compacted layers deeper in the soil profile			

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		• **(VH)** After construction, where soil compaction has occurred, use soil aeration techniques, such as subsoiling or deep ploughing, to break up compacted layers and improve water infiltration. • **(VH, H)** Agricultural and forestry soils will be handled and stored separately, particularly distinguishing between topsoil and subsoils • **(VH, H M)** Areas cleared of vegetation, or of bare soil must be covered to prevent erosion and reinstated and revegetated immediately upon completion of the construction works, especially slopes, to stabilise the soil and minimise soil erosion. • **(VH, H)** Effective surface water drainage systems must be installed, especially on slopes, to prevent soil saturation and erosion from surface run-off. • **(VH, H, M**) Limit excavation through precise methods and controlled construction sequences to reduce soil disruption. • **(VH)** Reinforce soil with geogrids, soil nailing, or in-situ soil improvement techniques to enhance soil strength In regard to land use: • **(VH, H)** Ensure that access roads do not pass through sensitive land areas • **(VH, H)** Avoid prime agricultural lands within the IBA, and prioritize areas that are already disturbed or less fertile. Where agricultural land is affected, ensure compensation, relocation, or assistance to affected farmers. • **(VH)** Maintain buffer zones along rivers, streams, and wetlands to protect water quality and prevent siltation from construction activities. • **(VH, H, M)** Work with local authorities to plan for sustainable land use post-construction. • **(VH, H, M)** Establish revegetation programs to restore disturbed land. In regard to topsoil: • **(VH, H, M)** Store topsoil in designated, well-drained areas where it is shielded from wind and water erosion. Utilize temporary barriers like silt fences or windbreaks to minimize erosion risk. • **(VH, H, M)** If topsoil is to be stored for longer than 3 months, the soil must be turned at monthly intervals to aerate the soil.			

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		• **(VH, H, M)** During dry conditions, topsoil stockpiles must be watered to maintain moisture levels and preserve the soil's microbial life and fertility. • **(VH, H, M)** Avoid compaction of topsoil stockpiles by preventing encroachment by heavy machinery or equipment with fencing. • **(VH, H)** The top layer of soil will be removed (preferably in dry conditions) and stored separately to prevent mixing with sub-soil, until construction works are completed, • **(VH, H)** Topsoil stockpiles will be located at least 50 m distance from any watercourses to avoid water siltation. • **(VH, H, M)** Topsoil stockpiles should not be located adjacent to future planned excavations. • **(VH, H)** The height of the stockpiles should not exceed 2 m. • **(VH, H)** The gradient of topsoil stockpile slopes should not exceed 25º. • **(VH, H, M)** Topsoil stockpiles will be clearly labelled as such. • **(VH)** Topsoil stockpiles will be covered to avoid soil erosion where natural revegetation has not occurred. • **(VH, H, M)** Drainage channels will be installed around the base of topsoil stockpiles if required to direct run-off away from the stockpile. • **(VH)** Specifically designated areas for temporary stockpiling of excavated material to be reused or for spoil disposal must be identified that exclude sensitive biodiversity habitats, sloping areas, and river flood plains. • **(VH, H, M)** Excavated material must be re-used where possible. • **(VH, H, M)** Excess material that cannot be reused will be disposed of at a designated spoil disposal site only • The Plan will include at least the following measures relating to Surface Waters: • All vehicles and construction equipment will be well-maintained to prevent oil or fuel leakages. • Fuelling and maintenance of vehicles/equipment must be done on hard standing in designated areas with appropriate drainage, at least 100m from watercourses. • Washing and cleaning of vehicles must also be performed on specially designated, impermeable areas with closed drainage and wastewater treatment.			

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		• Concrete mixing and washing areas must be located more than 30m from any watercourse, and wastewater will be disposed off-site. • All temporary fuel tanks and fuel storage areas must be located at least 100m from surface water bodies and be double skinned. • All fuel/oil/chemical containers must be stored in a secured, covered area within secondary containment (110% of the container capacity). • Fuel-powered stationary equipment must have drip trays beneath to contain leaks. • The discharge of untreated wastewater effluent into surface water bodies is prohibited. • Treated wastewater discharges must comply with effluent quality standards and any licensing requirements. • The discharge of cement-contaminated water directly into surface waters is strictly prohibited. Wastewater from concrete batching will be collected in a dedicated tank on site and disposed of off-site by a licensed contractor • Concrete truck washout is prohibited unless specific concrete washout areas are provided on-site. These areas should be impermeable and emptied when 75% full. • Spill kits must be available at all construction sites to manage accidental spills/leaks of fuel/oil/chemicals. • Septic tanks must be made of impermeable material and emptied regularly by a licensed company. • Hazardous construction materials will be stored in special enclosed facilities with external cut-off drainage. No materials will be stored within 100m of a watercourse. • Drainage systems must be installed that direct runoff away from watercourses, including the retention basins, or permeable surfaces to treat and capture runoff. • Ensure proper maintenance of stormwater management systems to prevent clogging and ensure effective sedimentation control. • Stormwater drains and oil-water separators must be regularly serviced and maintained to ensure they remain effective and do not become blocked • Collection ponds to be constructed to regulate the flow of runoff into surface water bodies and to enable settlement of soil particles to minimize turbidity impacts.			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		• Soil stockpiles should be located a minimum of 30m from any watercourse and outside flood-risk areas and should be contained with bunds or sediment fences to prevent erosion • Use erosion control blankets or mats on exposed soils to stabilize them and prevent erosion. Specifically in relation to tunnel discharge water: • Water Treatment Before Discharge - Implement appropriate treatment systems such as sedimentation basins, filtration units, and chemical treatment to remove suspended solids, heavy metals, and other pollutants before discharging tunnel water into surface waters. • Sedimentation basins - must be properly sized based on expected flow rates and sediment loads, regularly maintained to remove accumulated sediments, and designed to handle variable flow conditions, including stormwater surges. The Plan will additionally include at least the following measures relating to Groundwaters: • Fuels and potentially hazardous construction materials will be stored in special enclosed facilities with external cut-off drainage. • Waste fuels and other fluid contaminants will be collected in leak-proof containers prior to removal from site to an approved processing facility. • Construction equipment will be regularly checked for oil and fuel leaks. • The discharge of untreated wastewater directly into or onto the ground is prohibited • Adequate portable toilets must be provided at construction site for workers • Site sanitary and drainage facilities must be properly operated and regularly maintained • Any Project septic tanks shall be made of impermeable material and will be emptied regularly by a licensed company for disposal. • Wastewater facilities must be established to collect/treat water draining from the Đunis tunnel during construction • Fuel storage and other chemical storage facilities should be located at least 30 meters from groundwater sources.			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		• Suitable construction site drainage system should be provided by the Contractor including cut-off valves, ditches or drains and sustainable drainage systems, or equivalent, with suitably sized treatment facilities. • If required by relevant authorities, oil separators should be used. • Use silt fences, sediment traps, and stabilize exposed soils quickly to reduce erosion. • Implement diversion channels, check dams, and maintain drainage systems to control runoff and sediment transport. • Suitable construction site drainage system including ditches or drains and sustainable drainage systems. • The maximum width of the work corridor will be clearly defined and limitations of haul routes for material supply will be strictly limited. • Any damage caused to ground and surface water infrastructure must be rectified. • Construction activities are prohibited within sensitive areas, particularly around wells and springs • Construction camps, machinery parking zones, spoil landfills, and storage sites should be located at least 100 meters from any sensitive zone • The temporary storage of construction materials should be restricted within 30 meters of groundwater recharge areas • Construction facilities are not allowed within identified groundwater sources • Activities that might increase the risk of contamination must be excluded from areas within 30 meters of sensitive water features • Site drainage systems: These manage both the containment of pollutants and stormwater runoff. • Oil-water separators and impermeable surfaces: Prevent both direct pollution and spread via runoff. • Zoning restrictions near water features: Help control both erosion and direct pollutant input. • Seal any open excavations that have created a pathway for groundwater flow. • The use of raft foundations and limiting the depths of piles or cut-off walls where possible to reduce aquifer penetration in high sensitivity zones. • Limit the area and duration of ground disturbance as far as possible to reduce the potential for groundwater contamination and disruption.			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		• If dewatering is necessary, use controlled and monitored methods (such as sump pumping with flow regulation, flow meters, and piezometric monitoring) to prevent excessive lowering of the groundwater table. The Contractor will also implement all other measures included in the River Crossing and Works Plan, Construction Emergency Preparedness and Response Plan, Construction Planting Management Plan, Construction Waste Management Plan and Biodiversity Management Plan.			
31	River Crossing and Works Plan	The Plan will include the control measures that must be implemented during construction works in or near surface water courses to avoid or minimise disturbance and/or erosion, or any change in the hydraulic regime, as well as other requirements that will be set in the Water Consent issued by the Ministry of Agriculture, Forestry and Water Management-Water Directorate: Measures will include (but not be limited to): • Foundation works for bridges and any other works adjacent to or within surface water bodies shall be conducted in periods of no or low flows as far as possible • Bridge pillars and support structures will be constructed that create the least resistance to water runoff, hydraulically shaped and parallel to river flow. • In case of deep erosion in the riverbank zone, technical solutions must be implemented to stabilize river flow upstream, downstream of the bridge, and along the riverbed. • Watercourses must be kept clear of obstructions and debris to reduce blockage risks (important for bridge underpasses to avoid hydraulic failure). • Minimize direct entry of vehicles to watercourses. Any vehicles that must enter watercourses must be inspected, and remedial measures taken to prevent oil/fuel contamination (especially relevant during bridge works over rivers. • If the riverbed is to be disturbed, work must be avoided during fish spawning and hatching periods, to be agreed with nature protection authorities. • Incorporate habitat-enhancing features into the concrete-lined channel, such as embedded natural substrate pockets, roughness elements (e.g., boulders or artificial riffles), and low-flow meanders, to mimic some ecological functions of a natural riverbed.	• Preparation and implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		• Re-establish native riparian vegetation on affected banks to restore their natural morphology and prevent further erosion. • Vegetation clearance on riverbank areas must be minimized. Where necessary, it will be done just before work commences, in agreement with relevant authorities. • Limit the extraction of material from watercourses to the minimum necessary extent, and prioritize the reuse of excavated material within the project area for ecological or structural purposes (e.g., bank stabilization, creation of habitat features). • Minimize the creation of steep slopes and large exposed areas near rivers to prevent destabilization and erosion. • Store the natural riverbed material during the construction phase and keep it clean. When construction is complete use the stored bed material to restore the riverbed; • Restore any affected banks by re-establishing native riparian vegetation.			
32	Construction Waste and Materials Management Plan	The Contractor must prepare a Construction Waste and Materials Management Plan that complies with all applicable Serbian Regulations, including: • Regulations on the manner and procedure of construction and demolition waste management ("Official Gazette of RS", no. 93/2023 and 94 of 30/2023). • Any removal of waste from site will be done by licensed sub-contractors in compliance to the Serbian regulatory requirements on transfer, treatment and disposal of waste and accompanied with appropriate documentation in compliance with the Regulations on the Form Document, Chain Custody of Waste and Instructions for Filling ("Official Gazette of RS", No. 114/2013) or with Rules on the Form of the Document Chain Custody of Hazardous Wastes and Instructions for Filling it ("Official Gazette of RS", No. 17/2017); • The contractor will categorize waste generated in accordance with the Regulation on categories, testing and classification of waste ("Official Gazette of the RS", no. 56/2010, 93/2019 and 39 of 21/2021); • Waste rails, including iron and steel, must be handed over to an authorized operator in compliance with the Law on Waste Management ("Official Gazette of RS", Nos. 36/09, 88/10,14/16, 95/18 and 35/23).	• Preparation and implementation – Contractor • Approval – PIU / Supervision Engineer	• Records maintained on the volumes of waste generated and disposed of/recycled by waste type, and Waste Transfer Notes. • Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		Additionally, the Plan should include the following measures in relation to waste management: • The majority of excavated material that will be generated must be reused, if suitable, either as engineering fill material or in the environmental mitigation earthworks of the project. • Opportunities must be sought for the appropriate utilisation of surplus excavation material or material not suitable as engineering fill, e.g. regional construction projects, flood protection, etc. • Decommissioned rails must be stored prior to disposal in a designated area with the following measures: o Impermeable surfaces: use of concrete pads or similar impermeable bases to prevent contamination migration into soil and groundwater. o Containment systems: Include bunds or barriers around storage areas to capture runoff. • An immediate spill response protocol must be developed to address the accidental spillages of hazardous liquid waste and included in the Construction Waste Management Plan. • Material Safety Data Sheets must be provided and easily available wherever hazardous waste is being stored. • Hazardous waste storage areas to be clearly labelled as such, well lit and ventilated, have an impermeable floor, be covered and lockable and hazardous waste containers to be clearly labelled. • Liquid waste to be stored in leak-proof, sealed containers. • Adequate secondary containment (110% of the volume of the container) to be provided for any hazardous liquid wastes • Waste to be segregated at source to facilitate re-use and recycling. • Security arrangements to be put in place to prevent unauthorised railway sleeper acquisition by locals. • Recyclable waste streams to be collected/stored in dedicated, separate containers, clearly labelled as to their contents (e.g. paper, wood, metal, glass, plastic). • The open burning of waste materials is strictly prohibited. • Detailed plans to be developed for the routing of traffic transporting waste in order to minimise impacts on communities. • Engagement with affected communities to be undertaken to inform them of construction waste management arrangements and gather feedback on potential siting concerns.			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		• Temporary waste storage areas must be adequately fenced to provide a visual barrier and to prevent unauthorised possession of dismantled sleepers by locals as construction materials. • Adequate waste containment must be provided to prevent loose/windblown waste migration and odour. In relation to materials consumption and supply chains: • Source materials locally to minimize transportation impacts and support local economies, thereby reducing the carbon footprint associated with material transport. • Implement design strategies that minimize material use, such as optimizing structural designs and using advanced modeling techniques to reduce waste. • Utilize modular construction techniques that allow for prefabrication and reduce on-site waste generation. These include Track Panels (preassembled track sections including rails and sleepers, transported and laid in segments), Bridge and Culvert Components (prefabricated concrete or steel structures for quick installation), Signalling and Control Systems (prewired and pretested control units and signal cabins), and Utility Ducts and Cable Troughs (manufactured off-site and installed rapidly).			
33	Construction Spoil Management Plan	A Construction Spoil Management Plan will be developed that will include: • A spoil/material calculations/balance. • Details of where and how excavated materials will be stored or temporarily stockpiled for reuse or disposed of. • Details of the intended final (re)uses of excavated soil and materials, with a clear distinction between excavated soil and materials to be reused for construction purposes, and excavated soil and material that are surplus to requirements or unsuitable for reuse in fill and embankments. Additionally, the Plan will include the following measures: • Disposal of contaminated spoil will be undertaken in accordance with hazardous waste regulations, including by using licensed facilities that can handle and treat contaminated material. • Spoil stockpiles will be designed to minimise soil quality degradation, and loss of material. Measures to consider include the stockpile	• Preparation and implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction. • Spoil stored, reused or disposed of in accordance with legal requirements and good international practice.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		location, soil type and condition, prevention of erosion and leachate generation and use of appropriate signage. • Drainage from higher areas will be diverted around stockpile areas to prevent erosion. • During dry or windy weather, stockpiles will be dampened down using a water spray to minimise the potential for wind pick-up. • Spoil storage/disposal areas will be secured with barriers and signage to prevent unauthorized access, especially by children or other vulnerable populations. • Detailed records of all spoil management activities will be kept, including quantities of materials generated, stored, reused, and disposed of, as well as any incidents of erosion, contamination, or other environmental impacts. • Open lines of communication with the community and other relevant stakeholders about spoil management activities and any changes to the Plan will be maintained.			
34	Construction Planting Management Plan	The Contractor will develop a Construction Planting Management Plan to cover landscaping and revegetation actions required to reinstate construction sites/facilities to their pre-construction condition and the requirements of the Biodiversity Management Plan. Landscape and Visual Management Plan, Emergency Preparedness and Response, River Crossing and Works, and Water and Soil Management Plans with regard to planting. The Plan will include at least the following measures: • Planting activities will be implemented where possible during the construction phase, before completion of construction works • The number of trees planted / compensated for will be in accordance with national legislation, EU Directives and the opinion of the Ministry of Agriculture, Forestry and Water Economy, Directorate for Forestry, as well as opinion of the Public Company Srbijasume. • The Plan will outline the requirements for establishing and maintaining vegetation in the Project area, especially for reinstating habitats to their pre-construction condition after the completion of construction works. Species types, density and the number of plants for shrub and tree planting, as well as seed mixes, quantity and sowing rates for seed mixes (such as grass or wildflower) will be defined; • Vegetation around the entrances to underpasses and overpasses will be linked to natural vegetation by low shrubs or herbaceous vegetation;	• Preparation and implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		the entrances will be covered by natural soils, where possible and the use concrete will be minimised. • Replacement tree planting / woodland planting will be carried out within disturbed areas noted as being subject to loss. This replacement planting will be located as close to the area of loss as practicable; • Planting measures will be designed to provide enhancement to local landscape character; • Planting measures will be designed to provide connectivity within the wider landscape where possible. • Planting should make use of species of local/regional provenance • Compensatory planting for ecological habitats lost to ensure net gain of sensitive habitats will need to be approved as part of the overall planting plan approval process • Landscape plans, including proposed habitat creation areas and species lists will be agreed with the relevant Contractor Ecology Clerk of Works, Supervising Engineer Biodiversity Supervisor and PIU Biodiversity Expert.			
35	Construction Cultural Heritage Management Plan including a Chance Finds Procedure	• Develop and implement a Chance Finds Procedure, including the immediate cessation of works and notification of the relevant cultural heritage authorities in the event of a discovery, provision of an on-site chance finds storage area for the temporary storage of any moveable chance finds that is lockable with restricted access, identification of a suitable archival institution (such as a museum) where any chance finds will be transferred, and protocols for the handling and cataloguing of moveable chance finds. • Construction-related infrastructure should not be located in proximity to any known cultural heritage assets or areas of sensitivity, including those identified in the ESIA process as listed below: 1. Cultural Monument: the Building at Branka Krsmanovića 47 street' in Paraćin – National library Dr Vićentije Rakić 2. Supovac Tower. Specifically: o The Contractor will establish construction camps, access roads and construction traffic routes, laydown areas, borrow pits, waste and materials storage, vehicle parking and spoil disposal sites away from identified cultural heritage sites, if possible. If this is not possible, the Contractor will define a specific set of measures for the	• Preparation / Implementation – Contractor • Liaison with the Institute for Protection of Cultural Monuments in Kragujevac and Niš • Approval – Responsible Institute for Protection of Cultural Monuments in Kragujevac and Niš and PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		protection of each cultural heritage site that could be affected. o If there is an immediate threat of damage to a known cultural monument, the competent institution for the protection of cultural monuments may temporarily suspend work until archaeological research is conducted based on the Law on Cultural Heritage ("Official Gazette of the RS, No. 52/11, 99/11, 6/20, 35/21, 129/21, and 76/23). o The Contractor will liaise with the Institute for Protection of Cultural Monuments in Kragujevac and Niš during the preparation of the Cultural Heritage Management Plan and the Main Design and will send these to the Institutes prior to the commencement of construction. Should the Institutes require additional mitigation measures, the Contractor shall revise the Cultural Heritage Management Plan to include such measures. Any substantial changes in the Project design will require the issuing of a new official opinion by the Institute. o There must be no start up or shutdown of vibratory plant within 50m of cultural heritage assets. o Pre-construction condition surveys of the 2 cultural heritage assets listed above will be undertaken by an independent surveyor to visually identify and document (with a written record and photographs) all existing signs of exterior damage, cracks (including size, type and direction) and settlement before construction takes place. This will provide a record of the existing condition of the asset, against which any change due to the construction activities can be monitored during the construction phase. Post-construction condition surveys will also be undertaken post construction, to identify any damage that needs to be rectified by the Contractor, in consultation with the site owner and the responsible institute. • Cultural Heritage management and chance finds will be included as part of the Induction Briefing for all Project workers. Additionally, the Contractor SEOs will carry out specific training to sensitise the			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		workforce to the possibility of chance finds, to raise competency and awareness of how to recognise a chance find, and on the requirements of the Chance Finds Procedure.			
36	Construction Labour, Employment, and Local Procurement Plan	• The Contractor will, to the extent possible, employ local workers by giving preference to suitably qualified and experienced applicants from local communities; in close proximity to the Project, and will cooperate with the local National Employment Service to facilitate the employment of unemployed people. The Plan will include: • Details of employment opportunities for locals; how employment opportunities will be advertised locally; the recruitment process, which will be transparent and fair, non-discriminatory and provide equal opportunities for both men and women; the training opportunities that will be provided for graduates and employees on technical, health and safety and manual work where suitable. • A requirement for all workers (including sub-contractors) to have signed employment contracts in place prior to them commencing work, and that these contracts are in line with national legislation, applicable ILO standards, EBRD PR2 and EIB ESS 8. • The named Contractor manager with responsibility for labour issues – including those in relation to sub-contractors and labour agencies and a labour officer as defined in Section 3.4. • Cross reference to a documented Human Resources Policy including the Contractors' policy on equal opportunities and how the contractor will ensure equal remuneration for men and women for work of equal value, which will be communicated to workers and which workers have access to. • Procedures for enhancing staff skills, including regular, documented training with clear objectives. • Details of how the Contractor maintains regular contact with trade unions or, in their absence, other workers' representatives • The confidential worker grievance and dispute resolution process • Policies on the recruitment and treatment of migrant workers by subcontractors and labour agencies, including prohibiting charging workers recruitment fees and employer retention of worker identity documents • That the Contractor adheres to a Workers Code of Conduct and includes the requirement for workers to comply with this Code in their employment contracts.	• Preparation / Implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan. • Semi-annul independent Labour Audit by specialised labour expert in the Supervision Engineer's team	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction. • Plan fully implemented by the Contractor and any Sub-Contractors.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		• That the Contractor will require contractual conditions that obligate Sub-Contractors and labour providers to comply with national legislation, EBRD PR2 and EIB ESS 8, and the Workers Code of Conduct. • Details of the process of regular review of performance on labour issues and how the Contractor will co-operate with other parties in the construction sector to identify areas of concern and seek solutions. • A Local Procurement Plan that will prioritise the procurement local goods and services to the extent possible. This will include that upcoming procurement opportunities will be announced to local communities; so that local people and businesses can plan, prepare and offer goods and services as and when they become needed.			
37	Construction Emergency Preparedness and Response Plan, incorporating a Major Spill Response Plan	This Plan will: • Set out applicable Serbian and EU policies, laws and standards related to emergency preparedness and response. • Define emergency roles and responsibilities, including designated emergency response personnel and first responders. • Define emergency communication protocols, including emergency contact lists, notification procedures, and on-site alert systems such as alarms and radios. • Define clear rescue and evacuation procedures for construction sites (including the requirement for prominently marked escape routes, designated emergency assembly points), and protocols for rescue/evacuation from tunnels or confined spaces. • Identify potential emergencies based on a hazard assessment process, expected to include (but not be limited to) gas main explosion, striking high voltage cables or overhead power lines, collapse of earthworks, slope failure, landslides, flooding, extreme weather, wildfires, earthquake, tunnel failure, fire/incident within the tunnel. • Define procedures to shut down equipment in the event of an emergency. • Include a list of and the location of emergency response equipment (firefighting, spill response, first aid kits, personal protection equipment for emergency response teams). • Include protocols for the use of emergency equipment and facilities. • Set out a schedule for the periodic inspection, testing and maintenance of emergency equipment.	• Preparation and implementation – Contractor • Approval – PIU / Supervision Engineer	• Records of emergencies that occurred on the construction site and the response that was implemented. • Contractor and Supervision Engineer to prepare monthly reports for the PIU including statistics on emergencies, the response that was taken, and any investigations undertaken as a result (where relevant)	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction. • Emergency drills conducted according to the schedule. • All workers trained on emergency response. • Any emergencies responded to effectively.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		• Define the training requirements and schedule for emergency preparedness and response. • Define the procedure for recovery and review after emergency situations. • Define the procedures for periodic review and update of the Emergency Preparedness and Response Plan. • Define the Procedures for and frequency of emergency drills to be undertaken. • Define the Procedures for the immediate isolation of affected power circuits • Outline first aid arrangements, including trained personnel, locations of first aid kits and medical supplies, and coordination mechanisms with local medical facilities in Paraćin, Aleksinac, Niš, and surrounding areas. • Provide emergency contacts and define communication protocols with communities when necessary, and procedures for interaction with local government authorities, medical facilities and emergency services. • Include scenario-based emergency procedures addressing incidents such as fire, explosion, electrocution, hazardous material spills, equipment failure, tunnel collapse, or worker injuries at height. Specifically, the Plan will include the following mitigation measures: • Prior to any excavation works, obtain and verify accurate maps of underground gas pipelines from relevant authorities and utilities. • Conduct on-site detection surveys to confirm the exact location and depth of gas pipelines. • Clearly mark the location of gas pipelines on-site using visible signage and barriers. • Establish safe buffer zones around identified gas pipelines, prohibiting the use of heavy machinery within these zones unless supervised excavation methods are employed. • Train construction workers on the risks associated with working near gas pipelines and on emergency procedures. • Implement Permit-to-Work systems for any excavation activities within gas pipeline corridors. • Maintain continuous communication and coordination with gas pipeline operators during construction activities near pipelines			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		• Conduct detailed surveys using modern cable detection equipment (e.g., Ground Penetrating Radar, electromagnetic locators) prior to any excavation activities. • Verify the location and depth of underground cables based on as-built drawings and site investigations. • Clearly mark identified underground cable routes and overhead power line zones with visible signage and physical barriers where necessary. • Establish safe working distances from high voltage infrastructure in accordance with national and international safety standards. • Train construction workers on risks associated with working near electrical infrastructure and emergency response procedures in the event of cable strikes. • Implement a Permit-to-Work system for excavation works in proximity to high voltage cables. • Install additional mechanical protection for existing cables at critical crossing points (e.g., roadways, railway crossings) where accidental damage risk is higher. • Limit the movement of heavy machinery by designating specific access routes, parking, and turning areas to avoid soil destabilisation. • Design and implement adequate surface water drainage systems, including the construction of drainage channels, to minimise water infiltration and soil erosion. • Install inclinometers and other ground movement monitoring devices at critical locations to enable early detection of slope instability. • Stabilise excavations through appropriate engineering methods such as temporary shoring, benching, or the use of retaining structures where required. • Perform all excavation activities in accordance with applicable technical regulations, project documentation, and good engineering practices. • Ensure that all final excavation surfaces are shaped and finished according to project specifications and designed stable slope angles. • Incorporate the findings and recommendations of the seismic hazard study when excavating near platform foundations, ensuring foundations are placed in stable soil layers. • Continuously monitor groundwater levels and earthwork stability throughout the construction phase, using prediction measurements and real-time observations to detect any changes in ground conditions.			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		• Conduct regular geotechnical inspections of embankments, cuttings, and slopes during operation, including both visual checks and instrument-based monitoring where appropriate. • Implement vegetation control on embankments and slopes to prevent deep root penetration and to maintain surface integrity, while balancing erosion control and ecological needs. • Establish standard emergency response procedures in the event of observed slope failure (e.g. immediate service suspension, rerouting, notification of authorities). • Equip construction sites with fire detection, alarm, and firefighting equipment appropriate to the scale and use of the premises, and ensure all equipment is regularly inspected and maintained. • Provide manual firefighting equipment that is easily accessible and simple to use by site personnel. • Establish early warning systems for extreme weather events (e.g., flooding, high winds, wildfires) and ensure that site management teams are trained to respond appropriately to warnings. • Train managerial staff and emergency coordinators in disaster response and evacuation procedures tailored to climate-related risks. • Conduct regular public awareness campaigns for local communities on personal safety measures during extreme weather events, using clear and practical information channels (e.g., information boards, community meetings, local media). • Implement real-time monitoring of weather conditions during critical construction activities to enable proactive decision-making and timely suspension of works when severe conditions are forecasted. • Undertake detailed geotechnical investigations prior to excavation and continuously update geotechnical assessments based on actual ground conditions encountered during construction. • Apply appropriate tunnel excavation methods (e.g., New Austrian Tunnelling Method - NATM or other best practices) based on soil and rock stability conditions. • Install temporary and permanent support systems (e.g., rock bolts, shotcrete, steel ribs) as required to ensure tunnel stability. • Implement continuous ground and tunnel structure monitoring using inclinometers, extensometers, and convergence monitoring systems to detect ground movement and structural deformation early.			

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		The Contractor shall review the Plan after any emergency situation or training exercise and update it as necessary, to ensure its continual improvement.			
38	Training Plan	A Training Plan will be prepared for all personnel and workers on the Project. The Plan will include details of training programs covering all ESHS risks and impacts, and measures defined in the CESMP as well as individual Management Plans as defined earlier in this table. The Training Plan will include, but not be limited to: • Applicable HR policy provisions and procedures, • Worker Grievance Mechanism, • Construction Workers' Code of Conduct, with emphasis on provisions intended to combat gender-based violence and harassment. • Protection of known cultural heritage and chance finds, • Emergency preparedness and response, • Occupational Health and Safety • Community Health and Safety • Traffic Safety • Waste and Materials management • Environmental protection, and • Important/protected species and habitats and their identification (including avoidance zones), as well and guidelines for their preservation and actions to be taken if they are encountered during construction activities. All workers will be required to undertake a construction site induction before commencing any physical work. This will cover the safety rules and controls in place on site, hazards that workers might be exposed to, how to work safely on site and how to evacuate the site in the event of an emergency. Regular toolbox talks will be delivered covering environmental, social and health and safety issues applicable to the Project, or specific relevant construction activities. Following any emergency situation, the Contractor is obliged to repeat Emergency Preparedness and Response training, as a refresher and to explain	• Preparation and implementation – Contractor • Approval – PIU / Supervision Engineer	• Records of training delivered • Contractor to prepare monthly reports for the PIU including the status of delivery of the Training Plan.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction. • Training delivered in accordance with the training plan. Records kept on file.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		any updates in process/procedures as a result of investigations into the emergency. Refresher training on all ESHS issues will be provided by the Contractor periodically, or following an incident, to ensure all workers are up to date on relevant requirements.			
39	Construction Monitoring Plan	The Contractor will develop a detailed Construction Monitoring Plan in line with the requirements set out in the ESIA, this document and the CESMP. This Plan will include details of regular environmental and social monitoring to be performed during the construction phase. It will specify the locations where sampling should be performed, the parameters to be measured, and the frequency of sampling/measuring. The Plan will also outline the procedure to be followed in case of exceedances of applicable threshold limit values. For details see Appendix 1	• Preparation and implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on the status of performance against threshold limit values.	• Plan approved by PIU /Supervision Engineer prior to the commencement of construction. • Records of monitoring completed, and results shared with Supervising Engineer and PIU.
40	Stakeholder Engagement	• SRI to cooperate with local self-governments and other stakeholders to support the organisation of local road transport services in villages, coordinated with train arrivals and departures at the nearest stations, by: • At the start of construction, SRI to establish and chair a coordination group, comprising representatives of Paraćin, Ćićevac, Aleksinac and the city of Niš who will work on preparing local transport services adjusted to train transport. Include representatives of Serbia Train who will be defining future train schedules and a representative of the MCTI to provide support to the process and ensure cooperation with other relevant ministries. • SRI to organise quarterly meetings of the coordination group during construction, to discuss what settlements need to be included in local transport services, the capacity of local self governments to organise transport, potential cooperation between bordering self governments to collect passengers from their territories, etc. • SRI to ensure that draft plans for the organisation of local transport services are presented to local communities along the railway line and that their feedback is taken into account to adjust plans, to the extent possible.	• PIU / SRI • MCTI	PIU	• Communities near railway have organised road transport services coordinated with train arrivals and departures at nearest stations.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		• SRI to invite representatives of the MCTI and/or other ministries, as needed to provide support to local self-governments who do not have the capacity to organise local transport. For example, at the time of developing this study, the Ministry for Rural Welfare, is allocating minibuses to local self- governments in need of such support. • SRI to ensure that all local transport information relevant for train transport (e.g. bus schedules and how they correspond to train schedules) is available in local communities, at train stations, on the SRI and municipal websites, in local media, etc. • SRI to establish cooperation with Serbia Train on responding to grievances in connection to this topic and monitor how these grievances are being addressed. • During operation, SRI to continue to engage with local self-governments and Serbia Train to monitor whether transport services are adequate and raise any concerns that must be addressed to enhance services. Involve MCTI for support, as needed.			
41	Construction Contractor's Grievance Management Plan	The Contractor Grievance Management Plan muts be fully aligned with the SRI Grievance Mechanism outlined in the SEP. This Planmust cover both community and workers grievances. The Plan must include: • Clear roles and responsibilities relating to the management of community, and workers, grievances. • Details of all the channels by which grievances can be raised (e.g. dedicated collection boxes placed at construction offices/sites and worker accommodation camps, the provision of printed forms, dedicated email addresses and phone numbers). • A mechanism for grievances to be raised anonymously (especially by workers). • Assurances that workers will not be penalized for raising complaints/concerns. • Protocols for registering and tracking, resolving, and reporting on external grievances in coordination with SRI and the Supervision Engineer Social Specialist.	• Preparation and implementation – Contractor • Approval – PIU / Supervision Engineer	• Contractor and Supervision Engineer to prepare monthly reports for the PIU on performance relating to this Plan, including statistics on complaints received.	• Any community grievances received by the Contractor shared with SRI. • All construction activity related community grievances resolved by the Contractor in accordance with the Plan. • All workers grievances resolved by the Contractor in accordance with the Plan.

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
			Preparation/ Implementation/Approval	Monitoring	
		• Protocols for registering and tracking, resolving, and reporting on workers grievances (within defined time frames). • Protocols for addressing workers grievances related to GBVH. • In order to comply with the Grievance Mechanism outlined in the SEP, the Contractor will implement the following measures in relation to community grievances: • Place boxes for the receipt of complaint forms in construction camps and at the on-site office. • Provide complaint forms at all construction sites and ensure they are publicly available at all times. • Ensure individuals are trained and available to explain the grievance mechanism to concerned citizens. • Share immediately all grievances received with Supervision Engineer and SRI to ensure timely action and full coordination regarding their resolution • Address any grievances in relation to construction activities as required. • Develop specific protocols on how to address community grievances related to GBVH. •			
42	Landscape and Visual Management Plan	The contractor will: • Install and maintain appropriate erosion control systems (e.g., silt fences, straw bales, erosion control blankets) in areas of disturbed soil, particularly on slopes, to prevent sediment runoff and maintain the natural form of the landscape. Minimise modifications to the natural landscape wherever feasible. • Confine construction materials, waste, and equipment within clearly defined and secured work zones. • Install temporary visual barriers (e.g., fencing, screening fabric) that are neutral in colour and visually unobtrusive, especially near residential zones, and protected landscape areas. • Manage temporary visual impacts through site organisation. Clearly organise equipment, storage areas, and waste zones to preserve the	• Preparation: Contractor • Approval: PIU/ Landscape architect.	PIU /Supervision Landscape Architect.	• No evidence of sediment runoff in surrounding areas • No unauthorised waste/materials outside defined zones • Approved design solutions that effectively mitigate visual impacts. • Community feedback addressed and

No.	Topic	Recommended minimum mitigation/control and enhancement measures	Responsibility		Target/Indicator
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		aesthetic quality of the surrounding environment during all construction phases. • Apply dust suppression techniques (e.g., regular water spraying, covering of materials and transport vehicles) to prevent dust from affecting visual quality and surrounding vegetation. • Where the alignment passes through urban, residential, or visually sensitive areas, install visually appropriate fencing or screening elements. These should be designed to blend into the surroundings in terms of material, form, and colour. • Restore all temporary construction areas upon completion of works by regrading, replacing topsoil, and implementing a native vegetation planting scheme. • Engage with local communities: Conduct public consultations to gather input on visual and landscape impacts, especially noise barrier design, and adjust designs based on community feedback.			incorporated into the design.

7. OPERATIONAL ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
SRI (Operation)					
1.	Development of an Operation Environmental and Social Management Plan (OESMP)	SRI will develop and implement an OESMP. The OESMP will incorporate the SRI's existing operational Plans and Procedures as relevant and will also define any additional ESHS processes, procedures and mitigation measures that must be implemented to avoid or limit ESHS risks and impacts during Project operation and maintenance. This will include the requirements of regulatory permits, approvals, licenses, applicable Lenders' standards and national legislative requirements.	• Preparation and implementation – SRI • Approval – PIU	• PIU	• OESMP developed and approved prior to commencement of the operation phase
2.	Development of OESMP Sub-Plans	Prior to operation and as part of the OESMP, SRI will prepare the following Sub-Plans: • Operational Biodiversity Management Plan • Operational Air Quality Management Plan • Operational Noise and Vibration Management Plan • Operational Water and Soil Management Plan • Operational Waste Management Plan • Operational Maintenance Plan • Operational Occupational Health and Safety Plan; • Operational Community Health, Safety and Security Plan • Operational Cultural Heritage Management Plan • Operational Emergency Preparedness and Response Plan • Gender Plan • Contractor Management Plan.	• Preparation and implementation – SRI • Approval – PIU, representatives of relevant SRI sectors and SRI management	• PIU	• Plans developed and approved prior to commencement of the operation phase
3	Operational Biodiversity Management Plan	SRI will develop and implement an Operational Biodiversity Management Plan based on the requirements of, and mitigation measures included in, the Biodiversity Management Plan developed as part of the ESIA Package for the Project and implement the Plan throughout the operation phase. The Plan will cover actions to safeguard and conserve biodiversity that could be affected by the railway operation.	• Preparation and implementation – SRI or Contractor • Approval – PIU, representatives of relevant SRI sectors and SRI	• PIU	• Plans developed and approved prior to commencement of the operation phase.

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
			management, and Lenders		
4.	Operational Air Quality Management Plan	The specified mitigation measures should be implemented within the relevant sensitivity zones, as indicated, at the following locations: **Highly Sensitive Zones (H):** km 154.500 to km 155.700 and from km 156.000 to km156.500, from km 165.00 to km 165.500, from km 166.500 to km 168.000, from km 171.500 to km 173.000, from km 193.800 to km 194.300, from km 195.000 to km 196.500, from km 197.000 to km 198.700, from km 200.00 to km 201.000, from km 202.000 to km 204.000, from km 206.000 to km 211.000, from km 212.000 to km 2014.000, from km 216.700 to km 217.500, from km 219.000 to km 222.000, from km 224.000 to km 224.200, from km 227.000 to km 228.000, and from km229.000 to km 229.60 **Moderately Sensitive Zones (M):** For human receptors: from km 153.400 to km 154.500, from km 155.700 to km 156.000, from km 156.500 to km 159.300, from km 161.700 to km 162.000, from km 163.700 to km 164.000, from km 170.000 to km 171.500, from km 173.000 to km 174.500, from km 222.000 to km 224.000, from km 224.200 to km 227.000, from km 227.200 to km 229.000.). For sensitive ecological receptors: from km 222.000 to km 224.000, from km 224.200 to km 227.000, from km 227.200 to km 229.000. • **(H)** Maintenance and reconstruction works should be carried out during specific weather conditions that minimize dust dispersion, such as periods of low wind speed, high humidity, or after rainfall, in order to limit the spread of dust; • **(H, M)** Sand and gravel materials must be transported in covered trucks; • **(H, M)** Maintenance vehicles must obey all speed limits. • **(H, M)** Maintenance machines and vehicles to must have valid use/operation permits; • **(H, M)** Maintenance machines and vehicles must be regularly maintained; • **(H, M)** High quality fossil fuels (with a low percentage of sulphur and lead) must be used as fuel for vehicles, machinery and equipment; • **(H, M)** All vehicle operators will switch off engines when stationary – no idling vehicles. • **(H, M)** Bonfires and the burning of waste will be prohibited; • **(H, M)** In case of demolition operations, effective water suppression measures will be used to limit dust generation.	• Preparation and implementation – SRI or Contractor • Approval – PIU, representatives of relevant SRI sectors and SRI management	• PIU	• Plan developed and approved prior to commencement of the operation phase • Number of air quality complaints received

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• **(H, M)** Regular maintenance and inspection of brake systems on trains should be undertaken to ensure they are functioning efficiently • **(H)** Planting should be maintained along railway corridors to minimise the distribution of particulate matter from rail and train brake wear.			
5.	Operational Noise and Vibration Management Plan	The SRI will develop an Operational Noise and Vibration Management Plan to prevent or minimise negative noise and vibration impacts along the railway alignment during Project operation. The Plan will include the following measures: • Noise monitoring shall be performed at least annually in the zones of residential and other sensitive buildings located in the immediate vicinity of the railway. In selecting the measuring points, the following shall be included: o structures that were not considered affected during calculations, o structures protected with noise barriers and o structures protected by applying passive protection measures. • Measuring points representative of the analysed area shall be selected, but in case of justified complaints of local population, the number of measuring points can be increased. Parameters of environmental noise levels that are to be monitored are as follows: o Equivalent noise level LAeq,T [dB], o Referent noise level LRaeq,T [dB] and o Residual noise level [dB]. • The noise barrier characteristics shall be inspected at least once every five years. Control shall be performed in accordance with: ISO 10847, EN 16272-4, SRPS CEN/TS 16272-5, SRPS EN 16272-6 and SRPS CEN/TS 16272-7; • Visual inspections of noise barriers shall be carried out at least annually. Inspections may be performed on a selected sample, but the sample must be different each year. If the inspection of the barriers sampled shows problems, all barriers shall be inspected that year. • Vibration monitoring should be performed in the switching area of the stations. The monitoring locations will be established at selected residential and other sensitive buildings up to 50 m from the nearest station switch (out of the railway infrastructure belt). The vibration levels should be monitored at the most affected façade and/or room (closest to the railway vibration source). The vibration measurements can be done following the principles outlined in ISO 14837-1. Vibration monitoring should be conducted once during year 1 of operation • Depending on the results of such monitoring additional mitigation measures may need to be implemented. • SRI will regularly maintain the noise barriers; • Plan to include the procedure in case of complaints relating to noise or vibration.	• Preparation – Contractor (theMain Design) • Approval – technical control entity (a company or other legal entity or entrepreneur who meets the requirements for technical documentation required by national law and determined by SRI) and PIU • Implementation – SRI	• Monitoring of noise and/or vibration to be performed by an accredited organisation (third party) engaged by SRI	• Plan developed and approved prior to commencement of the operation phase • Number of noise and/or vibration complaints received

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
6.	Operational Water and Soil Management Plan	The Plan will include at least the following measures relating to geohazards: • Ensure installed drainage systems (closed rainwater evacuation system and drainage channels, designed to manage water flow along the railway route) are regularly cleared of debris and sediment to maintain their capacity to manage water flow. Where needed, reinforce vulnerable slopes with soil stabilization techniques such as geo-grids, geotextiles, or soil nailing to prevent erosion and maintain slope stability. • Use erosion control blankets or geotextile mats on disturbed or exposed slopes to prevent erosion and allow vegetation to be established. • Revegetate disturbed areas, particularly those prone to erosion, with native grasses, shrubs, and trees. Establish deep-rooted vegetation to help bind the soil, preventing erosion and stabilizing slopes. Regularly maintain vegetation cover to ensure continued erosion resistance. • Allow for the natural regrowth of vegetation where possible, as this will strengthen soil cohesion and reduce gully erosion risks over time. • In critical areas where vegetation is slow to establish, install erosion control mats or blankets to protect soil from water erosion • After heavy rainfall or storms, conduct inspections to assess any potential damage to slopes or drainage systems. Immediate repairs can prevent further erosion and gully formation before they become major issues. • Ensure SRI's maintenance crews are trained in identifying early signs of erosion and understand the importance of maintaining erosion control measures. The following specified mitigation measures relating to Soil should be implemented according to the relevant sensitivity of receptors, as indicated: **Very High Sensitivity Receptors (VH)**: The Dobrič-Nišava IBA-protected area, from km 220+315 to the end of Section 3. **High Sensitivity Receptors (H)**: Fertile agricultural soils, grasslands and forests. • **(VH, H)** Prohibit the dumping of waste and undertake regular visual inspections of obvious dumping sites. Inspections will be carried out by the site supervisor. Any evidence of dumping or soil contamination will be reported to the Environmental Manager within 24 hours for action. • **(VH, H)** The application of herbicides will be carefully managed to prevent over application and minimise the risk of chemicals leaching into groundwater from the soil. Only selective, low-toxicity herbicides approved by national regulations (e.g., glyphosate-based products, excluding persistent or bio-accumulative substances) may be used. Application is prohibited during rainfall, when heavy rain is forecast within 24 hours, or when wind speeds exceed 15 km/h.	• Preparation and implementation – SRI • Approval – PIU, representatives of relevant SRI sectors and SRI management	• PIU	• Plan developed and approved prior to commencement of the operation phase • Number complaints received in relation to surface waters, groundwater, soil and geohazards.

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• **(VH, H)** Areas where the use of herbicides is prohibited (such as sensitive vegetation areas and zones near rivers) will be clearly defined and communicated. These consider areas within 20 meters of rivers, streams, wetlands, and areas with sensitive vegetation, and should be clearly defined in site plans and communicated to maintenance personnel. • **(H)** Perform maintenance activities in dry weather as far as practicable to prevent contamination from surface run-off. • **(VH, H)** Where possible, limit the use of de-icing chemicals during cold weather, giving preference to mechanical means such as scrubbers and snow ploughs. • **(VH, H)** Hazardous and potentially contaminating materials required for maintenance activities must be stored in accordance with the Construction Phase Waste and Materials Management Plan. This plan will update and replace the Construction Phase version, incorporating operational risks, site-specific procedures, staff responsibilities, and emergency spill response measures. Regular training and inspections will be conducted to ensure compliance. • **(H)** Regular control and maintenance of the surface water drainage system and structures must be undertaken, including the removal of accumulated sediments and debris, and cleaning of oil/water separators, to avoid blockages, overflow and direct discharge of contaminated runoff onto the surrounding soil. • **(VH, H)** Regular maintenance of vegetation should be undertaken in cuttings and on embankments to ensure slope stability and along affected waterways to minimise soil erosion and reduce suspended matter in surface run-off. • **(H)** Implement proper drainage systems (culverts, ditches) to manage water runoff and avoid ground saturation that could destabilize terrain. Drainage systems must be inspected seasonally (at minimum before and after the rainy season), with accumulated silt, debris, and vegetation removed to ensure flow capacity. Storm-readiness measures, including functional checks of culverts and emergency overflow routes, must be conducted ahead of predicted heavy rainfall. • **(VH, H)** In areas identified as geotechnically unstable, elevation and reinforcement of tracks and embankments may be undertaken as part of major maintenance interventions or deferred design upgrades. This measure will only be triggered based on erosion monitoring data or significant terrain movement detected during inspections, and it will be coordinated with engineering assessments. The Plan will include at least the following measures relating to Surface Waters: • Potentially contaminated surface run-off from the station hard standing areas (e.g. car parks) will be treated using oil and silt traps prior to discharge to any receiving surface water course;			

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• The integrity of the surface water drainage systems (as described in Section 2.3.9 of Chapter 2 of the ESIA) must be maintained, including the removal of accumulated sediments and cleaning of oil/water separators, to avoid blockages, overflow and direct discharge of contaminated runoff into surface water courses. • In the case of significant accidental spills/leaks of hazardous substances into watercourses, downstream stakeholders must be immediately notified of the associated risks to health. • Maintenance work on bridges will be undertaken in periods of low flows where possible; • Sanitary wastewater from the station facilities will not be discharged to surface water recipients without prior treatment. • The integrity of septic tanks at stations will be maintained and regularly checked, and tanks will be regularly emptied by local, licensed waste removal companies and the sludge disposed in accordance with national requirements; • Establish buffer zones and no-spray areas around water bodies to prevent direct contamination. • Use environmentally safe herbicides with low aquatic toxicity and low mobility in soil. • Apply herbicides using targeted methods (e.g., spot treatment) and avoid spraying during adverse weather conditions. • Schedule applications during dry periods and avoid treatment prior to heavy rainfall. • Use herbicides that are known to be the least toxic and have the lowest persistence in the environment. • Use targeted application of herbicides rather than broad applications to minimize the quantities of herbicide used and reduce the risk of surface water contamination. • Buffer zones or strips will be established along surface water courses where herbicides must not be used, to reduce the risk of surface water contamination; • Conduct regular inspections and maintenance of bridge structures and scour protection. • Monitor structural integrity to prevent material release into water bodies. • Implement surface water quality monitoring near bridge sites. • Ensure ongoing compliance with permits and environmental regulations, with regular review of procedures. The Plan will include at least the following measures relating to Groundwaters:			

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• Sections of the railway that pass through sanitary protection zones must have a prescribed speed limit and special transport security measures for dangerous/hazardous goods, in line with relevant regulations. • Store hazardous and potentially contaminating materials required for railway maintenance in accordance with the Construction Phase Water and Soil Management Plan, including impermeable surfaces, secondary containment, and spill kits. • Conduct regular training for railway staff on hazardous material handling, transport, and storage protocols. • Run-off from the railway line will be contained by the track drainage system (helps manage potential contamination from leaks). • Regular control and maintenance of drainage structures will be conducted to check they do not become clogged with debris or sediments (indirectly related to leak containment). • Integrity of the septic tanks for sanitary wastewater in stations will be tested at regular intervals. • Regularly maintain sediment traps and basins, drainage channels, and treatment systems (helps control contaminants from accidental leaks) • Where possible, limit the use of de-icing chemicals at stations during cold weather, giving preference to mechanical means. • Application of herbicides will be managed to reduce unnecessary overuse and the risk of leaching into soil and groundwater. • On all designed roads, drainage is carried out into the surrounding terrain, except for access roads to parking lots at stations, where a closed system, treatment via oil separators, and controlled discharge into a recipient (canal or river) is foreseen			
7.	Operational Waste Management Plan	SRI will update and continue to implement its three-year Operational Waste Management Plan in accordance with the national *Law on Waste Management; Regulations on the Form Document, Chain Custody of Waste and Instructions for Filling ("Official Gazette of RS", No. 114/2013) or with Rules on the Form of the Document Chain Custody of Hazardous Wastes and Instructions for Filling it ("Official Gazette of RS", No. 17/2017); Regulation on categories, testing and classification of waste ("Official Gazette of the RS", no. 56/2010, 93/2019 and 39 of 21/2021)* and other relevant regulatory documents.	• Preparation and implementation – SRI • Approval – PIU, representatives of relevant SRI sectors and SRI management	• PIU	• Plan developed and approved prior to commencement of the operation phase • Number of complaints received relating to waste management
8.	Operational Maintenance Plan	SRI will develop an Operational Maintenance Plan to include: • A schedule of regular maintenance and system testing, as well as the requirement for ad-hoc maintenance and repairs;	• Preparation and implementation – SRI • Approval – PIU, representatives of	• PIU	• Plan developed and approved prior to commencement of the operation phase

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• Procedures to enable regular maintenance activities to be delivered safely and in a manner that minimises disruption where practicable. • Provisions for all repairs and maintenance of railway infrastructure to be undertaken to result in no traffic disruption, if possible; • That all maintenance activities will be done in accordance with the national Rulebook on Technical Conditions and Maintenance of the Lower Parts of Railway Infrastructure and the Rulebook on Technical Conditions and Maintenance of the Upper Parts of Railway Infrastructure; • A robust maintenance regime for the Project elements to be implemented based on the adopted Rules of Procedure for Safety Management of the Joint Stock Company for Management of Public Railway Infrastructure Serbian Railway Infrastructure" Belgrade (2022). • That inspections must be conducted and managed by suitably qualified and experience engineers and in line with appropriate national and international standards; • The storage requirements for materials needed for the maintenance of the Project, including current and planned storage locations and procedures; • That SRI will ensure that sufficient resources of qualified and competent personnel are available to plan, conduct, supervise and interpret the results of any inspection and maintenance programs.	relevant SRI sectors and SRI management		• Annual number of rail traffic disruptions as a result of inadequate maintenance
9	Operational Occupational Health, Safety Plan;	To mitigate any health and safety risks, SRI will implement an Operational Occupational Health, Safety Plan which will include provisions on OHS risks and measures for regular railway workers and maintenance workers as required by the EU Railway Safety Directive and provisions of ISO 45001, and relevant local safety legislation. The Occupational Health and Safety Management Plan should include as a minimum: • SRI to ensure that the design includes advanced signalling systems and train control technologies to ensure the safety of workers in proximity to live tracks. • Strict and clearly defined safety protocols must be enforced for any work conducted near or on operational railway infrastructure. These protocols must address worker access, communication with traffic control, emergency procedures, and real-time monitoring, ensuring that safety is maintained. • SRI must enforce the use of high-visibility PPE for maintenance personnel. • Maintenance scheduling during non-operational hours must be obligatory, with compliance verified by the SRI respective services.	• Preparation and implementation – SRI • Approval – PIU, representatives of relevant SRI sectors and SRI management	• PIU	• Plan developed and approved prior to commencement of the operation phase •

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• SRI will update the current lockout/tagout procedures and implement comprehensive measures for de-energizing catenary systems during maintenance activities. • Operators must provide PPE, such as insulated gloves and dielectric boots, as specified in operational plans. • Routine inspections of catenary systems must be enforced by strict protocols and audited by SRI. • Warning signage and barriers must be installed and monitored to prevent accidental contact. • SRI must ensure that design includes provisions for worker safety during maintenance, including the use of advanced monitoring technologies like automated track inspection systems. • SRI must enforce lockout/tagout procedures and train staff on safe maintenance practices. • SRI must implement protocols for safe storage, labelling, and disposal of harmful substances. • SRI must ensure strict compliance with mandatory personal protective equipment (PPE) usage for hazardous substances. • Routine and mandatory air quality monitoring in high-risk areas must be implemented. • SRI will enforce the implementation of rigid fire safety protocols and fire suppression systems onboard trains, at stations, and in depots. • Training to internal and external staff in fire prevention and emergency response procedures will be provided and semi-annual emergency drills will be conducted. • Regular inspections of electrical systems and fuel storage facilities must be mandated and audited by SRI. • SRI is responsible for conducting routine inspections to identify potential hazards in both passenger and work areas, inspections must be clearly detailed in the standard operating procedures. • Designs must mandate installation of non-slip surfaces, handrails, and proper lighting in high-risk zones. • Rapid response protocols for cleaning and repairs must be implemented, with compliance monitored by trained staff. • SRI will enforce ergonomic assessments of control centres, and workspaces during operational planning.			

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• Designs must include provisions for adjustable seating and interfaces tailored to the workers' needs. • Mental health support programs and fatigue management systems should be offered to workers to prevent long-term impacts. • SRI will develop comprehensive emergency response plans, including crisis simulations and drills. • Regular training for staff on emergency protocols and first aid will be mandatory. • Stations and all other facilities will be equipped with mobile and stationary emergency equipment and its effectiveness checked during regular audits. • Advanced communication systems for rapid information dissemination must be implemented. • The provision of protective measures for workers exposed to harsh weather, such as weather-resistant PPE and access to shelters is mandatory. • Monitoring systems for real-time weather updates and alerts must be implemented. • Regular maintenance of infrastructure to withstand extreme weather impacts must be undertaken.			
10	Operational Community Health, Safety and Security Plan	SRI will implement an Operational Community Health, Safety and Security Plan which will include (but not be limited to): • Measures to mitigate identified health, safety and security risks and impacts to local communities following a risk assessment process and incorporating consultation with local communities regarding whether the installed crossings are working effectively and safely, any to ensure all potential hazards are addressed, particularly trespassing and electrocution. • Measures to ensure that security personnel (if engaged at newly constructed stations) are employed and act in line with the Lenders' requirements. • A cross reference to the grievance mechanism for the local community as detailed in the SEP. • The requirement for adequate physical barriers and signage to be installed in the immediate vicinity of settlements to protect the public from electrical hazards. • The requirement to advertise, including issuing newsletters to affected communities, details of the new crossings (overpasses and underpasses) before they are operational. • The requirement for signage for the new crossings to be displayed along the Project alignment;	• Preparation and implementation – SRI • Approval – PIU, representatives of relevant SRI sectors and SRI management	• Inspection and maintenance records to be kept	• Plan developed and approved prior to commencement of the operation phase

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• That all the new crossings will be maintained and inspected regularly for any potential damage, in accordance with the Operational Maintenance Plan. • A cross-reference to the Emergency Preparedness and Response Plan, particularly in relation to potential accidents involving the rail transport of dangerous goods. • The requirement to hold regular events to raise awareness within local communities on the dangers of illegally crossing the railway on foot or by car and disregarding the formal railway crossings and signals, focused on the youth and parents, elderly people and the Roma population. • SRI will maintain fencing and noise protection barriers along the railway route.			
11.	• Stakeholder Engagement Plan (SEP)	• The SEP will be updated at least on an annual basis and/or in case of any significant changes by SRI and continually implemented during the operation phase. This should include that: • Regular consultation activities with local communities are organised; • CLOs will manage consultation activities and workshops and implement the SEP with local communities; • Consultation events will be organised with locally affected people (including vulnerable groups) regularly during the first year of operation and as and when required thereafter. •	• SEP update – SRI	• PIU	• SEP updated as needed and approved prior to the commencement of the operation phase
12.	Gender Plan	To mitigate gender related risks and impacts, SRI will develop a Gender Plan for the operation phase in line with the national legal framework (the Law on Prevention of Harassment in the Workplace, and the Law on Gender Equality). It is advisable to include the recommendations of the European Transport Workers' Federation (ETF) and Community of European Railway and Infrastructure Companies (CER) on the integration of women in the railway sector. The Gender Plan will include (but will not be limited to) the following: • A zero-tolerance policy for discrimination against women • Protocols for the maintenance of infrastructure and train facilities to ensure accessibility for the elderly, disabled and those with reduced mobility (both men and women) and pregnant women; • Employee and public grievance mechanisms; • Detailed actions to promote gender equality • Policies and procedures to address gender-based violence and harassment.	• SRI	• PIU	• Plan developed and approved prior to commencement of the operation phase

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• Measures to ensure equal pay for equal work • Requirements for training and awareness-raising activities to promote gender equality and address unconscious biases • Measures to support work-life balance.			
13.	Operational Cultural Heritage Management Plan including a Chance Finds Procedure	• The Plan will include the Chance Finds Procedure developed for the Construction Phase. • Any maintenance activities with the potential to impact known cultural heritage assets will be planned carefully and in liaison with the Institute for Protection of Cultural Monuments in Kragujevac and Niš as required by national legislation. • SRI will ensure that those undertaking maintenance activities are aware of the potential for previously undiscovered cultural heritage and how to implement the Chance Finds Procedure before undertaking any intrusive below ground activity.	• Preparation – SRI • Implementation – SRI and maintenance contractor	• PIU	• Plan developed and approved prior to commencement of the operation phase
14.	Operational Emergency Preparedness and Response Plan	Under it's overarching Safety Management System (in accordance with the Railway Safety Directive 2016/798) SRI should prepare an Operational Emergency Preparedness and Response Plan prior to the commencement of the operation This Plan will: • Set out applicable Serbian and EU policies, laws and standards related to emergency preparedness and response. • Define emergency roles and responsibilities, including designated emergency response personnel and first responders. • Define emergency communication protocols, including emergency contact lists, notification procedures, and on-site alert systems such as alarms and radios. • Define protocols for communication with the media in emergency situations • Define clear rescue and evacuation procedures for all railway infrastructure and trains (including the requirement for prominently marked escape routes, designated emergency assembly points), and protocols for rescue/evacuation from the tunnel or underpasses. • Identify potential emergencies based on a hazard assessment process, expected to include (but not be limited to) gas main explosion, or overhead power lines, collapse of earthworks, slope failure, landslides, train derailment, flooding, extreme weather, wildfires, earthquake, tunnel failure, fire/hazardous incident within the tunnel. • Define procedures to shut down equipment in the event of an emergency. • Include a list of and the location of emergency response equipment (firefighting, spill response, first aid kits, personal protection equipment for emergency response teams). • Include protocols for the use of emergency equipment and facilities. • Set out a schedule for the periodic inspection, testing and maintenance of emergency equipment.	• Preparation and implementation – SRI • Approval – PIU, representatives of relevant SRI sectors and SRI management	• SRI / PIU	• Plan developed and approved prior to commencement of the operation phase

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• Define the training requirements and schedule for emergency preparedness and response. • Define the procedure for recovery and review after emergency situations. • Define the procedures for periodic review and update of the Emergency Preparedness and Response Plan, based on updated risk assessments and risk profiles. • Define the Procedures for and frequency of emergency drills to be undertaken. • Define the Procedures for the immediate isolation of affected power circuits. • Outline first aid arrangements, including trained personnel, locations of first aid kits and medical supplies, and coordination mechanisms with local medical facilities in Paraćin, Aleksinac, Niš, and surrounding areas. • Provide emergency contacts and define communication protocols with communities when necessary, and procedures for interaction with local government authorities, medical facilities and emergency services. • Include scenario-based emergency procedures addressing incidents such as fire, explosion, electrocution, hazardous material spills, equipment failure, tunnel collapse, or worker injuries at height. Specifically, the Plan will include the following mitigation measures: • Although specific Derailment Mitigation Measures (DMMs), such as guardrails or deflecting walls, are not included in the current infrastructure design, derailment risk is addressed through the application of the Common Safety Methodology (CSM). This includes the implementation of ETCS Level 2, electronic interlocking, track geometry compliance, and access control for certified railway undertakings. • Conduct regular inspection and maintenance of track geometry and railway infrastructure to detect and eliminate risks contributing to derailments. • Ensure that only railway undertakings certified under national and EU safety regulations have access to the infrastructure, and that they are responsible — in accordance with Serbian railway legislation — for the technical condition, maintenance, and pre-departure inspection of their rolling stock, including wagon frames, suspensions, wheelsets, and loading compliance. • Apply rigorous monitoring and maintenance protocols for Signalling and Train Control Equipment to ensure operational reliability and early detection of system failures. • Implement speed restrictions where necessary, particularly in track sections prone to twisting or other stability risks. • Ensure that only railway operators whose staff are appropriately trained in accident prevention and emergency procedures — in accordance with national and EU safety regulations — are granted access to railway infrastructure.			

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• Ensure that Operation and Maintenance (O&M) manuals are made available to all operational staff prior to the commencement of service, with specific emphasis on derailment risk factors and preventive actions. • The SRI Major Incident Response Plan providing emergency response protocols in the event of derailments and other critical incidents should be updated to account for the anticipated higher train speeds (up to 200km/h). This Plan should demonstrate institutional preparedness and alignment with national railway safety procedures. The Plan should outline the definition of responsibilities, communication channels, and on-site response mechanisms, contributing to effective incident management in line with applicable regulations. The Plan should also specifically cover incidents and accidents involving hazardous goods, including those regulated under RID. • Equip operational facilities with fire detection, alarm, and firefighting equipment appropriate to the scale and use of the premises, and ensure all equipment is regularly inspected and maintained. • Provide manual firefighting equipment that is easily accessible and simple to use by site personnel. • Establish early warning systems for extreme weather events (e.g., flooding, high winds, wildfires) and ensure that site management teams are trained to respond appropriately to warnings. • Ensure that the Emergency Response Plans adequately addresses specific natural hazards relevant to the Project area, including flooding, high winds, snowstorms, and wildfires. • Train managerial staff and emergency coordinators in disaster response and evacuation procedures tailored to climate-related risks. • Conduct regular public awareness campaigns for local communities on personal safety measures during extreme weather events, using clear and practical information channels (e.g., information boards, community meetings, local media). • Implement real-time monitoring of weather conditions during critical construction activities to enable proactive decision-making and timely suspension of works when severe conditions are forecasted. • Install and maintain automatic fire detection and suppression systems, smoke extraction and forced ventilation systems within the Đunis tunnel, • Install inclinometers and other ground movement monitoring devices at critical locations to enable early detection of slope instability. • Conduct regular geotechnical inspections of embankments, cuttings, and slopes during operation, including both visual checks and instrument-based monitoring where appropriate.			

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		• Maintain and periodically clean all surface drainage infrastructure (culverts, ditches) to reduce infiltration and erosion-related destabilisation • Provide training to maintenance staff for recognising and reporting early signs of ground movement or erosion. • Implement vegetation control on embankments and slopes to prevent deep root penetration and to maintain surface integrity, while balancing erosion control and ecological needs. • Establish standard emergency response procedures in the event of observed slope failure (e.g. immediate service suspension, rerouting, notification of authorities) • Install and maintain clearly marked and accessible emergency exits and signage within the Đunis tunnel, • Install and maintain Emergency lighting and communication systems within the Đunis tunnel, • All tunnel structures are designed and constructed in accordance with Eurocode 8 (EN 1998) for seismic resistance, ensuring resilience to seismic events and other structural stresses. • Implement regular structural inspections and maintenance programs for the tunnel lining, drainage systems, ventilation systems, and emergency infrastructure. • Maintain tunnel safety systems, including fire detection and suppression systems, emergency lighting, and communication systems.			
15	Operational Contractor Management Plan.	Develop a Contractor Management Plan to reduce and mitigate impacts associated with contractors and suppliers during the operation phase. The Plan will include as a minimum: • Measures to ensure that Contractors and suppliers are obliged to comply with all environmental and social requirements contained within applicable Project documentation and standards. • That SRI will inform their Contractors and suppliers of their Environmental, Social, Health & Safety (including Labour & Working Conditions) obligations, including relevant requirements within the OESMP. • Measures to ensure that any tendering process and procurement contracts include labour management clauses and policies, including on minimum working age, normal working hours, freedom to undertake collective bargaining, good working conditions and eradicating risks of forced labour, discrimination, and gender-based violence and harassment.	• Preparation and implementation – SRI • Approval – PIU, representatives of relevant SRI sectors and SRI management	• PIU	• Plan developed and approved prior to commencement of the operation phase • Contractor & supplier contracts contain adequate ESHS requirements.

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
16	Operational Monitoring Plan	SRI will develop a detailed Operational Monitoring Plan in line with the requirements set out in the ESIA, this document and the OESMP. This Plan will include details of regular environmental and social monitoring to be performed during the operation phase. It will specify the locations where sampling should be performed, the parameters to be measured, and the frequency of sampling/measuring. The Plan will also outline the procedure to be followed in case of exceedances of applicable threshold limit values. For details see Appendix 1	• Preparation and implementation – SRI • Approval – PIU, representatives of relevant SRI sectors and SRI management	• PIU	• Plan developed and approved prior to commencement of the operation phase • Records of monitoring completed and kept on file.

8. APPENDIX 1 – MONITORING PLAN

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
Pre – Construction Phase						
License / Permit	Possession of an official approval or valid (work) license in accordance with the Law Serbian	Quarry (if any / all)	Official license / permit checking	Prior to the start of the construction works	To ensure that the Contractor is compliant with Serbian Law regarding the requirement for any permits relating to the operation of a quarry	Contractor / Supervision Engineer
License / Permit	Possession of an official approval or valid (work) license in accordance with the Law Serbian	Sand and gravel borrow-pit or separation facility	Official license / permit checking	Prior to the start of the construction works	To ensure that the Contractor is compliant with Serbian Law regarding the requirement for any permits relating to the operation of a gravel borrow pit or separation facility.	Contractor / Supervision Engineer
Soil Quality	Minimum parameters to be monitored include pH, P, K, Na, Fe, Al, Ca, organic matter, clay, Be, V, Cd, Cr, Cu, Ni, Pb, Zn, Hg, As, Ba, Co, Mo, Sb, Se, Ti, Te, Ag, Sn.	In settlements along the railway alignment (at approx. 0.5-1.0 m from the alignment), at locations where the new railway follows the existing one. Sensitive zones (from km 159+000 to km 170+000, from km 191.950 to km 206+000, from km 211+000 to the end of Section 3) Sampling points and GPS coordinates (N and E)	Sampling of soil Analysis in a certified laboratory	One off baseline survey – before the start of any construction works, including mobilization and site clearance	Determination of baseline conditions against which to monitor impacts. European Standard EN 15657:2019 and Regulation on Systematic Monitoring of Soil Condition and Quality ("Official Gazette of RS", No. 88/2020) would be used to verify compliance.	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
		Sampling points and GPS coordinates (N and E) S1 - 43.865546°, 21.397232°; S2 - 43.867433°, 21.395905°; S3 - 43.717153°, 21.437228°; S4 - 43.719592°, 21.437773°; S5 - 43.507910°, 21.693292°; S6 - 43.508874°, 21.692006°; S7 - 43.355651°, 21.820444° and S8 - 43.357034°, 21.820033° Additionally, at the sites of construction compounds, accommodation camps, concrete batching plants, hazardous materials storage, waste and hazardous waste storage and at the locations where drainage / wastewater will be discharged. **Final list of locations to be defined in CESMP and approved by Supervision Engineer / PIU*				
Surface water	Minimum physical-chemical parameters to be monitored include: pH, smell, colour, dissolved oxygen (DO), electrical conductivity, suspended solids, chemical oxygen	At all locations where construction sites/facilities or wastewater discharges are planned within 100 meters of either side of the following watercourses:	Sampling of surface water Analysis in a certified laboratory	One off baseline survey – before the start of any construction works, including mobilization and site clearance	Determination of baseline conditions against which to monitor impacts. Water Framework Directive (2000/60/EC) and Regulation on the Parameters of Ecological	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	demand (COD), biochemical oxygen demand, ammonia, nitrates, nitrites, total nitrogen – N, total phosphorus – P, sulphates, Cd, Cu, Cr, Zn, Ni, Fe, Pb, Mn, TOC, oils and fats, mineral oils, Hg. Include also ecological and quantitative parameters	1. Crnica River (from km 155.000 to at km 157.000); 2. Južna Morava River (from km 192.000 to km 196.000 and from km 222.000 to at km 224.000) *Final list of locations to be defined in CESMP and approved by Supervision Engineer / PIU			and Chemical Status of Surface Waters and Parameters of Chemical and Quantitative Status of Groundwater ("Official Gazette of RS", No. 74/2011) would be used to verify compliance.	
Groundwater	Minimum physical-chemical parameters to be monitored include pH, turbidity, dissolved oxygen (DO), electrical conductivity, total suspended solids (TSS), chloride, alkalinity, total hardness, calcium, magnesium, zinc and iron. Groundwater levels (at springs and wells identified as being informally used during the pre-construction survey).	At all future construction sites located within alluvial and colluvial terrain. All springs and wells identified as being informally used during the pre-construction survey. Sensitive zones: Gorunje (from km 153+380 to 154+350), Dankovo (at km 157+000), Striža (at km 160+000), Bahus (from km 157+350–158+400) *Final list of locations to be defined in CESMP and approved by Supervision Engineer / PIU	Analysis in a certified laboratory	One off baseline survey – before the start of any construction works, including mobilization and site clearance	Determination of baseline conditions against which to monitor impacts. "Official Gazette of RS", No. 74/2011) would be used to verify compliance.	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
Noise	Noise levels	In all settlements that are located within 200m of the railway line. Measurements to be taken in front of the house closest to the railway line, facing the railway line). And at all locations where mitigation measures have been applied (including noise barriers, passive measures, etc.) **Final list of locations to be defined in CESMP and approved by Supervision Engineer / PIU*	Noise measuring equipment Licensed personnel / company and equipment	One off baseline survey – before the start of any construction works, including mobilization and site clearance	Determination of baseline against which to monitor impacts.	Contractor (sampling and analysis) / Supervision Engineer (checking)
Community Grievances	Numbers of grievances, topics of grievances, locations to which grievances pertain, etc.	N/A	Periodic review of grievance log, processing and analysing grievances	Monthly during the pre-construction phase	To identify key concerns, problems and questions from external stakeholders	Contractor / PIU
Resettlement	Expropriation and resettlement process	N/A	Review of progress with the land acquisition and resettlement process	Monthly during the pre-construction phase On-going for the possible exceptions	To avoiding/minimise negative impacts on the Project implementation schedule.	PIU

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
Stakeholder Engagement	Implementation of the Stakeholder Engagement Plan	N/A	Review of the progress of planned stakeholder engagement events and updates to the SEP as required.	On-going	To minimise adverse social impacts on local communities	SRI/PIU
Construction Phase						
Air Quality	Carbon monoxide (CO), nitrogen dioxide (NO2), sulphur dioxide (SO2), ozone (O3), benzene, benzo(a)pyrene, suspended particles of the PM10 fraction, suspended particles of the PM2.5 fraction, metals and metalloid from of suspended particles of the PM10 fraction (As, Cd, Cu, Zn, Fe, Pb, Mn, Ni).	Urban areas along the railway corridor. Residential and industrial zones within 500 m on either side of the railway line. All Project Facilities and worksites, and Project landfill sites.	Air quality measurements are conducted by an accredited testing laboratory authorized by the competent Ministry	Monthly, and additionally as needed in response to community complaints.	To ensure compliance with Air Quality and Dust Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
Soil	Heavy metals and metalloid concentrations (Cd, Cr, Cu, Ni, Pb, Zn, Ba, Co, Mo, Sb, Hg, and As) in soil.	Areas with soil disturbance, construction material storage sites, and locations within 500 m of the railway corridor.	Soil sampling and analysis by an accredited laboratory authorized by the competent Ministry.	In response to incidents.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Concentrations of industrial and petroleum-derived organic contaminants	Areas around fuel storage, maintenance depots, and construction sites where heavy machinery is used.	Soil sampling and analysis by an accredited laboratory authorized by the competent Ministry	Quarterly and as needed in response to spills.	To ensure compliance with Soil and Water Management Plan and	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	(PCBs, BTEX, PAHs, and VOCs) in soil.				effectiveness of mitigation measures	
	Erosion and sediment deposition	Areas prone to erosion along the railway corridor, near watercourses, and at cut-and-fill sections	Visual inspection and topographic surveys.	Monthly and after heavy rainfall events.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
Surface water	Concentrations of heavy metals in surface water (Cd, Cr, Cu, Ni, Pb, Zn, Ba, Co, Mo, Sb, Hg, and As)	Water bodies near construction sites, material storage areas, and locations within 500 m of the railway corridor.	Water sampling and analysis by an accredited laboratory authorized by the competent Ministry.	Quarterly and in response to incidents (e.g., spills, major rainfall involving materials containing heavy metals).	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Suspended solids and turbidity in surface water	Water bodies near embankments, watercourse crossings, and cut-and-fill sections.	Turbidity meter and suspended solids measurements using filtration and gravimetric techniques.	Quarterly (Monthly only in high-risk areas) and after heavy rainfall exceeding 20 mm/hour or 50 mm/day	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	pH, dissolved oxygen, and temperature of surface water	Water bodies near construction sites, embankments, and drainage channels.	Portable meters for pH, dissolved oxygen, and temperature; laboratory analysis for additional parameters.	Quarterly and after detection of fish kill, odour, or visible stress to aquatic life.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Erosion and sediment deposition in water bodies	Water bodies near embankments, cut-and-fill areas, and drainage channels.	Visual inspection, sediment collection, and topographic surveys.	Quarterly (Monthly only in high-risk areas) and after major storm events (e.g. >50 mm rainfall in 24h).	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	Petroleum hydrocarbons in surface water	Water bodies near fuel storage, maintenance depots, and construction zones.	Water sampling and analysis using GC-MS or similar methods to detect petroleum hydrocarbons.	Quarterly and as needed after spills or leaks greater than 20 liters.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Flooding and watercourse alteration impacts	Areas near watercourse crossings, floodplains, and embankments.	Hydrological surveys, flow rate measurements, and visual inspections.	As needed after significant riverbank modification or redirection of flow during bridge/tunnel works	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Groundwater Level	Monitoring wells installed at strategic points along the tunnel alignment and in surrounding sensitive areas	Use of automated piezometers/data loggers with manual verification; data should be recorded, analyzed for trends, and compared to baseline levels.	Pre-construction - Monthly for at least 6 months before works begin to establish baseline conditions; During construction: - Bi-weekly; Post-construction - Monthly for at least 12 months after completion	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Turbidity and Contaminant Monitoring of Groundwaters	Same monitoring wells as groundwater level monitoring	Field turbidity meters, water sampling for lab analysis of suspended solids, heavy metals, hydrocarbons (e.g., EPA or ISO standards)	Pre-construction: Monthly for 3–6 months; During construction: Bi-weekly or after significant rainfall events; Post-construction: Monthly for 6–12 months	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Drainage and Waterproofing System Verification	Inside tunnel (drainage systems), at water-proofing interfaces, and at outlet/discharge points	Visual inspection, hydrostatic testing, dye tracer tests, and flow measurements at drainage outfalls; documentation of	During construction: Monthly inspections and after significant tunneling milestones (e.g., segment completion); Post-construction: Quarterly	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
			any anomalies and corrective actions.	inspections for at least 2 years, and during/after heavy rainfall events		
	Impact of suspended sediments on aquatic life	Biological surveys (e.g., fish and invertebrates) and sediment analysis.	Water bodies near construction sites and sensitive aquatic ecosystems.	Quarterly (Monthly only in high-risk areas) and after significant construction activities or storm events.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
Groundwater	Groundwater quality parameters (Minimum physical-chemical parameters to be monitored include pH, turbidity, dissolved oxygen (DO), electrical conductivity, total suspended solids (TSS), chloride, alkalinity, total hardness, calcium, magnesium, zinc and iron)	All construction sites, areas of excavation (underpasses and overpasses) or groundwater sources	Instrumental monitoring at well points or boreholes, sampling, and laboratory analysis	As needed (in case of accidental spill or upon of individual complaints)	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Groundwater yield (flow rates and levels)	Near excavation sites, temporary dewatering areas	Monitoring well pumping tests, piezometer readings, measurement of flow rates from wells	As needed (upon of individual complaints)	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Compliance with Water and Soil Management Plan	All construction facilities and worksites	Visual inspections, document review for adherence to prescribed protection measures,	Continuous	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
			auditing water quality monitoring reports			
	Pollution control and treatment measures (e.g., storage of fuels, oils, hazardous liquids, and integrity of spill kits)	Areas storing hazardous materials, fuel tanks, and construction zones with potential pollutant runoff	Visual inspections to ensure proper storage and integrity of containment systems, fuel/oil storage, and spill kits functionality		To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
Geohazards	Inclinometer: Monitoring of ground movements in the area of the pile structure (Đunis tunnel)	Tunnel portals: behind the piles, on the berms, at intervals of 100 meters.	Installation of inclinometers to measure ground displacement. Regular data logging and analysis for any signs of instability. The measurement results will be submitted to the Supervising Engineer and the Designer for interpretation.	To be defined by the Contractor	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Rockfall: Visual inspection for rockfall risk (e.g., loose rocks, fractures)	High risk rockfall areas (tunnel portals and cuttings)	Continuous visual inspections. Documentation of findings with photographs and notes.	Not less than monthly	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Rockfall: Monitoring of rockfall accumulation (e.g., fallen debris)	High risk rockfall areas (tunnel portals and cuttings)	On-site inspections with detailed reporting of rockfall events.	Monthly or after heavy rain	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	Gully erosion: Inspection of gully erosion progression (e.g., fallen debris, rock size)	High-risk gully erosion areas (near tunnel portals)	Visual inspections, topographic surveys to monitor changes in gully depth and width.	Not less than monthly	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Gully erosion: Installation of erosion control measures (e.g., temporary barriers, drainage improvements)	Vulnerable gully areas prone to rapid erosion (tunnel portals)	Site documentation, and monitoring the effectiveness of control measures (e.g., after heavy rainfall).	As needed	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Rockfall and Gully erosion: Ground stabilization activities (e.g., netting, retaining walls)	Cuttings and tunnel portals	Recording and inspection of stabilization efforts.	As needed	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
Noise and Vibration	Noise and vibration levels	Noise: In all settlements (which are closer than 200m from the railway line), in front of the house closest to the railway line). And for all locations where mitigation measures have been applied (including noise barriers, passive measures, etc.) Vibration: At the locations of sensitive recipients **Final list of locations to be defined in CESMP and approved by Supervision Engineer / PIU*	Noise and vibration measuring equipment Licensed personnel / company and equipment	Noise: Monthly during construction phase Vibration: As defined by the vibration risk assessment	Noise pollution and nuisance Vibration disturbance and structural impact	Contractor (sampling and analysis) / Supervision Engineer (checking)

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
Noise / Vibrations	Noise and vibration levels	At locations requested by local community Location where grievances are received	Noise and vibration measurement (licensed company and equipment)	When exceedance is recorded Upon request of local community Upon received grievance	Minimize noise and vibration pollution and nuisance to local communities	Contractor / Supervision Engineer
Biodiversity	As per the Biodiversity Management Plan developed as part of the ESIA package for the Project	As per the Biodiversity Management Plan developed as part of the ESIA package for the Project	Field surveys by qualified biologist/ecologist (botanist, entomologist, ichthyologist, herpetologist, ornithologist, mammalogist), overseen by the Ecology Clerk of Works	As per the Biodiversity Management Plan developed as part of the ESIA package for the Project	To minimize habitats loss, degradation and/or fragmentation and species disturbance. Preservation of favourable ecological conditions within protected sites	Contractor / Biodiversity supervisions
Waste	Waste management practices	All project facilities, worksites	On-site inspections by designated personnel using standardized checklists	Daily (or continuous)	To ensure compliance with Waste and Materials Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Accuracy of waste transfer notes	Project facilities	Documentation review to verify compliance with the Waste Management Plan	Weekly	To ensure compliance with Waste and Materials Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Requirements of the Construction Waste and Materials Management Plan	Project facilities, worksites,	Internal audits using detailed checklists to assess adherence to waste management procedures	Monthly	To ensure compliance with Waste and Materials Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	Volume of waste generated recycled, reused and disposed of to landfill (by waste stream) to identify opportunities for increased recycling/reuse	All Project facilities and worksites	Documentation review	Monthly	To ensure compliance with Waste and Materials Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
Landscape and Visual	Construction Activity and Visual Disruption, Compliance with Visual Impact Regulations.	Key viewpoints identified in the LVIA. Construction sites and adjacent areas. Surrounding residential areas near the construction site.	Visual inspections, photographic surveys, monitoring of construction sites. Site assessments, mapping of changes in landscape features.	Ongoing during construction	To minimise temporary visual impacts and maintain aesthetic quality. To evaluate and document changes in landscape character due to construction. To ensure compliance with visual impact regulations throughout construction	Contractor/ Landscape Architect
Occupational Health and Safety	Compliance with heavy machinery and equipment protocols	All Project worksites	- Visual inspections of machinery operation and maintenance activities. - Audits of operator training records and records on third party inspections.	Monthly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Fall protection system functionality	Elevated work zones and scaffolding sites	- Inspections of guardrails, safety nets, and harness usage. - Review of worker compliance logs.	Weekly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	Electrical safety measures compliance	Areas with overhead lines and electrical systems	- Inspections of lockout/tagout protocols. - Audits of PPE usage for workers in electrical zones.	Weekly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Noise and vibration levels monitoring	High-intensity worksites (e.g. tunnels)	- Instrument-based measurements of noise and vibration levels. - Comparison to regulatory thresholds.	Monthly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Collisions with utilities monitoring	Areas with underground and aboveground utilities (e.g., 10/35/110 kV lines and MOP 55 bar gas pipeline)	- Inspections for visible utility markers, fencing, and signage. - Review of utility location records and updates. - Audits of Contractor's coordination with utility providers and adherence to utility conflict plans.	Monthly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Hazardous materials handling and containment	Sites with chemical storage and hazardous material activities	- Inspections of storage areas and containment measures. - Audits of hazardous material handling records.	Monthly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Confined space safety protocol compliance	Confined space worksites	- Inspections of entry permits and monitoring systems. - Audits of worker training logs for confined space safety.	Monthly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	Fire and explosion risk assessments	All Project worksites	- Inspections of flammable material storage and fire suppression systems. - Safety audits of fire response training records.	Weekly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Manual handling and ergonomic practices monitoring	Workstations and manual task zones	- Observations of worker posture and equipment use. - Review of compliance with ergonomic protocols.	Monthly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Railway Interface Safety Management Plan adherence	Worksites near operational railway track	- Observations on safe access and communication protocols, signalling coordination and work windows implementation. - Audits of emergency preparedness drills and safety training effectiveness.	Monthly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Psychological and social well-being monitoring	All Project worksites	- Surveys of worker well-being and stress levels. - Review of support program implementation by Contractor.	Semi-annual	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer
	Weather resilience monitoring	Exposed work areas	- Review of PPE adequacy and availability for weather extremes.	Annual; Increased frequency during extreme seasons	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	Contractor / Supervision Engineer

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
Community Grievances	Number of grievances, Nature of grievances, Locations to which grievances pertain, Time to resolution of community grievances, Percentage of grievances resolved to stakeholder satisfaction, Number of court proceedings..	N/A	Review of grievance registry log	Quarterly during the construction phase	To identify trends in, and key concerns, problems and questions raised by external stakeholders relating to construction activities.	Contractor in collaboration with SRI (who are managing the SEP Grievance Registry Log)/ Supervision Engineer and PIU
Local employment	Requirements of the Construction Labour, Employment and Local Procurement Plan	N/A	Number of staff hired to work on the Project from local communities Register of engaged local companies.	Quarterly	Compliance with project social requirements for employment and engagement of local workforce and companies	Contractor / PIU
Stakeholder Engagement	Implementation of the Stakeholder Engagement Plan	N/A	Review and ongoing update of the SEP: • Number of public meetings and attendance • Review of relevant documents • Analysis of grievance mechanisms process	Quarterly	Minimise adverse social impacts on local communities	SRI / PIU
Operational Phase						
Air Quality	Carbon monoxide (CO), nitrogen dioxide (NO2), sulphur dioxide (SO2), ozone (O3), benzene,	Urban areas along the railway corridor.	Air quality measurements are conducted by an accredited testing laboratory	During heavy maintenance operations, and additionally in	To ensure compliance with Air Quality and Dust Management Plan and	SRI / PIU

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	benzo(a)pyrene, suspended particles of the PM10 fraction, suspended particles of the PM2.5 fraction, metals and metalloid from of suspended particles of the PM10 fraction (As, Cd, Cu, Zn, Fe, Pb, Mn, Ni).	Residential and industrial zones within 500 m on either side of the railway line. Areas with potential railway maintenance activities. Major train stations and depots. High-traffic railway crossings.	authorized by the competent Ministry	response to any community complaints	effectiveness of mitigation measures	
Soil	Heavy metals and metalloid concentrations (Cd, Cr, Cu, Ni, Pb, Zn, Ba, Co, Mo, Sb, Hg, and As) in soil.	Areas where spills or contamination risks exist	Soil sampling and analysis by an accredited laboratory authorized by the competent Ministry	In response to contamination concerns.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
	Concentrations of industrial and petroleum-derived organic contaminants (PCBs, BTEX, PAHs, and VOCs) in soil.	Areas around train maintenance and refuelling stations, as well as railway depots	Soil sampling and analysis by an accredited laboratory authorized by the competent Ministry	In response to spills	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
	Erosion and sediment deposition	Railway embankments, drainage channels, and areas with slope instability.	Visual inspection and topographic surveys	Quarterly and after extreme weather events.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
Surface Water	Concentrations of heavy metals in surface water (Cd, Cr, Cu, Ni, Pb, Zn,	Water bodies near maintenance yards, fuel storage, and areas where spills or contamination	Water sampling and analysis by an accredited	Annually and in response to contamination concerns	To ensure compliance with Soil and Water Management Plan and	SRI / PIU

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	Ba, Co, Mo, Sb, Hg, and As)	risks exist along the railway corridor.	laboratory authorized by the competent Ministry.	involving materials containing heavy metals)	effectiveness of mitigation measures	
	Suspended solids and turbidity in surface water	Water bodies near railway embankments, drainage channels, and areas prone to slope instability.	Turbidity meter and suspended solids measurements using filtration and gravimetric techniques.	Annually and after extreme weather events exceeding 20 mm/hour or 50 mm/ or operational disturbances.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
	pH, dissolved oxygen, and temperature of surface water	Water bodies near railway depots, maintenance yards, embankments, and drainage channels.	Portable meters for pH, dissolved oxygen, and temperature; laboratory analysis for additional parameters.	Annually and after significant operational disturbances or detection of fish kill, odour, or visible stress to aquatic life	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
	Erosion and sediment deposition in water bodies	Water bodies near embankments, drainage channels, and unstable slopes along the railway corridor.	Visual inspections, sediment collection, and topographic surveys.	Annually and after major storm events (e.g. >50 mm rainfall in 24h) or operational disturbances.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
	Petroleum hydrocarbons in surface water	Water bodies near fuel storage, maintenance depots, and refuelling stations.	Water sampling and analysis using GC-MS or similar techniques to detect petroleum hydrocarbons.	Annually and in response to spills greater than 20 liters or operational accidents.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
	Flooding and watercourse alteration impacts	Watercourses near embankments, drainage channels, and floodplains impacted by the railway.	Hydrological surveys, flow rate measurements, and visual inspections of watercourses.	As needed after major weather events, operational activities, or infrastructure changes.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	Impact of suspended sediments on aquatic life	Water bodies near railway operations and sensitive aquatic ecosystems (e.g., wetlands).	Biological surveys (e.g., fish and invertebrates), sediment analysis, and impact assessment on local aquatic life.	Annually and after extreme weather events or operational disturbances.	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
Groundwater	Integrity and efficiency of groundwater protection systems (e.g., geomembranes, concrete channels, drainage systems)	All constructed groundwater protection systems along the railway	Visual inspections, integrity checks for any damage, performance testing, and operational assessments of drainage systems for any leaks or failures	At regular intervals	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
Geohazards	Rockfall: Ongoing monitoring of rockfall risk (e.g., potential for new rockfalls, debris accumulation)	High risk rockfall areas (tunnel portals)	Continuous visual inspections, debris collection and reporting.	Not less than every 6 months	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
	Rockfall: Monitoring of rockfall debris (e.g., increase in size or frequency of fallen rocks)	Areas with recorded rockfall incidents or known high-risk zones	Inspections and photographic documentation of rockfall debris accumulation.	Every 6 months or after significant weather events	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
	Gully erosion: Monitoring of erosion progression (e.g., widening or deepening of gullies)	Areas susceptible to erosion	Visual inspections, topographic surveys, and recording changes in gully morphology.	Not less than every 6 months	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
	Gully erosion: Monitoring of drainage	Areas downstream of known gully erosion zones	Use of flow gauges and recording of rainfall data,	After significant rainfall events or as needed	To ensure compliance with Soil and Water Management Plan and	SRI / PIU

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	systems (e.g., water flow impact on erosion)		visual inspection for signs of further erosion.		effectiveness of mitigation measures	
	Rockfall and Gully erosion: Evaluation of effectiveness of long-term mitigation measures (e.g., netting, reinforced embankments)	Areas with previous mitigation interventions	Site inspections, stability checks, and reports on the effectiveness of mitigation strategies.	Annually or as needed	To ensure compliance with Soil and Water Management Plan and effectiveness of mitigation measures	SRI / PIU
Noise	Noise levels	Location of final position of noise barriers. **Final list of locations to be defined by PIU / SRI based on the final position of noise barriers.*	Noise and vibration measurement (licensed company and equipment)	Three times after installation of noise barriers – monthly. The noise barriers characteristics shall be controlled at least once in five years	Confirmation of performance of installed noise barriers	SRI / PIU
Noise	Equivalent noise level LAeq,T [dB], Referent noise level LRaeq,T [dB] and Residual noise level [dB]	In the zones of residential and other sensitive buildings located in the immediate vicinity of the railway. In selecting the measuring points, following shall be included in the monitoring: • structures that were not considered affected during calculations, • structures protected with noise barriers and • structures protected by applying passive protection measures.	Noise and vibration measurement (licensed company and equipment)	Noise monitoring at each measurement location should be conducted for at least 15 days, twice per year.	Control of noise pollution	SRI / PIU

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
		Measuring points representative for the analysed area shall be selected, but in case of justified complaints of local population, the number of measuring points can be increased. **Final list of locations to be defined by PIU / SRI*				
Vibration	Vibration principles in ISO 14837-1	Vibration monitoring should be performed in the switching area of the stations. The monitoring locations will be established at selected residentials and other sensitive buildings up to 50 m from nearest station switch (out of the railway infrastructure belt). The vibration levels should be monitored at the most affected façade and/or room (closest to the railway vibration source).	Noise and vibration measurement (licensed company and equipment)	Vibration monitoring at each measurement location should be conducted for at least 15 days, twice per year.	Control of vibration levels	SRI / PIU
Biodiversity	Habitats, flora and fauna as per the Biodiversity Management Plan developed as part of the ESIA package for the Project	Along the railway corridor	Field surveys by qualified ecologists (botanist, entomologist, ichthyologist, herpetologist, ornithologist, mammalogist)	As per the Biodiversity Management Plan developed as part of the ESIA package for the Project	To minimize habitat degradation and species disturbance, collisions of fauna with trains and electrocution of fauna	SRI / PIU

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
Community Grievances	Number of grievances, Nature of grievances, Locations to which grievances pertain, etc.	N/A	Review of grievance registry log	Quarterly during the first two years of the operations phase, and annually after that.	To identify trends in, and key concerns, problems and questions raised by external stakeholders	SRI / PIU
Waste	Operational waste disposal practices	Operational facilities,	On-site inspections supplemented by remote monitoring (e.g., CCTV, sensor data)	Quarterly	To ensure compliance with the SRI Waste Management Plan and effectiveness of mitigation measures	SRI / PIU
	Long-term waste management records and performance reports	Operational Facilities	Analysis of records and performance data against environmental standards	Monthly	To ensure compliance with the SRI Waste Management Plan and effectiveness of mitigation measures	SRI / PIU
	SRI Waste Management Plan and regulatory requirements	All operational sites and facilities	Comprehensive external/internal audits, including review of historical data and corrective actions	Annually	To ensure compliance with the SRI Waste Management Plan and effectiveness of mitigation measures	SRI / PIU
Landscape and Visual	Survival rate and health of planted vegetation. Climbers and greening on overpasses. Vegetation encroachment or failure on embankments/cuttings.	Residential areas near the railway infrastructure.	Visual inspection, plant counts, photographic records. Visual assessment from public roads, residential areas, and viewpoints. Assessment of plant health and spread.	Annually, and as needed based on observed changes	To ensure establishment of native vegetation for visual and ecological integration. To confirm long-term screening and identify needs for replanting or modifications.	SRI / PIU

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	Community satisfaction with visual outcomes. Effectiveness of visual screening (e.g. barriers, planting)		Stakeholder surveys, interviews.		To ensure landscape features on overpasses remain effective and visually integrated. To assess success of visual integration and identify further mitigation if needed	
Occupational Health and Safety	Compliance with railway worker safety protocols	Tracks, stations, maintenance zones, and tunnels	Unannounced safety audits of worker behaviour and PPE usage. Review of work permits, time logs, and management records. Evaluation of near-miss and incident reports.	Not less than quarterly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	SRI / PIU
	Overhead catenary and electrical system integrity	Overhead lines, substations, switching yards	Instrument-based checks for current leakage and grounding effectiveness. Drone-based visual inspection of high-risk and inaccessible areas. Review of thermal imaging data for hot spots.	Quarterly or after major maintenance events	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	SRI / PIU
	Track and infrastructure maintenance safety compliance	Track, bridges, tunnels and culverts	Physical inspection of safety practices during maintenance. Review of safety logs, LOTO procedures, and maintenance checklists. Worker interviews for protocol familiarity.	Not less than quarterly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	SRI / PIU

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
	Harmful substance exposure monitoring	Depots, cleaning facilities, storage areas	Air and surface sampling for diesel fumes, solvents, and other hazardous substances. Inspection of ventilation systems and containment areas. Audits of chemical inventory and SDS documentation.	Quarterly or after major maintenance events	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	SRI / PIU
	Fire and explosion prevention system effectiveness	Depots, stations, rolling stock, signal cabins	Functional testing of fire alarms, detectors, and suppression systems. Audits of fire drill records and extinguisher inspection logs. Review of flammable material handling/storage.	Quarterly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	SRI / PIU
	Slips, trips, and falls hazard inspections	Platforms, public and staff walkways, rest areas	Condition surveys for flooring, stairwells, railings, and lighting. Verification of incident log follow-ups and signage adequacy. Observation of housekeeping practices.	Quarterly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	SRI / PIU
	Psychological and ergonomic well-being monitoring	Control centers, maintenance workshops, ticket offices	Anonymous mental health surveys and one-on-one interviews. Ergonomic assessments of workstations and vehicle operator cabins.	Quarterly	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	SRI / PIU

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
			Review of rotation schedules and job design.			
	Emergency response system and preparedness	Stations, tunnels, control rooms, onboard trains	Emergency drills simulating various scenarios (fire, derailment, medical). Inspection of first-aid kits, evacuation signage, and PA systems. Training refreshers for emergency response teams.	Quarterly (drills); Monthly (readiness checks)	To ensure compliance with the OHS Management Plan and Emergency Preparedness and Response Plan, and the effectiveness of mitigation measures	SRI / PIU
	Weather resilience monitoring	Exposed work areas, trackside facilities, signal boxes	Review of PPE adequacy and availability for weather extremes. Functional testing of heating/cooling/lighting in shelters. Evaluation of drainage, snow/ice control systems, and heat mitigation plans.	Annual; Increased frequency during extreme seasons	To ensure compliance with the OHS Management Plan and effectiveness of mitigation measures	SRI / PIU
Social Management	Livelihood Restoration Plan (LRP)	N/A	Review of the plan and monitor indicators included in the plan	Once prior to start of the operation phase	Mitigation measures for unemployment	PIU and Contractor
Livelihood	Dissemination of information for the new railway transport system	N/A	Monitor number of passengers and cargo volumes	Ongoing	Stimulus to local and regional development	SRI
Community Health, Safety and Security	Campaign for public awareness about risks associated with illegal crossing of the railway	N/A	Number of meetings and participants Dedicated education sessions in focus groups	Ongoing	Minimise health, safety and security risks to the communities	SRI

Topic	Parameter to be monitored	Location where the parameter is monitored	How the parameter is monitored	When the parameter is monitored (frequency or continuous)	Why the parameter is monitored	Implementation / Supervision
			(pupils and parents, elderly, Roma etc)			
**Monitoring requirements to be included in the SRI's overarching Environmental Management System for Operation Phase*						

9. APPENDIX 2 – NOISE BARRIERS LOCATIONS

List of recommended noise barriers, Paraćin-Stalać sub-section, 2060 traffic

Barrier No.	Settlement/ Municipality	Railway line chainage		Position in relation to railway line
		start point	end point	
		[km]	[km]	
1	Paraćin	153+628.00	154+248.00	Left
2	Paraćin	154+546.00	154+958.00	Left
3	Paraćin	155+250.00	155+530.00	Right
4	Paraćin	155+158.00	155+358.00	Left
5	Paraćin /Striža	155+401.00	159+670.00	Left
6	Paraćin	155+566.00	157+482.00	Right
7	Striža	158+255.00	159+967.00	Right
8	Ratare	161+525.00	163+045.00	Right
9	Ratare	161+540.00	162+780.00	Left
10*	Sikirica	163+621.00	164+061.00	Right
11	Sikirica/Drenovac/Pojate	164+151.00	168+355.00	Right
12	Drenovac/Pojate	165+459.00	168+347.00	Left
13	Ćićevac	169+816.00	170+500.00	Right
14	Ćićevac	169+772.00	171+356.00	Left
15	Ćićevac	171+018.00	171+366.00	Right
16	Ćićevac	171+279.00	174+175.00	Left
17	Ćićevac /Lučina	171+468.00	172+292.00	Right
18	Lučina	173+178.00	174+170.00	Right

*Objects that could be replaced with passive measures based on the cost-effectiveness assessment after completed Design.

List of recommended noise barriers, Đunis-Trupale sub-section, 2060 traffic

Barrier No.	Settlement/ Municipality	Railway line chainage		Position in relation to railway line
		start point	end point	
		[km]	[km]	
1	Vitkovac	193+501.00	194+713.00	Right
2	Vitkovac/Donji Ljubes	193+417.00	196+721.00	Left
3	Donji Ljubes/Srezovac/ Gornji Ljubes	195+080.00	198+724.00	Right
4	Srezovac/Gornji Ljubes/ Korman	197+044.00	200+708.00	Left

5	Korman/Trnjane	199+431.00	204+427.00	Right
6	Korman	200+817.00	201+181.00	Left
7	Korman/Trnjane	201+440.00	204+284.00	Left
8*	Tranjane/Donji Adrovac	204+880.00	205+460.00	Right
9	Donji Adrova/Pricilovica/ Zitkovac	205+422.00	208+922.00	Left
10	Pricilovica/Zitkovac/ Moravac	207+589.00	211+297.00	Right
11	Zitkovac	208+935.00	209+091.00	Left
12	Zitkovac/Moravac/Nozrina/ Luzane	209+350.00	213+738.00	Left
13	Nozrina/Luzane	212+091.00	213+215.00	Right
14*	Luzane	213+451.00	213+831.00	Right
15	Luzane	213+813.00	214+485.00	Left
16	Tesica	215+401.00	216+857.00	Left
17	Tesica	216+517.00	217+129.00	Right
18	Tesica/Grejac	216+935.00	218+519.00	Left
19	Tesica/Grejac	217+397.00	218+405.00	Right
20	Grejac/Veliki Drenovac/ Supovac/Mezgraja	218+539.00	223+553.00	Right
21*	Grejac	219+424.00	220+220.00	Left
22	Supovac/Mezgraja	223+077.00	224+413.00	Left
23	Mezgraja/Vrtiste	223+891.00	224+607.00	Right
24	Vrtiste/Tupale	226+603.00	228+063.00	Right
25-1	Vrtiste/Tupale	226+742.00	228+022.00	Left
25-2	Vrtiste/Tupale	228+458.00	228+860.00	Left
26	Trupale	228+438.00	229+638.00	Right
27	Trupale	228+956.00	229+036.00	Left
28	Trupale	229+062.00	229+642.00	Left

*Objects that could be replaced with passive measures based on the cost-effectiveness assessment after completed Design.

10. APPENDIX 3 – MANAGEMENT OF CHANGE PROCEDURE

Introduction

This Management of Change Procedure (MCP) sets out how the potential ESHS implications of design changes would be assessed. The assessment of the design change would aim to ensure that adequate mitigation is adopted to minimise and avoid effects where any deviations to the Project, as described in the ESIA, are proposed. This procedure also covers associated infrastructure not defined in the ESIA, which could be located beyond the Project area. Such infrastructure could include the following: access roads, construction compounds, workers accommodation camps, waste management facilities and changes to the public highway or accesses.

This MCP should be read in conjunction with the Environmental and Social Management Plan (ESMP) for the Project, where the roles and responsibilities of SRI, the Project Implementation Unit (PIU), the Supervision Engineer, and the Contractor are set out in Section 3. Contractors will prepare their own management of change procedure in compliance with this procedure and give required training to their staff.

Potential changes can be triggered at either the detailed design stage, or prior to and during construction, and can be initiated by various stakeholders (SRI, PIU, Supervision Engineer, Lenders, Local Community or the Contractor). Changes by the Contractors or the PIU could be prompted by the application of the environmental and social design principles that are set out in the ESMP. They could include:

- Basic design refinement, after disclosure of the ESIA, due to detailed topographic or geotechnical information, or Lenders' requirements;
- Detailed design development submitted by the design team of the Contractor in advance of the construction activities and approved by SRI/PIU;
- Results of further field surveys, investigations, and monitoring;
- Identification of additional areas required for Project construction, which are not included in the ESIA.
- Comments or concerns submitted by stakeholders, including the public;
- Changes in regulations or comments by regulatory bodies; and
- Unexpected Issues arising during construction.

The Contractor will define the technical changes to the design that are proposed and determine the need to conduct ESHS studies to inform the potential implications of changes to the design. The MCP recognises that there could be differing degrees of change, and the need and scope of environmental and social investigation would need to be appropriate for the proposed change.

Consequently, three categories of change have been developed, which comprise:

CATEGORY 1

A Project design or activity change that does not result in any changes to, or impacts on, communities or the natural environment, and does not result in non-compliance with national legislation and project requirements. Any potential impacts would be routinely controlled through the existing mitigation measures outlined in the ESMP. Subject to technical evaluation, the change can be accepted without the need for further ESHS studies.

Management of change process form in Annex-1 will be filled and submitted to Supervision Engineer for review and approval and submitted to the PIU for information.

CATEGORY 2

A Project design or activity change that could lead to ESHS changes, but which are unlikely to result in significant impacts. Such impacts may or may not have been covered by the ESIA, or by mitigation measures outlined in the ESMP. These design changes would not be in sensitive locations (i.e. within any protected or proposed protected area or within close proximity of settlements (i.e. within 150m)) and are unlikely to result in any potential non-compliance with Project ESHS requirements. However, an ESHS study would be required to demonstrate the potential impacts of the change and to confirm that measures are either already in place in the ESMP, can be controlled by good international practice or measures can be extended or introduced to fully control and/or mitigate the potential impacts. The PIU would undertake a review and approve the scope and outcome of these Category 2 ESHS studies prior to any design changes being implemented. This change will come through either the Contractor or Supervision Engineer, in accordance with the above listed change principles, and the Management of Change Process Form given in the Annex-1 will be prepared including the ESHS studies and submitted for the approval of PIU.

CATEGORY 3

This applies to a project design or activity change that could result in potentially significant impacts, that was not included in the ESIA and is not covered by the ESMP. A Category 3 change would also apply to any changes outside the ESIA study area, within any Protected or Proposed Protected area, or within close proximity of settlements (i.e. within 150m). Category 3 changes will require approval of both the scope and outcome of ESHS studies from both SRI/PIU and the Lenders. These ESHS studies will need to demonstrate compliance with the Project ESHS requirements. In some circumstances, the assessment may need to be undertaken in consultation with stakeholders and communities and may require full public disclosure, prior to confirmation of no objection by the Lenders, and will likely lead to changes to the Contractors ESMP. This change will come through either the Contractor or Supervision Engineer in accordance with the above listed change principles, the

Management of Change Process Form given in the Annex-1 will be prepared including the ESHS studies/assessments and submitted the PIU for approval and submitted to the Lenders for confirmation that they have no objection. Work can progress once both approval from the PIU and no objection from the Lenders is received.

Procedure

The general MCP procedure is described in the following eight steps:

Note – in case the change is initiated by SRI, PIU will undertake the below steps preparing the screening and supplementary documentation and undertaking any disclosure and stakeholder engagement required.

Step 1 - Notification of Design Change and Screening by Contractor

The Contractor will notify the Supervision Engineer of the need to change the design or clarify the details of associated infrastructure being developed outside of the Project area. In doing so, the Contractor will present details of the proposed change, the justification for the change, any alternatives considered and indicate their preliminary evaluation of the ESHS category of the change.

The Supervision Engineer shall review and approve the Annex-1 screening conducted by the Contractor to provide a preliminary opinion for proposed design changes in order to evaluate the ESHS categorisation of the design change.

The Supervision Engineer shall register and track all proposed changes to the design (irrespective of the entity who initiates the change), or the design of associated infrastructure that fall outside the Project area, in an MCP log, for periodic review by PIU/the Lenders. The MCP log shall be used to document all design change decisions.

Step 2 – Screening Review by Supervision Engineer

The Supervision Engineer shall then examine the Management of Change Process Form and documentation provided by the Contractor (e.g. drawings, technical notes, or Feasibility Studies) for all Category 2 and 3 design changes to understand the features and location of the proposed change in order to confirm the categorisation of the proposed design change. If the Supervision Engineer agrees to the change being a Category 1 change, it will inform the Contractor and no further work is necessary. PIU will be informed about all category changes in the monthly reports. For all Category 2 and 3 changes, the Supervision Engineer will inform the Contractor of the need to provide a scope of works in line with Step 3 below.

In addition, for each Category 2 and 3 design change, the Supervision Engineer shall assess and monitor whether the Contractor has evaluated a sufficient number of alternative designs and selected the most appropriate option taking into account inter alia the potential ESHS impacts.

Step 3 - Scoping of Environmental, Health and Safety and Social Studies (ESHS) for Category 2 and 3 Changes

The Contractor is responsible for the procurement and funding of the ESHS study necessary for Category 2 and 3 design changes (unless they are proposed by SRI / PIU). The Contractor shall establish:

- the scope and level of detail of the necessary ESHS Study;
- the scope of any necessary site surveys; and
- the technical studies, assessments and reporting formats needed.

The proposed scope of the ESHS study will be based on the methods used in the Project ESIA, where applicable. The PIU shall coordinate with the Contractor and Supervision Engineer to ensure that these needs are addressed. The PIU would approve the scope of an ESHS study for a Category 2 change via the review and monitoring undertaken by the Supervision Engineer.

For Category 3 changes, the Supervision Engineer will review, monitor and inform PIU and PIU shall report to the Lenders to inform them of: the proposed change; the result of the ESHS screening; and to gain approval for the proposed scope of the ESHS study. The ESHS study proposed by the Contractor must comply with the Project ESHS requirements. The Lenders must approve the scope of all Category 3 ESHS studies. At this scoping stage for Category 3 changes, the need for stakeholder engagement and public disclose of the final ESHS study is also to be determined by the PIU and approved by the Lenders.

The Supervision Engineer shall review the Contractors proposals with respect to the:

- Scope and level of detail of the necessary ESHS Study;
- Scope of the site surveys;
- Technical studies, assessments and reporting formats; and
- Proposals for stakeholder consultation and public disclosure (where relevant).

The PIU shall review the proposed scope of ESHS work based on the recommendation from the Supervision Engineer to ensure it is compliant with the Project ESHS requirements.

For Category 3 changes, the PIU shall report to the Lenders the proposed design changes, the result of the ESHS screening as per Annex-1 Management of Change Process Form (MCPF), the proposed scope of the ESHS study and the strategy for stakeholder consultation.

PIU shall inform the Contractor of the outcome of this review.

Step 4 – Environmental, Health and Safety, and Social Studies for Category 2 and 3

The Contractor procures, funds, and undertakes the approved ESHS study for design changes proposed by the Contractor. SRI would fund the ESHS study if the changes are proposed by SRI/PIU.

For Category 3 changes, the Contractor undertakes the agreed stakeholder consultation. The Supervision Engineer monitors the stakeholder consultation process and the ESHS study.

Where public disclosure and consultation of the ESHS study is needed, PIU shall support the Contractor with any public disclosure and consultation requirements of any ESHS studies by organising any public meetings and posting details of the disclosure on the Project website. Public disclosure and consultation only occurs after Step 5 which is the review and approval of the ESHS study. Feedback from disclosure and consultation shall be accounted for in the final design of the change.

Step 5 - Review and Approval

For Category 2 design changes, the ESHS study report(s) shall be submitted for the approval or rejection of the PIU only. For Category 3 changes the PIU shall provide the ESHS study report(s) for the Lender's review and approval. The Lender's must approve all Category 3 design changes.

The review and approval of Category 3 changes must demonstrate compliance with the Project ESHS requirements. The Supervision Engineer will review, monitor the ESHS studies carried out by the Contractor and give feedback to the PIU.

The PIU shall inform the Contractor about the final outcome of the review of the design changes and the results of any ESHS study reviews making clear the details of any additional work needed to the ESHS studies. Changes and updates will be made to the ESMP, or CESMP if appropriate, as required for both Category 2 and 3 changes – see Step 7.

The Supervision Engineer shall review the Category 2 and 3 ESHS study report(s) provided by the Contractor and verify the following for the final approval of PIU;

- Robustness of the baseline description;
- Relevance and adequacy of the impact assessment;
- Effectiveness of the proposed mitigation strategy; and
- Identification of any changes to the ESMP.

Once any Category 3 ESHS studies are finalised and approved, the PIU shall support the Contractor with any public disclosure requirements of any ESHS studies by organising any public meetings and posting details of the disclosure on the Project website.

Step 6 - National EIA and Permits

The Contractor shall, for all approved design changes, carry out a review of existing permits to determine whether these could be affected and prepare any revised permit applications. The Contractor will then be responsible for implementing and complying with the requirements of the local permits.

The Supervision Engineer is responsible for notifying the appropriate regulators of all material design changes where these could require revisions to the national EIA. Supervision Engineer would then be responsible for facilitating revisions to the national EIA and obtaining permits as required.

Step 7 - Addenda to ESMP/CESMP

If an approved design change requires environmental and social measures which are not covered by the existing ESMP, the Supervision Engineer shall prepare an Addendum to the ESMP if appropriate, and the Contractor to the CESMP and specific sub-plans to address any new mitigation measures. The Addenda, together with the original ESMP/CESMP, shall be submitted to the Lenders and disclosed on the Project website.

Step 8 - Addenda to Resettlement Action Plans

For each approved design change, the PIU shall conduct the land surveys required and the necessary consultations to update the Resettlement Action Plans (RAP) for the area affected by the proposed change in design. The PIU shall use the result of the RAP investigations to minimise impacts on livelihoods and implement the required actions with the Contractor.

The PIU shall submit the Addenda to the RAP to the Lenders before payment of compensation and actual land take. The RAP shall be disclosed on the Project website and compensations paid in order that the land take can be formalised.

10.1 ANNEX-1

MANAGEMENT OF CHANGE PROCESS FORM	
Section A. This section of the form will be completed by the Facilitator of the Change	
Facilitator of the Proposed Change (s):	
Date:	
Location of the proposed Change(s):	
References to Relevant Design Documentation/ Drawings:	
Summary of the Proposed Change (s):	
Please specify the change content:	☐ Route/site facility change ☐ Engineering/Design Development ☐ Change in Legislation ☐ Change in Authority Decision ☐ Change in new E&S data including community safety ☐ Change of Construction/Operation Execution strategy ☐ Change of Management Strategy ☐ Stakeholder influence
ROUTE/SITE FACILITY CHANGE	
Please provide details of the route/site facility change *Note: Please refer to the ESIA Report and E&S documentation of the Project and if the change is Category 2 or 3, then prepare a detailed ESHS study and submit to*	

the approval of SRI/PIU and the Lenders.	
ENGINEERING/DESIGN DEVELOPMENT CHANGE	**Please specify the new E&S aspects with the below given questions?**
ATMOSPHERIC EMISSIONS	
Will there be any associated atmospheric emissions? If so, which contaminants will be emitted? What volumes or concentrations of these contaminants will be emitted?	
How will these contaminants be managed to reduce the environmental impact?	
How will the emission of these contaminants affect SRI's compliance with national and/or international legislation and policy commitments?	
WASTEWATER DISCHARGES	
Will there be any associated wastewater discharges? If so, what contaminants will be discharged? What volumes or concentrations of these contaminants will be discharged?	
How will this affect SRI's compliance with national/ international legislation and policy commitments?	
WASTE GENERATION	

Will any wastes be generated? If so, what types of waste will be	

generated? What quantities of these wastes will be generated?	
How will these wastes be managed and finally disposed?	
Are any of the wastes classified as hazardous?	
What are the specific hazards associated with these wastes (e.g., toxicity, flammability, corrosiveness)?	
How will different types of waste be segregated on-site?	
What are the storage requirements for each type of waste (e.g., containment, labeling, duration of storage)?	
Are there opportunities to minimize waste generation through process optimization or material substitution?	
What waste reduction strategies will be implemented?	
NOISE	
Will the proposed change be expected to create any additional noise impact? If so, what will be the level of this additional noise?	
How will the noise impact be mitigated if it is likely to exceed Project Standards?	
SOIL	

Will the proposed change be expected to create any additional impact to soil? If so, what will be the level of this additional impact?	
How will the soil impact be mitigated if it is likely to exceed Project Standards?	
ENVIRONMENTAL AND CULTURAL SENSITIVE AREAS	
Is a critical habitat (CH) or archaeological site (ARC) identified within the vicinity of the proposed change?	
If yes, has a specialist desktop (ecological or archaeological) review been completed to identify risks to the CH?	
If yes, will the proposed change create any impact on environmental sensitive areas? If so, what are those areas and what recommendations will be required?	

How will the impact on these areas be mitigated? As per national or international standards?	
USE OF NATURAL RESOURCES	
Will the proposed change create any increase in energy, water, raw material, fuel consumptions or additional land use? If so, what type and amount of increase is expected?	
Will there be any additional permit/legal requirements?	
ENVIRONMENTAL MONITORING	
Will there be any environmental monitoring/reporting requirements?	
If so, what will be these monitoring/reporting requirements and how will they be conducted?	
How often will these monitoring/reporting requirements need to be conducted?	
What measures will be taken to improve resource efficiency and reduce consumption (e.g., energy-efficient technologies, water-saving practices)?	
Are there any conservation strategies in place to mitigate the impact of increased resource use?	

Are there alternative resources that could be used to minimize the impact on natural resources (e.g., renewable energy sources, recycled materials)?	
What is the feasibility and cost-effectiveness of using these alternatives?	
MAINTENANCE	
Will any air emissions, wastewater discharges or wastes be generated during maintenance activities associated with the proposed change?	
If so, what contaminants will be generated? What quantities of these contaminants will be generated?	
How will these contaminants be managed to reduce the environmental impact? Are these management strategies in line with	

the existing national and international requirements?	
HAZARDOUS MATERIALS	
Will any new hazardous materials be used? If so, what types and quantities will be used? Does the MSDS of the new hazardous material fit for the legal requirements?	
How will these materials be stored and handled?	
Have Material Safety Data Sheets (MSDSs) been obtained, retained and communicated to all relevant personnel?	
How will these contaminants be managed to reduce the environmental impact?	
SENSITIVE RECEPTORS	
Will there be any additional or new sensitive receptors in the vicinity?	
POLITICS AND GOVERNANCE	
Will any additional or new authority approval or permit be required?	
SETTLEMENT PROFILE	
Are any settlements or houses nearby?	
INFRASTRUCTURE FACILITIES	

Will any additional or new infrastructure be crossed (roads, etc.)?	
TRANSPORTATION AND TRAFFIC	

Will there be any additional or new impact on existing, local traffic?	
ECONOMIC CONDITIONS	
Will economic conditions of the area be affected?	
LAND	
Will additional or new land be required?	
LAND USE	
If additional or new land is required, is it used as agricultural, pasture or forest?	
EMPLOYMENT AND LIVELIHOODS	
Will there be positive effects in terms of employment or procurement?	
CHANGE IN LEGISLATION	**Please specify the change details.**
CHANGE IN AUTHORITY PROVISION	**Please specify the change details.**
CHANGE IN NEW E&S DATA	**Please specify the change details.**

CHANGE OF CONSTRUCTION/OPERATION EXECUTION STRATEGY	**Please specify the change details.**
CHANGE OF MANAGEMENT STRATEGY	**Please specify the change details.**
STAKEHOLDER INFLUENCE	**Please specify the change details.**
Section B. This part will be filled by following disciplines for specific evaluation of MCP data	
COMMENTS OF SPECIALISTS	
Environmental Discipline	
Social Discipline	
HS and Railway Safety Discipline	
Land & Permits Discipline	
Project Manager	

Please state the final decision and category of the change based on the below headings:
☐ Category 1
☐ Category 2
☐ Category 3

☐ No action is required. Change can be implemented.
☐ Additional permit is required.
☐ Environmental and Social Assessment is required.
☐ Public Consultation is required.
☐ Project Description File is required by State Authorities.
☐ EIA/ESIA Process is required by State Authorities and Lenders.
☐ Change can be implemented provided that:

Note: After filling-out the form, please hand over the EMCP data to the Facilitator of the Change for the given decision to be communicated with the related stakeholders, in order to proceed to the approval/no objection.

11. APPENDIX 4 – 'AVOIDANCE ZONES'

'Avoidance Zones' are areas where the establishment of construction facilities (including but not limited to waste and materials storage facilities, waste disposal areas, lay down areas, accommodation camps, workshops and vehicle parking areas) is prohibited. These include the following:

- **Biodiversity protected areas**, including nationally and internationally designated sites (refer to Figures 5-1 to 5-8 in the Biodiversity Management Plan prepared as part of the ESIA package for the Project):
  - C1.33 - Rooted submerged vegetation of eutrophic waterbodies (3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation) – chainages: 225+000 km and 226+000 km and cca 228+000 km.
  - C3.2 Water-fringing reedbeds and tall helophytes other than canes – chainages: cca 223+00 km, cca 225+000 km, cca 227+000 km and cca 228+000 km.
  - E3 Wet or seasonally wet grasslands – chainages: cca 225+000 km, between 225+000 km and 226+000 km and cca 228+000 km.
  - G1 Broadleaved deciduous woodland – chainages: cca 192+200 km, cca 196+000 km, cca 198+000 km, cca 199+000 km.
  - G1.11 Riverine Salix woodlands (*91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) – chainages: between 192+000 km and 193+000 km, cca 197+000 km, cca 197+000 km, cca 200+000 km, cca 223+000 km, cca 225+000 km, cca 226+000 km, cca 227+000 km and cca 228+000.
  - G1.223 Southeast European *Fraxinus - Quercus - Alnus* forests (91F0 Riparian mixed forests of *Quercus robur,* and *Ulmus laevis Ulmus minor, Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (*Ulmenion minoris*)) – chainages: between 219+000 km and 220+000 km.
  - G1.76 Balkano-Anatolian thermophilous Quercus forests (91M0 Pannonian-Balkanic turkey oak – sessile oak forests) – chainages: between 191+500 km and 195+200 km, between 196+500 km and 197+300 km, between 198+100 km and 199+500 km, between 202+200 km and 203+200 km, between 204+800 km and 205+100 km, between 218+000 km and 219+200 km and cca 205+000 km.
  - All aquatic habitats in the riparian zone of Južna Morava River within the Project and wider area.

- **Groundwater protection zones**:

Sanitary

protection zones of groundwater sources (see Figure 10-10 in Chapter 10 of the ESIA Report): Zone III wider zone of sanitary protection for:

- Gorunje water source (used for public water supply) from km 153+380 to 154+350
- Bahus water source (used for the production of bottled water) from km 157+350–158+400
- Striža water source (used for public water supply) at km 160+000
- Dankovo water source (used for public water supply) at km 157+000.

- **A buffer zone of at least 50m from all surface water bodies and groundwater springs/wells.**

- **Areas in close proximity to sensitive social receptors** (including nurseries, schools, medical facilities, retirement homes, places of worship and residential zones).