

**Construction of new railway section from Kriva Palanka to
the border with Republic of Bulgaria, as part of Corridor
VIII**

**Environmental and Social Management
Plan**

**Public Enterprise for Railway Infrastructure Railways of
Republic of North Macedonia – Skopje**

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Explanation note:

The project is expected to be financed in part by an approved Instrument for Pre-Accession II (IPA II) grant. This grant shall be deployed through the IPA Operating Structure. See for further details: IPA 2014-2020 (IPA II) - CFCD (finance.gov.mk). In that context, the Environmental and Social instruments, including this document, shall be implemented by the Public Enterprise for Rail Infrastructure Management of the Republic of North Macedonia in collaboration with the Contracting Authority, or Central Financing and Contracting Dept within the Ministry of Finance, and the Ministry of Transport and Communication.

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List of Abbreviations

Abbreviation	Meaning
AQ&DSP	Air Quality and Dust Suppression Plan
BMP	Biodiversity Management Plan
CEPRP	Construction Emergency Preparedness and Response Plan
CESMP	Construction Environmental and Management Plan
CHMP	Cultural Heritage Management Plan
CLO	Community Liaison Officer
CSO	Civil Society Organization
CTMP	Construction Traffic Management Plan
dB	Decibel
E&S	Environmental and Social
EBRD	European Bank for Reconstruction and Development
EHSS	Environmental Health & Safety and Security
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EPRP	Emergency Preparedness and Response Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
EU	European Union
GBVH	Gender Based Violence and Harassment
H&S	Health and safety
ILO	International Labor Organization
MCP	Management of Change Procedure
NM	North Macedonia
OCHSSP	Operational Community Health, Safety and Security Plan
OEPRP	Operational Emergency Preparedness and Response Plan
OESMP	Operation Environmental and Management Plan
OG	Official Gazette
OGRNM	Official Gazette of Republic of North Macedonia
OMP	Operational Management Plan
OSH	Occupational Health and Safety
OSEMP	Operational Soil Erosion Management Plan
OWMP	Operational Waste Management Plan
PAP	Project Affected People
PE ZRSMI	Public Enterprise for Railway Infrastructure Railways of Republic of North Macedonia - Skopje
PIU	Project Implementation Unit
PM	Particulate Matter
PPE	Personal protective equipment
PWS	Private Water Supply
RAP	Resettlement Action Plan
RF	Resettlement Framework

Abbreviation	Meaning
RNMT	Railways of North Macedonia Transport
SEP	Stakeholder Engagement Plan
TPS	Traction Power Substation
WGM	Workers Grievance Mechanism
WFD	Water Framework Directive
WMMP	Waste and Materials Management Plan

1 Introduction

1.1 Context of the ESMP

The Public Enterprise for Railway Infrastructure - Railways of the Republic of North Macedonia (PE ZRSMI) is a public company in charge of the construction and maintenance of the national railway infrastructure. PE ZRSMI intends to select future build contractor to construct the 23.4km new single-track, 100km/h max. design speed railway between Kriva Palanka and the border with Bulgaria (Section 3 of the Railway Corridor VIII - Eastern Section) and to electrify Section 1, 2 and 3 of the same Corridor (the Project). The European Bank for Reconstruction and Development (the "EBRD") and the European Investment Bank (the "EIB")¹ are considering providing finance for this section as part of the loan agreement signed with the Republic of North Macedonia.

This document is the Environmental and Social Management Plan ("ESMP") which sets out a number of basic standards and arrangements that must be applied to the Project. These requirements include ESHS policies, management controls, key roles and responsibilities and reporting. The primary purpose of the ESMP is to ensure that the construction and operation of the Project complies with national (Macedonian) law, EU/international requirements, EBRD Performance Requirements and EIB E&S standards.

This ESMP represents a commitment by PE ZRSMI to environmental and social sustainability, and this commitment will also apply to their contractors and sub-contractors and supply chain. It is essential that the future design & build contractor, and their sub-contractors, understand the ESMP Requirements and to ensure that they are fully aware of the obligations placed upon them by the ESMP.

The potential effects and associated mitigation measures and management procedures in this ESMP are based on the findings and assessments of the following basic documents:

- A detailed national Environmental Impact Assessment (EIA) prepared in 2017 for Section 3 by a consortium of consultants acting on behalf of PE ZRSMI and was approved by local environmental authorities in 2018 (Decision for issuing project consent, No. 11-77/2, 05.06.2018) and renewed in 2021 and 2023 according to local legislation;
- An earlier ESIA (2012) for the entire Eastern Railway Corridor VIII including the ESMP, prepared by an international consortium (Eptisa & DB) and approved by the national environmental authority in 2012;
- Environmental and Social Assessment of the Project (done by the EU-funded technical assistance Connecta, 2022) which aimed to fill up gaps in the safeguard documentation to ensure the Project's compliance to national and Lenders requirements, which among others included the Biodiversity Assessment Report, the Resettlement Action Plan and the Stakeholder Engagement Plan.

1.2 Scope and Purpose of the ESMP

The objectives of this Environmental and Social Management Plan ESMP are to:

- Set out the key environmental and social issues or sensitivities related to the Project (as identified throughout the EIAs);

¹ Collectively known as the potential "Lenders"

- Ensure that the Project will comply with the EU EIA Directive, relevant Macedonian environmental, health, safety and social legislation and applicable Lenders requirements, including the EBRDs Environmental and Social Policy (ESP) and Performance Requirements (PRs), and EIBs Environmental and Social Policy (ESP) and E&S standards.
- Describe the mitigation measures and management procedures (as identified throughout the EIAs);
- Set out how the effectiveness of the mitigation measures and management procedures will be monitored;
- Identify roles and responsibilities for the mitigation measures and management process;
- Facilitate a continual review of the Project activities based on performance data and consultation feedback;
- Implement corrective actions or adaptive management procedures, as required.

This ESMP is intended for use primarily by the future design & build Contractor during construction phase of the project, as a framework environmental and social document, and will also be a reference document in the legal agreements with the financiers.

1.3 Intended Users

The aim of this document is to communicate to the Project Team (including contractors and sub-contractors), the potential environmental, health, safety, and social (EHSS) issues associated with the Project and the procedures and mitigation measures that are required to be implemented.

PE ZRSMI will utilize this ESMP during Project execution to achieve appropriate and effective EHSS management. This ESMP should be read in conjunction with other E&S safeguard documentation such as SEP, RAP, BMP.

PE ZRSMI will be responsible for ensuring their Contractors develop this ESMP into a Construction Environmental and Social Management Plan (CESMP) for the Project. The CESMP will include but not be limited to:

- Introduction, background, objectives and structure of the document;
- The Project's EHSS policies and goals;
- The Project's EHSS regulatory framework and safeguards;
- EHSS management roles and responsibilities;
- Register of environmental and social effects and mitigation measures;
- Issue-specific environmental and social management plans;
- EHSS management procedures;
- Institutional arrangements and implementation;
- Training requirements;
- Project resourcing and budget allocation;
- Project implementation schedule; and
- Monitoring, management review and reporting requirements.

2 Roles and Responsibilities

The broad role of each party involved in the Project in relation to the ESMP is identified in this section and the minimum EHSS resources they will be required to appoint to ensure effective implementation of the Project EHSS requirements.

The project is expected to be financed in part by an approved Instrument for Pre Accession II (IPA II) grant. This grant shall be deployed through the IPA Operating Structure. See for further details: [IPA 2014-2020 \(IPA II\) - CFCD \(finance.gov.mk\)](#). In that context, the Environmental and Social instruments, including this document, shall be implemented by the Public Enterprise for Rail Infrastructure Management of the Republic of North Macedonia in collaboration with the Contracting Authority, or Central Financing and Contracting Department (CFCD) within the Ministry of Finance, and the Ministry of Transport and Communication.

When contractors perform work under contract, the contracting entity i.e. either Central Financing and Contracting Department (CFCD) in the case of the Works Contract or PE ZRSMI in the case of signalling and telecommunication and electrification, shall be responsible for including the requirements of this ESAP into the relevant procurement documents and ultimately for contractors' compliance with the requirements of the ESAP. PE ZRSMI will engage a supervision consultant to provide support in monitoring the implementation of these requirements by contractors.

2.1 PE ZRSMI – Project Implementation Unit

PE ZRSMI will have ultimate responsibility for the Project and will oversee the implementation of the Lenders requirements during construction by overseeing construction contractor, construction sub-contractors and their involved third parties. PE ZRSMI will be responsible for creating a Project Implementation Unit to implement the Project.

Project Implementation Unit (PIU) has the following responsibilities:

- The PIU will be responsible for the implementation, financial management and overall delivery of the Project.
- The PIU will be responsible for the implementation of mitigation measures and management procedures specified within the disclosure package of the Project, including the Environmental and Social Management System (ESMS), Environmental, Health and Safety (EHS) Policy, Human Resources Policy and Procedures, Discrimination and Harassment Policy, a Gender Equality and Labour Management Procedure.
- The PIU will oversee the preparation and implementation of the ESMP, which requires the preparation of a CESMP by PE ZRSMI's Contractor, to ensure they fulfil all the identified EHSS requirements for the Project.
- The PIU are responsible for ensuring roles and responsibilities are clearly identified and allocated for EHSS aspects of the Project, both within the PIU itself, and within the workforce provided by the Contractor, their sub-contractors, supply chain and other involved third parties.
- The PIU 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.

The PIU will also be responsible for appointing technical specialists to effectively audit the implementation of EHSS measures and processes. These specialists will include:

- **PIU Manager** will be ultimately responsible for overseeing the activities undertaken by the PIU specialists (listed below), overseeing the implementation of mitigation measures and management procedures specified within the disclosure package of the Project, and overseeing the preparation and implementation of a CESMP, which will be based on this ESMP.
- **Environmental, Health and Safety, and Social (EHSS) Manager** will be responsible for overseeing all matters that relate to environment, health, safety and social aspects of the Project.
- **Community Liaison Officers (CLOs)** will be appointed to be responsible for supporting the implementation of the SEP, by conducting regular consultation with affected communities on any concern regarding the Project and handling grievances.
- **Environmental Specialist** will be responsible for overseeing the implementation of all environmental and biodiversity measures, as specified within the disclosure package of the Project, and regular reporting to senior management and the Lenders.
- **Biodiversity Expert** will be responsible for providing recommendations, guidance and training on BMP implementation and update prior to operation, quarterly site visits during construction and reviewing key biodiversity related deliverables.
- **Health and Safety Specialist** who is responsible for overseeing health and safety for the Project.
- **Human Resources / Labour Specialist** will be responsible for overseeing the implementation of all health, safety and social measures, as specified within the disclosure package of the Project, and regular reporting to senior management and the Lenders.
- **Social and Resettlement Specialist** will be responsible for overseeing the implementation of the RAP, livelihood and all the matters in relation to expropriation.

Further technical staff may be required during the course of the Project, who will be assigned internally by the PIU, either by means of permanent or temporary basis until the completion of relevant tasks under the Project whilst they undertake their current responsibilities. The PIU will also be supported by the PIU Consultant who will provide specific resources including a biodiversity expert as described in the BMP; support on RAP implementation and other resources as required.

2.2 Supervision Consultant

PE ZRSMI will appoint a Supervision Consultant, consisting of a range of expertise, to supervise the activities of the Contractor on a day-to-day basis. The Supervision Consultant will appoint the following:

- **Supervision Contract Manager** - Responsible for supervising the Contractor to ensure that recommendations and requirements, as set out in the disclosure package, are applied. They will be responsible for continuous monitoring of the processes and activities undertaken by the Contractor, and specifying measures to be implemented by the Contractor, to address any areas of non-compliance. This includes periodic audits, inspections, and/or spot checks of project locations or work sites and/or of records and reports compiled by contractors.
- **Environmental Expert** - Responsible for supervising the Contractors, and their sub-contractors, management of environment related matters. Including regular site inspections and regular reporting to PIU. Supported by an Environmental Field Officer and Ecologist / Biodiversity Specialist.
- **Health and Safety Expert** - Responsible for supervising the Contractors, and their sub-contractors, management of H&S. Including regular site inspections and regular reporting to PIU.

- **Social Supervisor** - Responsible for supervising and monitoring the Contractors management of social matters including the stakeholder engagement by CLOs, land related activities and implementation of the RAP.
- **Biodiversity Supervisor** - Responsible for supervising the Contractors, and their sub-contractors implementation of the mitigation measures outlined in the BMP. Including regular site inspections and regular reporting to PIU

2.3 Contractor

The Contractor will predominantly be responsible for ensuring that all their work and staff activity is compliant with the legislation, policies and standards for EHSS and the permits provided by national (and local) regulators and the Project EHSS requirements. Key responsibilities for the Contractor include:

- Utilising this ESMP to prepare and implementing the CESMP and associated sub-plans, as well as applicable sections of other plans including the SEP, RAP, and BMP.
- Undertaking stakeholder engagement as set out in the SEP. This includes the establishment of a worker's grievance mechanism.

The Contractor will be responsible for appointing specialists to ensure EHSS mitigation is implemented in accordance with the Project EHSS requirements. These specialists will include as a minimum:

- **Contractor Project Manager** - responsible for overseeing the construction of the Project, including planning and delivery. They will be suitably competent and have a strong understanding of construction best practice. The Project Manager is accountable for overall EHSS performance, and making the human and financial resources available to ensure compliance with EHSS requirements of the Contract
- **Construction/Site Manager(s)** – responsible for implementation of the CESMP measures through method statements and site working practices.
- **Environmental Lead** - responsible for reporting and supervising environmental activities on site. They will be suitably competent, having a strong understanding of environmental best practice including the Project EHSS requirements.
- **Biodiversity Specialist** - will provide biodiversity support in advance of, and throughout construction, including pre-construction surveys. This role will have a wide-ranging brief but ultimately will focus on ensuring required ecological mitigation is appropriately undertaken and measures are maintained throughout construction, in accordance with the ESMP and BMP. As per the requirements of the BMP, additional biodiversity specialist should be engaged (Mammal, amphibians and reptiles specialists) when and where necessary.
- **Health and Safety Lead** - responsible for the implementation of health and safety practices during construction.
- **Social Lead** - responsible for reporting and supervising social activities on site, stakeholder engagement and grievance management.
- **Community Liaison Officer(s)** will be appointed to be responsible for supporting the implementation of the SEP, including participating in regular consultation with affected communities and handling grievances related to the Contractor's activities (at least one CLO will be a women)
- **Human Resources Lead** - responsible for managing all matters relating to human resources management for the Contractor.

- **Qualified Archaeological Specialist** - responsible for overseeing all matters related to archaeology during construction, including implementing the chance finds procedure.

Certain specialists will be defined as Key Personnel in the Contract and all personnel shall be proposed to the PIU for non-objection in advance of hiring, to ensure they comply with the requirements of this ESMP.

The Contractor shall engage an appropriate number of on-site officers to support the above positions and implement the E&S requirements.

2.4 The Lenders

EBRD and EIB (collectively known as 'the Lenders'), are considering financing the Project. The Lenders will require the submission of progress reports that monitor the EHSS performance of the Project against its set of specific Performance Requirements (PRs) / Standards for key areas of environmental and social sustainability.

3 Contractor's CESMP and Delivery Mechanisms

Employers Requirements, that will be prepared by Connecta in cooperation with the IPA Operating Structure as part of the Tender Document for this Project, will set a clear requirement for the future contractor ("Contractor") to develop this ESMP into a full Construction Environmental and Social Management Plan ("CESMP"). The Contractor will be required to develop the ESMP into the CESMP prior to start of the construction phase. The CESMP will contain several sub-plans.

The Contractor will be responsible for implementing an ESMS that is in line with international standards, the Lenders requirements, and PE ZRSMI's corporate ESMS.

The Contractor will need to fulfil EU environmental, health, safety and social (EHSS) legislative requirements, Macedonian national legislation requirements, and the performance requirements / standards of the Lenders. The "Project EHSS requirements" include:

- The Lenders Environmental and Social Requirements (EBRD ESP PRs (2019) and EIB Standards (2022));
- EU Legislative Requirements;
- International Conventions and Protocols the Republic of North Macedonia is part of;
- World Bank Group Environmental, Health, and Safety (EHS) Guidelines; and
- Macedonian legislative requirements, including all permits, licenses and approvals.

If and when, national regulations differ from EU substantive environmental standards, the Project will be expected to meet the most stringent of these.

The purpose of the CESMP is to establish how the mitigation commitments made through the ESIA process will be implemented, monitored and sustained. The content of the CESMP is essential to bridge the findings of the ESIA, requirements set in the national permits / approvals, and this ESMP with the implementation of the mitigation measures. The CESMP needs to provide instructions how environmental, social and health commitments will be managed from pre-construction (preparatory) phase to the construction of the Project.

3.1 CESMP Sub-plans

The CESMP will contain several sub-plans, including but not limited to:

- Air Quality and Dust Suppression Plan;
- Surface Water Management Plan;
- Waste Management Plan and Materials Management Plan;
- Earthen Material/ Spoil Management Plan;
- Erosion Control Plan;
- Hazardous Materials Management Plan;
- Construction Biodiversity Management Plan (based on the 2022 BMP)
- Noise and Vibration Management Plan;
- Tunnel Construction Plan;
- Blasting Management Plan;
- Landscape Management Plan (and Landscape / Planting Plans);
- Cultural Heritage Management Plan;
- Health, Safety and Security Plan (Community and Occupational Health and Safety - OHS);
- Construction Emergency Preparedness and Response Plan;
- Construction Traffic Management Plan;
- Construction Worker's Accommodation Management Plan;
- Recruitment, Labour Management and Monitoring Plan;
- Training Plan;
- Supply Chain Management Plan;
- Management of Change Procedure;

Each sub-plan will be based on a standard format covering: (i) Cross references to applicable legislation and the Project EHSS standards; (ii) Roles and responsibilities; (iii) Cross reference to other procedures; (iv) Identification of construction activities with potential risks in the field of concern; (v) Description of impact specific and site specific mitigation measures; (vi) Implementation, monitoring, and adaptive management process; (vii) Technical description of measurement / monitoring methods; (viii) Timeframe;

The EHSS framework for each of the sub-plans is described in detail in Chapter 4 of this ESMP.

3.2 Supporting Plans

The following existing plans (prepared by EU Connecta Program, 2022) are to be read alongside the ESMP. Where relevant, the CESMP will contain details in reference to the content and implementation of the:

- Stakeholder Engagement Plan (SEP),
- Resettlement Action Plan (RAP),
- Biodiversity Management Plan (BMP).

3.3 Worker Training and Awareness

The CESMP should form part of the mandatory site induction for all employees, contractors and visitors attending the site. All employees and contractors should familiarise themselves with the contents of this document.

The Health & Safety of all the individuals working on the construction of the Project is of the highest importance to PE ZRSMI. It is essential that the Contractors provide a safe workplace and develop a culture that means that each member of staff looks out for their own safety and that of others. This includes being prepared to challenge a process or even stop work if necessary. This should be achieved with the help of the following trainings:

- Safety training for all personnel (in their language), covering the hazards and safety protocols of their jobs.
- Special training for specific hazards, e.g. working at heights, working in confined spaces in excavations, working with electricity, etc. (described in detail in Chapter 4.2.19 Training Plan).

The future Contractor, and the sub-contractors working for them, should be properly trained and hold relevant certificates to ensure that the workforce is competent to deliver the CESMP. The objectives of the Contractors' training program should be to:

- Inform the employees of their ESHS responsibilities during construction.
- Explain methods and techniques that can be used to reduce environmental impact and increase worker safety.
- Inform all employees about the ESHS policies, the Code of Conduct, management of workers accommodation (including welfare facilities) and the Workers Grievance Mechanism.
- Enable employees to respond to emergency situations in a safe and effective manner.
- Improve communication between all parties engaged in construction work related to the environmental and safety aspects of the Project.

It is the responsibility of the Contractor and their sub-contractors to ensure that the individuals employed by them, or sub-contracted to them, are sufficiently qualified and trained to undertake the tasks allocated them. Worker certification and legal compliance will be monitored by PE ZRSMI.

The Contractor must ensure that each worker has the necessary ESHS training so that they understand risks associated with the construction of the railway.

The Contractor and their sub-contractors must maintain a formal record of the training provided to each worker.

Each worker must be provided with a site induction briefing on their first visit to site. It is essential that each worker understands the ESHS protocols described in the Contractor's CESMP and the detailed sub-plans.

The CESMP forms the basis of the site induction and includes consideration of:

- General risks with working across the construction site including vehicle speed and work-related accidents and incidents.
- PPE requirements (relating to the work being undertaken).
- Location of hazardous material and waste storage facilities.
- Workers Grievance Mechanism.
- Potential emergencies and initial actions.
- Location of meeting points in case of emergency.
- Emergency contact numbers.

These topics should be described in the site safety booklet to be produced by the Contractor. A copy of the Safety Booklet is to be provided to each individual during the induction briefing.

Should the CESMP be updated as a consequence of a change in the ESHS Risk Assessment, then the induction training must be modified and all existing workers must be notified of the changes. Induction briefings may be repeated if considered necessary.

3.4 The Workers Grievance Mechanism (WGM)

The Workers Grievance Mechanism (“WGM”) applies to matters of concern, individual or collective, that may be raised by any worker engaged on the construction of the railway, i.e. employees of PE ZRSMI, the PE ZRSMI ’s PIU Manager, Contractor and their sub-contractors. These concerns could relate to terms and conditions of employment, the working environment, working relationships, working practices and any perceived breach of their contractual or statutory rights.

The Contractor shall implement a WGM which is accessible to their employees and that of their sub-contractors. The PIU will also have a WGM is operated by the PE ZRSMI ’s PIU Manager on the behalf of PE ZRSMI, which will be accessible to and communicated to contractor and sub-contractor workforce.

3.5 Monitoring, Audit and Reporting

A programme of ESHS monitoring will be undertaken in order to verify the effectiveness of the CESMP and its sub-plans. More specifically, the objectives of the monitoring program are to:

- Meet the applicable standards.
- Evaluate the effectiveness of the management plans and mitigation measures and to identify any shortcomings.
- Allow refinement and enhancement of management plans and mitigation measures to further reduce impacts.
- Allow identification of unforeseen issues or changes in operations and provide information for development of mitigation measures to deal with those issues or changes.

The following monitoring will be undertaken:

- Daily and weekly inspections by the Contractor to identify any key issues
- Period inspections and audits by the Supervision Consultant, PE ZRSMI ’s PIU Manager and the ESHS Manager (and other specialists)
- Monitoring of the KPIs in Section 6

The Contractor, and their sub-contractors, should maintain sufficient records to provide data and information to be included within the monthly reports to the PE ZRSMI ’s PIU. The basis of the auditing activities should be undertaken by the PIU Manager and his representatives. PIU retains the right to undertake environmental, social and health & safety inspections and audits at any time during the construction phase.

Supervision Engineer, as an independent third-party consultant, will supervise the implementation of the CESMP.

3.6 Accidents and Incidents

The Contractor will be responsible for the management, monitoring and reporting of all incidents, accidents and emergencies. The Contractor must report these events, their potential consequence and the proposed resolution to the PE ZRSMI PIU.

Any major accidents and/or fatalities must be reported to the PIU Manager within 2 hours.

Any ESHS incidents or accidents must be reported to the PIU ESHS Manager within 24 hours.

The Contractor should report any "Significant Environmental and Social Non-Compliance" within 24 hours.

These events are defined as:

- an intentional or reckless disregard of any specific prohibition, commitment or obligation set out in the CESMP; or
- any incident that has, or is likely to, result in significant, severe or irreversible damage or impact on the environment or damage, impact or harm to the lives, livelihood, quality of life, health, safety, security, property or cultural heritage of affected people; or
- has or is likely to have a material and adverse impact on the reputation or business of PE ZRSMI or the Lenders.

The Contractor should report any "Significant Environmental and Social Reporting Event" within 24 hours. These events are defined as:

- the release of any hazardous substance on or from any property associated with the Project;
- any unanticipated incident, accident or circumstance which has resulted in or is likely to result in significant, severe or irreversible damage or impact on the environment, or damage, impact or harm to the lives, livelihood, quality of life, health, safety, security, property or cultural heritage of affected people;
- any incident or accident in connection with the Project resulting in death or significant injury; and/or
- any material explosion or fire at or on any property associated with the Project.

3.7 Review of the CESMP

The CESMP should be maintained and updated by the Contractor to ensure the effective management of the ESHS impacts of the Project. The updates should ensure compliance with the Macedonian laws, permits, licences and agreements. The CESMP, and the sub-plans that form part of the CESMP, will be reviewed at least every three months by the Contractor to:

- ensure compliance with any changes to construction or temporary works permits;
- ensure it reflects the findings of any internal audits or major non-conformances/ incidents;
- ensure it reflects good international practice;
- ensure it incorporates the findings of pre-construction site investigations or chance finds; and
- take account of stakeholder views or grievances raised by them.

Any suggested changes to the CESMP will be discussed and agreed with the PE ZRSMI 's PIU Manager and the Engineer before a formal revision of the CESMP is put in place.

4 Environmental and Social Management Plan During Construction

This chapter presents the Environmental and Social Management Plan ("ESMP") during construction phase of the Project. It summarizes a set of environmental and social mitigation measures identified through the ESIA process, and sets out a number of basic standards and arrangements with aim to facilitate the future Contractor to ensure that construction of the Project complies with the Macedonian legislation and Lenders' requirements and standards.

4.1 PE ZRSMI – PIU and Contractor (Pre-Construction)

4.1.1 Adjustments of the Detailed Design

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
A1.1	Update of the noise and vibration modelling and Noise and Vibration Mitigation Design Study	<ul style="list-style-type: none"> ▪ The Contractor shall update the operational noise and vibration (including groundborne vibration) assessment and modelling during the detailed design and prior to final design. This shall include as inputs from the Contractor, updated baseline measurements representative of all sensitive receptors during day and night, verification of objects and their use within predicted zones of influence; measurements of noise and vibration from planned locomotives and rolling stock and actual terrain data; ▪ The Contractor shall develop Noise and Vibration (including groundborne 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 Contractor shall refer to the existing assessments of noise and vibration for additional requirements and details on standards 	<ul style="list-style-type: none"> ▪ PE ZRSMI to include the requirement in the tender documentation; ▪ Contractor to implement. 	<ul style="list-style-type: none"> ▪ PE ZRSMI PIU; ▪ Reported to the Lenders in monthly ESMS Report; 	<ul style="list-style-type: none"> ▪ Noise and vibration assessment and modelling updated ▪ Noise Mitigation Design Study ▪ Vibration Mitigation Design Study
A1.2	Noise Mitigation Design Study - Finalisation of the Detailed Design to include optimized noise barriers	<p>Based on the Noise Mitigation Design study, the Contractor shall include the following as part of the final design to ensure the Project Standards will be met:</p> <ul style="list-style-type: none"> ▪ Design-based noise control measures in line with the best industry practice (e.g. continuous welded 	<ul style="list-style-type: none"> ▪ PE ZRSMI to include the requirement in the tender documentation; ▪ Contractor to implement. 	<ul style="list-style-type: none"> ▪ PE ZRSMI PIU; ▪ Reported to the Lenders in monthly ESMS Report; 	<ul style="list-style-type: none"> ▪ Detailed Design includes design-based noise control measures; ▪ Detailed Design of Noise Barriers

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>rail, specially designed sleepers, flexible rail connectors for sleepers, etc.).</p> <ul style="list-style-type: none"> Optimised Detailed Design of Noise Barriers with consideration of the locations and dimensions specified in the Supplementary E&S Disclosure Package (unless it can be demonstrated these are no longer required) and additional locations if required The Contractor shall determine the specification of noise barriers as necessary to meet the Project Standards. 			
A1.3	Noise Mitigation Design Study - Sound insulation of individual buildings	<p>Based on the Noise Mitigation Design study Contractor to provide and install a sound insulation package to individual properties where the noise related standards are not predicted to be met and noise barriers are not considered the optimal solution as agreed with PE ZRSMI.</p> <p>The sound insulation package offer should provide sufficient noise attenuation in order to achieve the desired indoor noise levels as well as ventilation requirements for the comfort in the internal living spaces'. The affected people should be given the option to accept this mitigation.</p> <p>Locations of individual buildings have been specified in the Supplementary E&S Disclosure Package and shall be finalised by the Contractor as part of the noise mitigation design study.</p>	<ul style="list-style-type: none"> PE ZRSMI to include the requirement in the tender documentation; Contractor to implement. 	<ul style="list-style-type: none"> PE ZRSMI PIU; Reported to the Lenders in monthly ESMS Report; 	<ul style="list-style-type: none"> Sound insulation package offered and installed in applicable properties

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A1.4	Vibration Mitigation Design Study Update of the Detailed Design to include vibration attenuation measures	<p>Based on the Vibration Mitigation Design study, the Contractor shall include the following as part of the final design to ensure the Project Standards will be met:</p> <ul style="list-style-type: none"> ▪ design-based vibration attenuation measures in line with the best industry practice such as rail enhancements (e.g., control of the railhead roughness, using of the rail pads), fasteners enhancements (e.g., using of the elastic elements to prevent direct contact between the rail foot and sleeper), sleepers and ballast enhancements (e.g., using of the elastomeric pads between the sleepers and the ballast), reduction of breaks in the running surface of a rail; continuous welded rails, increase the elasticity of permanent way using the elastic fastening system. As an alternative to ballasted tracks in tunnels other technologies can be used, such as the floating slab tracks; Use of barriers on the transmission path or adjustment of soil properties e.g. stiffening to improve the soil absorption capacity under the track, around the track, or between the source and the receiver. ▪ Preventive grinding once new rails are installed <p>Preliminary assessment of vibration and areas of influence, as specified by the Supplementary E&S Disclosure Package shall be used as a basis and specific attention shall be paid to the section of the railway that passes through (under) the Kriva Palanka settlement (from km 70+660 to km 73+760) and enhanced design to mitigate vibration shall be applied</p>	<ul style="list-style-type: none"> ▪ PE ZRSMI to include the requirement in the tender documentation; ▪ Contractor to implement. 	<ul style="list-style-type: none"> ▪ PE ZRSMI PIU; ▪ Reported to the Lenders in monthly ESMS Report; 	<ul style="list-style-type: none"> ▪ Detailed Design and construction methodology includes vibration attenuation measures
A1.5	Installation of septic tank and oil separators	<p>PE ZRSMI to include the following requirements in the tender documentation:</p> <ul style="list-style-type: none"> ▪ A requirement for installation of a septic tank for domestic wastewater effluent from the passenger building in Židilovo. 	<ul style="list-style-type: none"> ▪ PE ZRSMI to include the requirements in the tender documentation; 	<ul style="list-style-type: none"> ▪ PE ZRSMI PIU; ▪ Reported to the Lenders in monthly ESMS Report; 	<ul style="list-style-type: none"> ▪ Tender documentation includes requirement for installation of a

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		<ul style="list-style-type: none"> ▪ A requirement for installation of oil separators for pre-treatment of potentially contaminated stormwater from parking areas at both Kriva Palanka and Židilovo before final discharge to a recipient. 	<ul style="list-style-type: none"> ▪ Contractor to implement. 		<p>septic tank for domestic wastewater effluent from the passenger building in Židilovo.</p> <ul style="list-style-type: none"> ▪ Tender documentation includes a requirement for installation of oil separators for pre-treatment of potentially contaminated stormwater from parking areas at both Kriva Palanka and Židilovo before discharging.
A1.6	Interim storage of hazardous waste and hazardous materials at the Kriva Palanka station and Židilovo halt.	<p>PE ZRSMI to include the following requirements in the tender documentation:</p> <p>Contractor to establish an appropriate interim storage of hazardous waste and hazardous materials at the Kriva Palanka station and Židilovo halt.</p>	<ul style="list-style-type: none"> ▪ PE ZRSMI to include the requirements in the tender documentation; ▪ Contractor to implement. 	<ul style="list-style-type: none"> ▪ PE ZRSMI PIU; ▪ Reported to the Lenders in monthly ESMS Report; 	<ul style="list-style-type: none"> ▪ Tender documentation includes a requirement for establishment of an appropriate interim storage of hazardous waste and hazardous materials at the Kriva Palanka station and Židilovo halt.
A1.7	Traction power transformers equipped with spill containment structures.	<p>PE ZRSMI to include the following requirement in the tender documentation:</p> <ul style="list-style-type: none"> ▪ Transformers to be placed within spill containment structures. 	<ul style="list-style-type: none"> ▪ PE ZRSMI to include the requirements in tender documentation; 	<ul style="list-style-type: none"> ▪ PE ZRSMI PIU; ▪ Reported to the Lenders in monthly ESMS Report; 	<ul style="list-style-type: none"> ▪ Tender documentation includes the requirement for transformer spill

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		<ul style="list-style-type: none"> ▪ Transformer oil containment bund volume to be designed for 110% of oil contained in the transformer. 	<ul style="list-style-type: none"> ▪ Contractor to implement. 		<ul style="list-style-type: none"> containment structures in the TPS Kratovo.
A.1.8	Protection from electrical hazards	<p>Contractor to adjust the Detailed Design and BoQ that will include installation of adequate physical barriers and signage in the immediate areas of the settlement to protect third parties from electrical hazards. Following are the identified areas:</p> <ul style="list-style-type: none"> • Between bridge No.18 and No.19, • Between bridge No.19 and No.20, • Between bridge No.21 and No.22, • End of bridge No.21 and entrance to tunnel No.7, • Between exit of tunnel No. 7 and entrance to tunnel No.8, • Between exit of tunnel No.8 and bridge No.23, • Between exit of tunnel No. 16 and bridge No.37. 	<ul style="list-style-type: none"> ▪ PE ZRSMI to include the requirements in tender documentation; ▪ Contractor to implement. 	<ul style="list-style-type: none"> ▪ PE ZRSMI PIU; ▪ Reported to the Lenders in monthly ESMS Report; 	<ul style="list-style-type: none"> ▪ Tender documentation includes the requirements
A1.9	Station facilities	<ul style="list-style-type: none"> ▪ Ensure the design includes station facilities which are accessible for elderly, disabled and those with reduced mobility (both men and women) and includes facilities for pregnant women ▪ Strategic placement of street lighting: Improved and strategically located street lighting should be implemented both around and inside the railway stations to enhance visibility and safety. ▪ Enhanced security measures: The design should incorporate improved surveillance cameras and emergency telephones to minimize security risks specifically for women and girls travellers. 	<ul style="list-style-type: none"> ▪ PE ZRSMI to include the requirements in tender documentation; ▪ Contractor to implement. 	<ul style="list-style-type: none"> ▪ PE ZRSMI PIU; ▪ Reported to the Lenders in monthly ESMS Report; 	<ul style="list-style-type: none"> ▪ Tender documentation includes the requirements ▪ Incorporated into detailed design and implemented
A1.10	Landscape and Visual Assessment Update	<ul style="list-style-type: none"> ▪ Update the landscape and visual assessment to account for the final design including the final location for noise 	<ul style="list-style-type: none"> ▪ PE ZRSMI to include the requirements in 	<ul style="list-style-type: none"> ▪ PE ZRSMI PIU; 	<ul style="list-style-type: none"> ▪ Tender documentation

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		<p>barriers or other structures within visual/landscape impacts</p> <ul style="list-style-type: none"> If there is a change in severity of impacts implement additional mitigation measures as required in specific locations 	<p>tender documentation;</p> <ul style="list-style-type: none"> Contractor to implement. 	<ul style="list-style-type: none"> Reported to the Lenders in monthly ESMS Report; 	<p>includes the requirements</p> <ul style="list-style-type: none"> Incorporated into detailed design and implemented
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4.1.2 Environmental and Social Management System (ESMS) and Policy

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
A2	Environmental and Social Management System (ESMS), Corporate Environmental and Social Policy	<p>PE ZRSMI shall set up a PIU, who will be responsible for implementing the company's corporate ESMS in relation to the project.</p> <p>The key environmental and social commitments in the ESMS will be set out in the tender documents for the Contractor, for inclusion in the Contractor ESMS</p> <p>Establish and maintain an E&S Policy</p>	<ul style="list-style-type: none"> Preparation PIU; Approval - PE ZRSMI Management Board 	<ul style="list-style-type: none"> PE ZRSMI -Regular auditing of the ESMS Reported to the Lenders in monthly ESMS Report; 	<ul style="list-style-type: none"> PIU established ESMS system established and approved

4.1.3 Occupational Health and Safety (OHS) System and Policy

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
A3	Occupational Health and Safety (OHS) System, Corporate Occupational Health and Safety Policy	PE ZRSMI shall establish and implement Occupational Health and Safety (OHS) System, based on identified safety and health risks and protection measures appropriate to the stage, size and nature of the project in accordance with relevant substantive EU Occupational Safety and Health (OSH) standards and GIP and Gender Based Violence and Harassment (GBVH). Establish and maintain an H&S Policy.	<ul style="list-style-type: none"> Preparation PIU; Approval - PE ZRSMI Management Board 	<ul style="list-style-type: none"> PE ZRSMI – Regular auditing of the OHS system; Reported to the Lenders in monthly ESMS Report; 	<ul style="list-style-type: none"> OHS established and implemented Regular auditing of the system;

4.1.4 Environmental, Health, Safety and Social Incidents Procedure

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
A4	Environmental, Health, Safety and Social Incidents procedure	Set up, maintain and continually review an EHSS Incident Reporting Procedure (or equivalent) to ensure accidents and incidents are accurately recorded, maintained and reported. The procedure must be fully integrated into the Project and communicated to the Contractor, who will have clearly specified responsibilities.	<ul style="list-style-type: none"> Preparation PIU; Approval - PE ZRSMI Management 	<ul style="list-style-type: none"> PIU / Supervision Consultant to report to the Lenders on incidents in the monthly EHSS Report; and Measures to remedy non-compliance to be discussed with Construction 	<ul style="list-style-type: none"> Establishment of PIU incident reporting procedure, and inclusion of requirements in tender documents for the Contractor.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
				Supervisor and agreed by PIU.	

4.1.5 Stakeholder Engagement Plan (SEP)

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
A5	Stakeholder Engagement Plan (SEP)	<p>PE ZRSMI, with support from the Contractor, will implement the SEP.</p> <p>The SEP is a public document which sets out PE ZRSMI's commitments to stakeholder engagement, consultation and disclosure activities in connection with the Project.</p>	<ul style="list-style-type: none"> ▪ Preparation PIU; ▪ Approval - PE ZRSMI Management; ▪ Contractor to implement relevant aspects as appropriate to their scope as outlined in the SEP 	<ul style="list-style-type: none"> ▪ Contractor reports to PIU ▪ PE ZRSMI/ PIU / to provide monthly report to the Lenders; and ▪ Measures to remedy non-compliance to be discussed with Construction Supervisor approved by Senior Management of PE ZRSMI. 	<ul style="list-style-type: none"> ▪ SEP elaborated into a detailed SEP. ▪ Appointment of Social supervisor

4.1.6 Project-level Grievance Mechanism (GM)

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
A6	Project-level Grievance Mechanism (GM)	<p>The Project Grievance Mechanism Process, as set out in Chapter 6 of the SEP and Chapter 9 of the RAP and will be implemented by the PIU (responsible person assigned by PE ZRSMI), with support from the Contractor.</p> <p>Grievance mechanism to set out the procedure in the case of complaints and use of Grievance Mechanism log. Also, GM will including on noise and/or vibration from the local residents. The procedure should define how the noise and/or vibration issue should be verified and what mitigation measures will be undertaken in response.</p> <p>PE ZRSMI will appoint Community Liaison Officer to provide efficient and timely implementation of the mechanism.</p>	<ul style="list-style-type: none"> ▪ Preparation PIU; ▪ Approval - PE ZRSMI Management; ▪ Contractor to implement – receive, record and respond to grievances related to their activities as agreed with PE ZRSMI 	<ul style="list-style-type: none"> ▪ PE ZRSMI/ PIU / to provide monthly report to the Lenders; and ▪ Measures to remedy non-compliance to be discussed with Construction Supervisor and approved by Senior Management of PE ZRSMI. 	<ul style="list-style-type: none"> ▪ Establishment of GM and feedback service

4.1.7 Biodiversity Management Plan

Biodiversity Management Plan is provided as a standalone document within the Supplementary E&S Disclosure Package.

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
A7	Biodiversity Management Plan (BMP)	<p>Implement the 2022 Biodiversity Management Plan (BMP), including the pre-construction surveys. Once the BMP is updated with the survey results the Contractor will elaborate and implement the full BMP.</p> <p>BMP is internally (PE ZRSMI and PIU) carefully discussed together with PIU Biodiversity expert Contractor and Supervision engineer to make sure that specifics are understood by all parties. PIU to ensure that all parties to the BMP have good understanding on the roles and responsibilities arising from the BMP.</p> <p>PIU to ensure that appropriate training is provided as identified in the BMP.</p> <p>PIU to ensure that other specialists are engaged as identified in the BMP (Mammal, amphibians and reptiles specialists).</p> <p>PIU to ensure monitoring of project implementation (construction and operational phase) and implementation of BMP measures particularly those outlined in section 5.3 of the BMP</p>	<ul style="list-style-type: none"> ▪ Preparation PIU (Biodiversity expert) ▪ Implementation - Contractor 	<ul style="list-style-type: none"> ▪ PIU Supervision consultant; ▪ Implementation of BMP as per the activities and frequency identified in the BMP ▪ Monthly reporting on BMP action/monitoring outcomes; ▪ Updates included in monthly EHSS progress reports to Lender. 	<ul style="list-style-type: none"> ▪ Outline BMP Plan approved and made available to the Contractor.

4.1.8 Resettlement Action Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
A9	Resettlement Action Plan (RAP)	<p>Implement the RAP during pre-construction, construction and operation, to ensure that project-affected peoples (PAPs) and communities are properly resettled and compensated for any losses, in a manner such that their well-being is restored to at least pre-Project levels.</p> <p>The RAP identifies eligible persons, types of impacts and entitlements to be provided, supported by the stakeholder engagement included in the SEP.</p> <p>Upon an amendment of the technical documentation, in particular related to the access roads and slopes in Kriva Palanka, the RAP should be updated accordingly.</p> <p>Contractor to acquire rights for temporary construction areas as per the procedure described in the RAP.</p>	<ul style="list-style-type: none"> ▪ PIU (Social/ Resettlement specialist ▪ Contractor (Social Lead) 	<ul style="list-style-type: none"> ▪ Updates provided in monthly EHSS progress reports to the Lenders. 	<ul style="list-style-type: none"> ▪ RAP implemented in accordance with requirements.

4.2 Contractor (Pre-Construction and Construction)

4.2.1 Development of a Contractor’s CESMP

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B1	Development of a Construction Environmental and Social Management Plan (CESMP)	<ul style="list-style-type: none"> ▪ The Contractor will elaborate the ESMP to prepare a CESMP which must be aligned with the PIUs ESMS; ▪ The CESMP will be submitted to the Supervision Consultant and PIU for approval at least 30 days prior to taking possession of any work site. No access to the Site will be allowed until the CESMP is approved by the Supervision Consultant and the PIU; The commencement of construction in each area shall be authorised by the Supervision Consultant and the PIU only after non-objection of the related specific EHSS management procedures. ▪ New topic specific or site specific ESMPs may also need to be developed by the Contractor during the construction phase or the CESMP updated. These new/updated plans will also need to be approved by the Supervision Consultant and the PIU; ▪ The Contractor will ensure that adequate resources are mobilised to implement the CESMP, including input from any specialist resources necessary to ensure effective planning and implementation of measures. 	<ul style="list-style-type: none"> ▪ Preparation Contractor; ▪ Approval – PIU and Supervision Consultant 	<ul style="list-style-type: none"> ▪ The Contractor will prepare monthly reports for the PIU on the status of the CESMP and EHSS performance; and ▪ PIU / Supervision Consultant will prepare monthly EHSS reports for the Lenders, drawing on the Contractors monthly reports. 	<ul style="list-style-type: none"> ▪ Contractor’s CESMP approved by the PIU / Supervising Engineer.

4.2.2 Development of sub-plans of the CESMP

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B2	Development of sub-plans of the CESMP	<p>Prior to the start of works and as part of the CESMP the Contractor shall prepare the following plans in line with the Lenders requirements and national legislation, this ESMP and the PIU ESMS:</p> <ul style="list-style-type: none"> ▪ Air Quality and Dust Suppression Plan; ▪ Surface Water Management Plan; ▪ Waste and Materials Management Plan; ▪ Earthen Material/ Spoil Management Plan; ▪ Erosion Control Plan; ▪ Hazardous Materials Management Plan; ▪ Construction Biodiversity Management Plan (based on the BMP) ▪ Noise and Vibration Management Plan; ▪ Tunnel Construction Plan; ▪ Blasting Management Plan; ▪ Landscape Management Plan (and Landscape / Planting Plans); ▪ Cultural Heritage Management Plan; ▪ Health, Safety and Security Plan (including occupational health and safety (OHS)); ▪ Construction Emergency Preparedness and Response Plan; ▪ Construction Traffic Management Plan; ▪ Construction Worker’s Accommodation Management Plan; ▪ Recruitment, Labour Management and Monitoring Plan; ▪ Training Plan; ▪ Supply Chain Management Plan; ▪ Design Change and Management Procedure. 	<ul style="list-style-type: none"> ▪ Preparation Contractor; ▪ Approval – PIU and Supervision Consultant 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Sub-plans approved as part of the Contractor CESMP.

4.2.3 Air Quality and Dust Suppression Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B3	Air Quality and Dust Suppression Plan (AQ&DSP)	<ul style="list-style-type: none"> ▪ The Contractor will prepare an AQ&DSP, which will include a requirement for monitoring of dust deposition and real-time PM10 continuous monitoring and/or visual inspections; ▪ Daily on-site inspections to monitor compliance with the AQ&DSP will be carried out and results recorded. The inspection results will be recorded and made available to the Kriva Palanka Municipality when requested; ▪ Dust deposition or real-time PM10 continuous monitoring locations will be agreed in liaison with the Kriva Planka Municipality, but this will be focused on locations where higher levels of dust are likely, such as near any borrow pits that are required, blasting locations and locations where there are substantial earthworks, such as tunnels and deep cuttings / embankments and unpaved access roads. ▪ Dust and particulate monitoring will be focused around areas with multiple sensitive receptors within close proximity to the works and should include the five locations where baseline air quality monitoring has already taken place (Section 3 - ESIA Addendum, 2022, Connecta): <ul style="list-style-type: none"> ▪ Location 1 (Tlminci); ▪ Location 2 (Kriva Palanka South-West); ▪ Location 3 (Kriva Palanka North-East); ▪ Location 4 (Židilovo); ▪ Location 5 (Uzem). ▪ The continuous monitoring is particularly recommended in the areas of Tlminci, Židilovo, 	<ul style="list-style-type: none"> ▪ Preparation Contractor; ▪ Approval – PIU and Supervision Consultant 	<ul style="list-style-type: none"> ▪ Contractor. ▪ Liaison with affected communities, as required in the SEP. ▪ Liaison with Kriva Palanka Municipality ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Plan approved by PIU / Supervision Consultant; and ▪ Plan implemented by Contractor.

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			Preparation / Implementation	Monitoring	
		<p>and Uzem as the ambient air quality there is already affected by PM10;</p> <ul style="list-style-type: none"> ▪ The monitoring locations will be adjusted depending on the wind direction. ▪ In case that additional baseline measurements will be needed (near the sensitive receptors of future construction activities which are not currently known, i.e. future borrow pits), baseline monitoring should start at least three months before the construction activities commences, if possible. ▪ During the electrification of Section 1 and 2 (construction of mast foundations) areas with residential receptors where dust and particulate control should be implemented are: Section 1 - Cherkesko selo, Lopate, Rezanovce, Kumanovo settlements (Sredorek, Pero Čičo, Proevce 1, Proevce 2, Kumanovo Spa), Šupli Kamen, and Dovezance; Section 2 - Odreno. ▪ Dust and particulate monitoring will also provide information which will be used to reduce dust exposure of the health of construction workers in the event of an exceedance of the EU Air Quality Standard short-term limit for PM10 of 50µm/m³ daily (24-hour) mean, not to be exceeded more than 35 times a calendar year. ▪ If standards are exceeded, construction activities at that location should be stopped, and the method statements reviewed to identify further mitigation measures and / or more appropriate weather conditions under which the activity can be undertaken. ▪ All dust and air quality grievances will be recorded by the Contractor, using the Project Grievance Mechanism, and causes identified. Appropriate 			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>remedial action will be taken in a timely manner with a record kept of actions taken including of any additional measures put in-place to avoid reoccurrence.</p> <ul style="list-style-type: none"> ▪ The air-quality related items in the Grievance Mechanism log will be made available to the Kriva Palanka Municipality on request. ▪ The application of dust reduction measures will be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. ▪ Any exceptional incidents that cause dust and/or air emissions, either on or offsite will be recorded, and action taken to resolve the situation recorded in the Grievance Mechanism. <p>Further measures to be implemented on construction compounds include:</p> <ul style="list-style-type: none"> ▪ An adequate water supply will be maintained on site for effective dust or particulate matter suppression or mitigation, using non-potable water where possible and appropriate; ▪ Enclosed chutes conveyors and covered skips will be used; ▪ 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; ▪ 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. ▪ All vehicle operators will switch off engines when stationary - no idling vehicles. 			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ A maximum-speed-limit of 25 km/h on surfaced and 15 km/h on unsurfaced construction access roads and work areas will be imposed. If long construction access roads are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the Contractor (nominated undertaker) and with the agreement of the local municipality, where appropriate. ▪ Any fire or burning of waste will be prohibited. ▪ Construction walls will be provided in all locations where strong winds could cause the blowing of dust and debris; ▪ The site layout will be planned so that machinery and dust causing activities are, as far as reasonably practicable, located away from residential properties; ▪ Solid screens or barriers will be erected, where practicable around dusty activities, or the site boundary, that are at least as high as any stockpiles on site; ▪ Where practicable, the site or specific operations will be fully enclosed where there is a high potential for dust production and the site is active for an extensive period; ▪ Earthworks and exposed areas/soil stockpiles will be re-vegetated to stabilise surfaces as soon as practicable. ▪ Where practicable, covers will only be removed in small areas during work and not all at once; ▪ Stockpile surface areas will be minimised (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pick-up; 			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ Where practicable, windbreak netting/screening will be positioned around material stockpiles and vehicle loading/unloading areas, as well as exposed excavation and material handling operations, to provide a physical barrier between the construction site and the surroundings; ▪ Where practicable, stockpiles of soils and materials will be located as far as possible from sensitive properties, taking account of the prevailing wind direction; ▪ 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. ▪ Sand and other aggregates will be stored in bunded areas and not allowed to dry out, unless this is required for a particular process, in which case appropriate additional control measures will be put in place; ▪ 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; ▪ For smaller supplies of fine powder materials bags will be sealed after use and stored appropriately to prevent dust; ▪ Effective water suppression will be used during demolition operations; ▪ Vehicles entering and leaving sites will be covered to prevent escape of materials during transport; ▪ On-site haul routes will be inspected for integrity and necessary repairs instigated to the surface as soon as reasonably practicable; 			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ All inspections of construction access routes and any subsequent actions will be recorded in a site log book; ▪ A wheel washing system will be implemented; ▪ Where practicable, hard surfaced haul routes will be installed, regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned; ▪ Where practicable, there will be an adequate area of hard surfaced road between the wheel wash facility and the site exit, if site size and layout allow; ▪ Access gates will be located at least 10m from receptors, where possible. 			

4.2.4 Surface Water Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B4.1	Surface Water Pollution Control / Monitoring	<p>The Contractor will be responsible for implementing a plan to manage surface water during construction. Measures included in the Plan are as follows:</p> <ul style="list-style-type: none"> ▪ Regular inspection of pollution control and treatment measures (such as storage of fuels, oils and other hazardous liquids, and integrity of spill kits) will be undertaken throughout the construction period to ensure they are working effectively; ▪ Construction plant will be regularly checked for oil and fuel leaks; 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor ▪ Approval – PIU / Supervision Consultant 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Plan approved by PIU / Supervision Consultant; and ▪ Plan implemented by Contractor

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ A programme of water quality monitoring on watercourses downstream of the working corridor will be implemented throughout the construction period. ▪ The location and requirement of water quality monitoring will be agreed with the relevant national Water Management Authority in line with Water Permit Requirements. ▪ The locations for water quality monitoring should include at minimum the eight locations where baseline water quality monitoring has already taken place (Section 3 - ESIA Addendum, 2022, Connecta) as well as at any watercourse crossed by the Project, any watercourses where there will be in channel works, and any watercourses that are downstream of the construction compound / construction workers accommodation. The eight locations where sampling has been taken previously are; <ul style="list-style-type: none"> ○ Gabarska River in the zone of proposed Bridge 03 crossing of the watercourse (chainage 65+841,065 - 66+106,750). ○ Grdelička River in the zone of proposed Bridge 05 crossing of the watercourse (chainage 66+742,660 - 66+884,280). ○ Rangel Creek in the zone of proposed Bridge 07 crossing of the watercourse (chainage 67+360,246 - 67+455,813). ○ Kiselička River in the zone of proposed Bridge 32 crossing of the watercourse (chainage 76+402,00 - 76+611,500). ○ Kriva River in the zone of proposed Bridge 37 crossing of the watercourse (chainage 79+785.906 - 80+068.737). 			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ○ Kriva River in the zone of proposed Bridge 43 crossing of the watercourse (chainage 84+094.529 - 84+107.459). ▪ Water monitoring samples will be compared against the quality status thresholds for the Water Framework Directive (WFD) relevant to North Macedonia for the characterisation of surface water. ▪ Where standards are found to have been exceeded work will stop to allow investigation. The Contractor will be responsible for identifying the source of pollution, containing the pollution and preventing further spread, The Contractor will be responsible for cleaning up any pollution and disposing of any contaminated waste (e.g. spill kits) appropriately. ▪ Any damage caused to surface water infrastructure such as supply systems, irrigation systems, flood defences or drainage ditches must be repaired by the Contractor. 			
B4.2	Specific Method Statements for construction works in or near watercourses	<p>The Section 3 alignment will cross the Kriva River via bridges at two points and small streams via bridges or in culverts. In-water and near-water works will be required, including the regulation of the Kriva River riverbed near the bridge No. 40. Permanent diversion of 2 ephemeral streams which cross deep cuts or tunnels will be necessary as well as temporary diversion of 2 ephemeral streams.</p> <p>Specific Method Statements for construction works in or near watercourses, including the construction of bridges, culverts, riverbed regulation and diversion of streams should be developed and implemented. The Statements should be cross-referenced with the Construction Erosion Control</p>	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor ▪ Approval – PIU / Supervision Consultant 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Plan approved by PIU / Supervision Consultant; and ▪ Plan implemented by Contractor

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>Plan, Biodiversity Management Plan, Emergency Preparedness and Response Plan, and the Pollution Incident Management Plan.</p> <p>The Contractor will be responsible for implementing the Statements to manage construction works in or near watercourses. Measures included in the Statements should include but not be limited to:</p> <ul style="list-style-type: none"> ▪ The positioning of stockpiles near to watercourses will be avoided, they will be a minimum of 30m from any watercourse, and they will be located outside areas at fluvial flood risk; ▪ Stockpiles will be contained with bunds or sediment fences and cover stockpiles when not in use; ▪ Avoid movement of heavy machinery in watercourses wherever possible to prevent adverse impacts on aquatic species; ▪ Sediment barriers will be positioned between earthworks and the watercourse to prevent sediment from washing into the river. Silt fences, silt traps, filter bunds, settlement basins will be used to treat sediment-loaded water generated on site before discharge; ▪ Any water generated by dewatering processes will be passed through silt busters or sediment tanks prior to returning this water to the watercourse; ▪ Access roads will be located at least 60m from watercourses. Site roads and approaches to watercourse crossings will be kept free from mud and cleaning water will not be discharged to the watercourse; ▪ Fuels and potentially hazardous construction materials will be stored in bunded areas with 			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>external cut-off drainage and fuel will be stored in double skinned tanks with 110% capacity. No materials will be stored within 30m of a watercourse;</p> <ul style="list-style-type: none"> ▪ Waste fuels and other fluid contaminants will be collected in leak-proof containers prior to removal from site to an approved processing facility; regular check-ups will be provided by the contractor; ▪ Fuelling and maintenance of construction vehicles and plant will be done on hard standing or on haul roads, with appropriate cut-off drainage and located away from watercourses. Drip trays will be used. No maintenance will be undertaken within 30m of a watercourse; ▪ Spill kits including oil absorbents and other spill containment equipment will be kept on site to be deployed in the event of a spillage, and site staff will be trained in their use; ▪ Concrete mixing and washing areas will be located more than 30m from any watercourse. Wastewater from these areas will not be discharged to a watercourse and will be disposed off-site. ▪ Clearance of bankside vegetation will be limited. Where works are required on the watercourse banks, or in-water, vegetation clearance will be restricted to the working area and should be undertaken only immediately prior to the commencement of those works. Vegetation will be re-established as soon as practicable; ▪ Until the beginning of the in-water works, a minimum of 20m depth of bankside vegetation will be preserved to protect bank stability; 			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ Works to watercourses will be avoided during high flow events and during heavy rainfall to reduce the risk of fine sediment release, watercourse erosion and increased flood risk; ▪ Silt management systems will be used such as silt curtains within watercourses that require diversion or in-water construction works; ▪ Direct access of vehicles to watercourses will be minimised. If it is necessary for any vehicle to enter a watercourse, it will be inspected in advance and, if required, remedial action taken to prevent contamination from oil/fuel leakages. All drivers will be instructed in the use and safe disposal of clean up equipment and carry absorbent materials in their vehicles; ▪ Works within or adjacent to the watercourses will be avoided as far as practicable; ▪ The required construction zone adjacent to and within watercourses will be minimised to reduce the impacts of flow constriction and loss of fluvial floodplain storage and conveyance; and ▪ A dry-working area for works will be created within a watercourse channel or within the floodplain wherever possible. Hydraulic connectivity must be maintained, and no more than two-thirds of the watercourse capacity should be blocked. ▪ Avoid disposal of excavated material by the riverbeds, ▪ Do not use the gravel and sand from the riverbed and the alluvial plain, ▪ The haulage roads should not be traced along the riverbed and sufficient areas with riparian vegetation should be left in order to prevent the 			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		direct input of dust, sand and other materials during the use of the haulage roads. <ul style="list-style-type: none"> ▪ During construction, regular supervision from the Biodiversity Supervisor in close cooperation with the Biodiversity Specialist is recommended. 			
B4.3	Procedure for Private Water Supplies (PWS)	As part of the Surface Water Management Plan - a Procedure for Private Water Supplies (PWS) should be developed to include: <ul style="list-style-type: none"> ▪ Identification of PWS down-gradient of the excavation/dewatering areas including the source of their water feeding, its catchment, distribution infrastructure and supply; ▪ Risk Assessment: Potential of excavation (or dewatering) to affect the quantity, quality or continuity of water at the receptor and appropriate mitigation to avoid or reduce the risk; ▪ Provision of temporary or permanent alternative water supplies, if necessary. A permanent alternative source should be comparable to or better than the current source and may include a groundwater borehole, or an alternative water spring/source with pipe infrastructure; 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor ▪ Approval – PIU / Supervision Consultant 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Procedure approved by PIU / Supervision Consultant; and ▪ Procedure implemented by Contractor

4.2.5 Waste and Materials Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B5	Waste and Materials Management Plan (WMMP)	<ul style="list-style-type: none"> ▪ The Contractor will prepare a Waste and Materials Management Plan (WMMP) to cover all activities associated with the production of wastes during construction and maximise reuse and recycling. ▪ The WMMP will outline the Contractor's plans to avoid and reduce waste and will be submitted for approval to the relevant environmental authority. ▪ The Contractor will (1) maximise the use of construction materials with recycled or secondary and low carbon content, (2) use locally sourced materials to minimise transport distances to the construction site, (3) use efficient construction processes, including construction plant, equipment and delivery vehicles, (4) reduce requirements for excavation and construction materials, where possible; ▪ The Contractor will provide waste segregation facilities. Collection will occur once containers are full by the respective municipality. A recycling company will take the waste to shared licenced recycling sites. ▪ Where on-site reuse (or other forms of recovery) cannot be achieved, waste arising should be sent to licensed off-site reuse, recycling or recovery facilities. ▪ Where it is not possible to reuse the materials off site, they should be temporarily stored on site in locations approved by the relevant authorities. ▪ Materials should then be disposed off-site, at locations determined in liaison with the relevant local authorities. 	<ul style="list-style-type: none"> ▪ Preparation – Contractor; and ▪ Authorisation / Supervision Consultant / PIU and relevant environmental authorities 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Plan approved by PIU / Supervision Consultant; and ▪ Plan implemented by Contractor.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ If asbestos is encountered during the earthworks the Contractor will be responsible for including an Asbestos Management Plan in the WMMP, to manage the risks associated with disposal of any asbestos containing materials that may be present. ▪ The Contractor will maintain a hazardous material register and inventory including the safety data sheets. ▪ The Contractor will maintain hazardous and non-hazardous waste records and documents of transfer of wastes to licenced waste operators. ▪ Materials stored on site will be stored neatly and safely, and as specified in other relevant sub-plans. ▪ Off-site construction and pre-fabrication methods will be maximised where practicable. ▪ During dry or windy weather, material stockpiles will be dampened down using a water spray to minimise the potential for wind pick-up. ▪ Randomly disposed waste (concrete, iron, rocks and stones etc.) should be removed immediately from the aforementioned habitats on a daily base. ▪ Dead-wood should be retained on site. 			

4.2.6 Earthen Material/ Spoil Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B6	Earthen Material/ Spoil Management Plan	<p>An Earthen Material/ Spoil Management Plan will be implemented prior to commencement of the earthworks and generation of surplus earthen material. Measures in the Plan will include:</p> <ul style="list-style-type: none"> ▪ Details of Contractor organisation - including subcontractors - involved with implementation of the Plan. ▪ Description of the excavated soils and excavated spoil in terms of potential reuse and relative quantities involved by categories of materials, with a breakdown for each site. ▪ Procedure and requirements for E&S assessment of borrow pits and spoil disposal areas prior to use ▪ Where appropriate, how excavated materials will be stored or temporarily stockpiled for reuse. ▪ As part of the Earthen Material/ Spoil Management Plan, a Contaminated Material Management Procedure should be developed to ensure that potentially contaminated excavated soil is tested for contamination and if contaminants are detected, segregated from the adjacent-underlying soil to avoid potential cross-contamination. ▪ A Contaminated Material Management Plan will include a pre-construction soil survey in the area around the proposed exit from the tunnel No. 8 and the pier of the proposed bridge (viaduct) No. 23), given that a single soil sample was found to be contaminated during the supplementary soil assessment in 2022. 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Plan approved by PIU / Supervision Consultant; and ▪ Plan implemented by Contractor.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ The soil stockpiles should be covered with sheeting and protected from surface run-off. Any contaminated excavated soil should be safely treated or disposed; ▪ The intended final destination and reuse of excavated soils and materials, with clear distinction between (1) excavated soil and materials that will be reused for construction purposes and (2) excavated soils and material that is surplus or unsuitable for reuse in fill and embankments. ▪ A total of 12 potential spoil disposal sites have been preliminarily identified during the Section 3 design preparation. Contractor will be obliged to investigate and allocate the sites that meet EU standards, selected related to topography, proximity to the alignment, biodiversity features and sensitiveness, presence of watercourses, drainage, etc. ▪ Borrow pits and disposal sites must be approved by the regulator, including the environmental authority and in coordination with the Kriva Palanka municipality (particularly for disposal activities) and subject to an E&S assessment and developed of mitigation by the Contractor in accordance with the Project EHSS requirements ▪ Stockpiles should be designed to minimise quality degradation, damaged and loss of material. Measures to consider include the stockpile location, soil type and condition, prevention of erosion and leachate generation and use of appropriate signage ▪ All long-term topsoil material stockpiles will be located outside the active construction site and away from drainage ditches. 			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ Drainage from higher areas will be diverted around stockpile areas to prevent erosion. As required, sediment controls will be installed downstream of stockpile areas to collect any run-off. ▪ Fertile topsoil will be stored in stockpiles using measures to prevent degradation, erosion, contamination and compaction. If agricultural land is temporarily required during construction, it will be returned to agricultural use on completion of construction. 			

4.2.7 Construction Erosion Control Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B7	Construction Erosion Control Plan	<p>The Contractor will develop a Construction Erosion Control Plan which will be cross-referenced with Specific Method Statements for construction works in or near watercourses and related sediment control measures.</p> <ul style="list-style-type: none"> ▪ The slope stabilisation measures will be determined by the Contractor ahead of construction (e.g. temporary vegetation planting, drainage, etc.). ▪ The measures should include a monitoring plan and a risk assessment which focusses on the ancillary structures along the Project (such as embankments for bridges and viaducts, cuttings 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Plan approved by PIU / Supervision Consultant; and ▪ Plan implemented by Contractor.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>for tunnel portals, cuttings for overpasses and embankments for underpasses).</p> <ul style="list-style-type: none"> ▪ The monitoring will ensure that the slopes do not show signs of slippage or movement which has the potential to cause harm. ▪ Further monitoring of the slopes should be undertaken particularly after period of intense rainfall, snowmelt or earthquakes for possible traces of erosion which could destabilise the slopes. ▪ Rehabilitation of disturbed ground will be conducted progressively as soon as construction works are completed in the area. ▪ Silt fences will be used in areas of wet open cut, strategically positioned to prevent sedimentation downstream. ▪ Banks would be restored using either gabion cages or wooden revetments to ensure soil/integrity before vegetation matures to provide soil stability. ▪ bridge embankment against erosion during construction phase; installation of drainage infrastructure to prevent erosion; open cuts near the river to be re-vegetated as soon as possible to prevent soil erosion. 			

4.2.8 Hazardous Materials Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B8	Hazardous Materials Management Plan	<p>The Contractor will develop a Hazardous Materials Management Plan for storing, handling, refuelling and using fuels, oils and other chemicals and will train all staff accordingly.</p> <ul style="list-style-type: none"> ▪ Laydown areas for vehicles and machinery and storage areas for chemicals, oils and fuels will be contained in appropriately designed facilities ▪ Chemicals, oils, fluids and other hazardous substances will be stored in accordance with the specifications of the material safety data sheet (MSDS), as appropriate. MSDS will be available at appropriate locations where these substances are stored or used. ▪ Chemical storage areas will be suitably bunded and constructed to minimise the potential for leaks. ▪ Acetylene bottles will not be stored near sources of ignition, oxidising agents, poisons, flammable liquids or combustible materials. ▪ Fire fighting and spill response systems will be provided. On-site emergency response teams will be trained to undertake the necessary actions to address fire and other incidents that may arise with areas used for storage of fuel (e.g. diesel). 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Plan approved by PIU / Supervision Consultant; and ▪ Plan implemented by Contractor.

4.2.9 Construction Biodiversity Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B9	Construction Biodiversity Management Plan (based on the 2022 BMP)	<p>The Contractor will elaborate the 2022 BMP (Connecta) to prepare and implement the full BMP throughout construction.</p> <p>The BMP is a live document and should be updated to reflect increased understanding of Project programme and design, and should be informed by any new information which may be obtained from ecology pre-construction surveys, invasive plant species surveys, botanical surveys, and any other ongoing/pre-construction surveys, or from relevant Project stakeholders.</p> <p>Biodiversity specific measures:</p> <ul style="list-style-type: none"> ▪ Minimise construction activities in preserved forests with presence of large tree trunks to avoid disturbance during hibernation; ▪ If vegetation clearance is to take place during the bird nesting season, then first perform a survey for nesting birds. ▪ Halt construction, if bats roosts are noted and following consultation with the Biodiversity Supervisor/Specialist resolve as per recommendation. ▪ In the area of Uzem-Ksotur, minimise the time for construction works close to the rivers and inside forests and avoid construction work during night; ▪ In the area of Kiselichka Reka gorge perform pre-construction checks, to identify if any species of conservation concern are present in 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ PIU / Supervision Consultant Biodiversity specialist in coordination with Biodiversity supervisor ▪ Monthly reports showing sensitive locations 	<ul style="list-style-type: none"> ▪ Preparation and implementation of a Construction BMP

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		order to avoid negative impacts and disturbance during demolition, mining or vehicle operation.			

4.2.10 Construction Noise and Vibration Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B10	Noise and Vibration Management Plan – in accordance with the specifications in the Noise and Vibration Assessment reports	<p>General measures</p> <p><u>The noise and vibration management plan will include:</u></p> <ul style="list-style-type: none"> ▪ Training of the Contractor staff ▪ Process for informing local residents in advance of the planned works and the potential periods of disruption. ▪ Core site working hours will be agreed with the local authorities (Kriva Palanka, Kumanovo, Staro Nagoričane, Rankovce, Kratovo) prior to the commencement of the works and be in accordance with national regulations between 7.00-19.00. Normal construction activities will not take place at night, except for specific activities which have to continue, or emergencies; ▪ Limiting the maximum speed on access roads and construction site and maintaining both in good condition <p>Noise</p> <p>During the construction of the Section 3 (Kriva Palanka – Deve Bair), the community of Kriva</p>	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders 	<ul style="list-style-type: none"> ▪ Plan approved by PIU/Supervision Consultant; and ▪ Plan implemented by Contractor

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>Palanka will be particularly exposed to construction noise given that the proposed alignment intersects the town by 7 bridges (viaducts) and 2 tunnels (123m and 997m long). Other communities that might be affected by the construction noise are Tlminci, Židilovo and Uzem as the ambient noise levels in these villages have been found to be above the legal limits.</p> <p>In addition, the electrification works have the potential to affect the ambient noise levels in parts of residential areas in Section 1: Cherkesko selo, Lopate, Rezanovce, Kumanovo settlements (Sredorek, Pero Čičo, Proevce 1, Proevce 2, Kumanovo Spa), Šupli Kamen, Dovezance and in Section 2: Odreno;</p> <p>A construction noise monitoring programme will be undertaken at sensitive receptor locations (particularly Tlminci, Židilovo, and Uzem). Monitoring should undertake continuously in real-time, with equipment situated near sensitive receptors, during all blasting and tunnel construction activities.</p> <p>The purpose of monitoring is to ensure that limits set out in the <i>Decision on Determining the Cases and Conditions in which the Peace of Citizens is Regarded Disturbed by Harmful Noise</i> ("Official Gazette of the Republic of Macedonia" No. 1/09) and the <i>Rulebook on Environmental Noise Limit Values</i> (Official Gazette of RM No. 147/08) and limits described in the Project Standards, are not exceeded.</p> <p>The Contractor will apply the following good practice measures to minimise residual noise effects to ensure levels set out in in the North Macedonian /</p>			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>EU noise regulations and Project Standards are not exceeded by the Project.</p> <ul style="list-style-type: none"> ▪ Idling will be avoided and equipment will be turned off when it is not required; ▪ Internal construction access roads will be kept well maintained; ▪ Rubber linings will be used for dump trucks to reduce noise impact; ▪ Drop height of materials will be minimised; ▪ Where possible, reversing alarms that do not have a tonal component (i.e. broadband) will be used; ▪ Sources of significant noise will be enclosed, as far as reasonably possible; ▪ Loading and unloading will be done away from noise-sensitive areas, where practicable; ▪ Stationary plant (i.e. pumps, compressor, concrete mixing, etc) will be located away from noise-sensitive receptors, where possible; ▪ Regular and effective maintenance for plant will and any sound-reducing equipment will be carried out; ▪ Temporary local noise barriers will be installed for noisy equipment; ▪ Guidance in the Directive 2000/14/EC of the European Parliament and the Council of the European Union is followed in respect to equipment for use outdoors; ▪ The World Bank Group Environmental, Health and Safety Guidelines: Noise Management (2007) will be followed in respect of noise arising from a source of an industrial nature. 			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p><u>Vibration</u></p> <p>Once details of blasting activities are known (i.e. amount and type of explosive, the explosive activating method, the property of the rock and the distance from the sensitive area) and construction methodologies are known, a detailed pre-condition survey of buildings in vibration sensitive areas will be undertaken.</p> <p>At the start of each phase of vibratory works which are within the stated distances of sensitive receptors, trials will be undertaken with concurrent vibration and/or noise monitoring at nearby sensitive receptors.</p> <p>Where potential significant effects are identified, alternative low vibration methods will be used where practicable. A detailed pre-condition will be undertaken by an independent surveyor to visually identify all existing signs of exterior or interior damage, cracks (including size, type and direction) and settlement before the construction takes place. The assessment should include a written record and photographs of the existing situation.</p> <p>During construction, condition surveys will be undertaken at least bi-monthly, and following the construction activities that generate a high level of vibration at specific location.</p> <p>If required, crack gauges will be installed to enhance monitoring and construction methodologies will be refined to reduce vibration levels.</p> <p>Condition surveys will be undertaken post construction, to identify any damage that needs to be repaired by the Contractor, in consultation with</p>			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>the affected people. The Contractor will be responsible for the repair of such damage.</p> <p>In areas where buildings are situated within 30 m of the construction site (distance depends on the type of construction work and the tools, equipment and machines used), temporary mitigation measures should be implemented to reduce the negative impact of vibration and/or low frequency noise. The Contractor will apply good practice measures to minimise residual vibration effects including:</p> <ul style="list-style-type: none"> ▪ Transport and construction management will be used to avoid the cumulative effects of vibration (prevention of simultaneous use of equipment that generates an appreciable level of vibration). ▪ 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 practicable (schedule and resource planning). ▪ Whenever possible, it is recommended to use piling equipment with low or non-vibratory methods (such as rotary or bored) to minimize potential disturbances. ▪ Impact piling works should be avoided in zones where residential buildings are located at a distance less than 60 meters. However, if impact piling must to be used, safe distances for executing works can be managed through pre-works tests, such as a preliminary piling series, which assess vibration levels based on specific equipment, technology and ground conditions, along with establishing monitoring. <ul style="list-style-type: none"> ▪ During planning and/or work execution, avoid vibratory compaction and using static force compaction wherever possible (e.g., 			

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		<p>reduce use of smooth-wheeled or sheepsfoot rollers and similar equipment).</p> <ul style="list-style-type: none"> ▪ Selection of demolition methods not involving vibration impact, where is possible. <ul style="list-style-type: none"> ▪ The Contractor, once appointed, will develop and review the construction program to identify potential periods and locations where it may be necessary to offer temporary housing, and they will discuss this offer with affected communities in advance. Temporary rehousing will be offered as outline in the Supplementary E&S Package ▪ Continuous vibration and groundborne noise monitoring system must be established within the construction site vicinity, at locations of the most vulnerable objects, in order to evaluate the impacts and determine if they exceed the allowable values 			

4.2.11 Tunnel Construction and Blasting Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B11	Tunnel Construction and Blasting Management Plan and Method Statements	<p>The Contractor will prepare and implement specific plans and method statements for temporary activities, such as storage areas, and the construction of ancillary structures (e.g. bridges, tunnels, viaducts, overpasses and underpasses).</p> <p>The specific construction plans will include:</p> <ul style="list-style-type: none"> ▪ Tunnel Construction and Handover Plans; and ▪ Blasting Management Plan. <p>The Tunnel Construction Plan will, as a minimum, include:</p> <ul style="list-style-type: none"> ▪ Arrangements for management of tunnelling effluent, including treatment and recycling and final disposal. ▪ Arrangement for the re-use, recycling, recovery and disposal of tunnel cuttings. ▪ Noise and vibration management measures, with cross-reference to the Blasting Management Plan, where required. ▪ Emergency, health and safety and incident response procedures. ▪ Training requirements, including health and safety. ▪ Risk management and reporting. ▪ Any measures required following further geotechnical investigations. ▪ Detailed assessment of the EHSS impacts and any additional mitigations required in addition to those in the Section 3 ESIA (2017). 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders 	<ul style="list-style-type: none"> ▪ Plan approved by PIU/Supervision Consultant; and ▪ Plan implemented by Contractor

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			Preparation / Implementation	Monitoring	
		<p>A Blasting Management Plan will be prepared by the Contractor and will include but not be limited to:</p> <ul style="list-style-type: none"> ▪ The Contractor must appoint an authorised blasting contractor. The PIU / Supervision Consultant will review this contractor's license; ▪ The safe and secure storage of blasting equipment when not in use; ▪ Managing the type and weight of explosives, variations in delay timing, size and number of holes, distance between holes and rows, method and direction of blast initiation can be utilized to reduce blasting-induced vibrations. ▪ Before a full-scale blasting is commenced, a series of test blasts must be conducted in each vibration sensitive zone, including the densely populated areas of the proposed tunnel No. 7 and No. 8. ▪ Test blast measurements should be used to establish appropriate propagation characteristics for each site and increase the accuracy of blasting predictions and define the safe methods of blasting with respect to the nearby properties. ▪ Pre and post blast surveys (including of the condition of sensitive 3rd party properties, as described in B10) ▪ Vibration sensors will be installed at strategic locations to monitor the impact of blasting and to ensure that the vibration levels are within adopted criteria (as part of the monitoring described in B10); ▪ Use blasting design with consideration of safety, blast geometry, free faces, burden, spacing, initiation pattern (delayed blasting) and angled 			

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			Preparation / Implementation	Monitoring	
		<p>holes. Use of multi deck blasting techniques is considered as an efficient method creating lower vibration levels;</p> <ul style="list-style-type: none"> ▪ Suitable procedures for management of explosives, including security and storage arrangements will be developed and implemented; ▪ The plan must be produced in accordance with the requirements of the BMP, and other sub-plans; ▪ Communities will be informed of blasting timetable in advance and will be provided adequate notice of when blasts are required outside of the planning schedule. 			

4.2.12 Landscape and Planting Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B12	Landscape Management Plan (and Landscape / Planting Plans);	<p>The PIU / Contractor will implement a Landscape Management Plan (LMP) to plan and manage construction and post-construction:</p> <ul style="list-style-type: none"> ▪ Reinstatement of all areas used temporarily and not required for the operation of the project including re-vegetation of slopes to ensure stabilisation and reduced visual impacts ▪ Habitat reinstatement and Offset Planting Plan based on the findings of the BMP, in particular Chapter 5.2 and 5.3. 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders 	<ul style="list-style-type: none"> ▪ Plan approved by PIU/Supervision Consultant; and ▪ Plan implemented by Contractor

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>The LMP will cover actions to suitably manage and maintain the growth and health of planting in year 1 (establishment), the first 5 years of growth (strengthening), and post 5-year longer-term typical management and maintenance requirements:</p> <p>Identification of management and maintenance regimes should be agreed with the Ecological Specialist (Contractor), Environmental Expert (Supervision Consultant), and Environmental / Biodiversity Expert (PIU);</p> <ul style="list-style-type: none"> ▪ Compliance with the plan will be the responsibility of the Contractor and monitored by the PIU; ▪ The LMP will outline the tasks to establish and maintain the trees, grass and vegetation identified on the Landscape Design/Planting Plans; ▪ Planting measures will be designed to provide visual screening, and provide enhancement to local landscape character; ▪ Planting measures will also be designed to provide connectivity within the wider landscape where possible; ▪ Planting should make use of species of local/regional provenance; and <p>Measures to mitigate landscape character effects include.</p> <ul style="list-style-type: none"> ▪ Replacement tree planting / woodland planting will be carried out within areas noted as being subject to significant loss. This replacement planting will be located as close to the area of loss as practicable; and ▪ Where topsoil is to be stripped and stored on site temporarily for reuse, the stockpile mounds 			

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		will be stored at a maximum height of 2m, in order to preserve the structural integrity of the soil. <ul style="list-style-type: none"> Reinstate and restore lost fertile topsoil on erosive slopes and agricultural land; 			

4.2.13 Cultural Heritage Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B13	Chance Finds Procedure (CFP)	A Chance Finds Procedure will be prepared and implemented by the Contractor detailing necessary steps to be taken should any culturally significant assets be found: <ul style="list-style-type: none"> In case of a chance finding the construction, activities shall cease in the field where the finding is discovered and the findings shall be reported to the relevant NM authority (Ministry of Culture, the Cultural Heritage Protection Office) Any archaeological/cultural heritage finding will require assessment by the relevant Ministry Conservators. Following the completion of investigation of the relevant Ministry Conservators, the necessary arrangements, such as the identification of the boundaries of the archaeological/cultural heritage asset/site (finding) for its protection, necessary measures, including notification of 	<ul style="list-style-type: none"> Preparation / Implementation – Contractor; and Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> Liaison with the Ministry of Culture, the Cultural Heritage Protection Office Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> Plan approved by PIU/Supervision Consultant; and Plan implemented by Contractor

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>workers in order to prevent any physical intervention, will be implemented.</p> <ul style="list-style-type: none"> ▪ The cultural heritage/archaeological monitoring expert/s will provide cultural heritage training to all Project staff, ensuring they are aware of the potential for identifying cultural remains, and on the implementation of the chance find procedure, as part of their Environmental Training. ▪ The workers will be required to follow the Code of Conduct in the CMP, which sets out their roles and responsibilities in reporting chance finds and respecting cultural assets; ▪ The cultural heritage/archaeological monitoring expert/s will record all chance finds on the Chance Find Report Form and the Chance Find Register as per the Chance Find Procedure; and ▪ Identify potential opportunities to enhance understanding and significance of heritage assets, including intangible cultural heritage, where this would be appropriate (e.g. heritage information boards). 			

4.2.14 Community Health, Safety and Security Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B14	Community Health, Safety and Security (HSS) Plan;	<p>The Contractor will be responsible for developing and implementing a Health, Safety and Security Plan for each construction site, which sets out the measures to manage local community HSS risks, cross referencing the following sub-plans of the CESMP;</p> <ul style="list-style-type: none"> ▪ Air Quality and Dust Suppression Plan; ▪ Construction Traffic Management Plan; ▪ Tunnel/Blasting Construction Plan; ▪ Risk Assessments and Method Statements. ▪ Gender-based Violence and Harassment Action Plan <p>The Contractor will be responsible for taking all necessary precautions to maintain the safety of the local communities. This includes provision of appropriate lighting and providing appropriate safety signage and barriers;</p> <p>The Contractor will be responsible for providing private site security and fire protection, in co-ordination with the local fire authority and local police;</p> <p>The plan will cover both existing risks and risks related to the Project such as the in-migration of construction workers, including increased impacts to women and vulnerable groups.</p> <p>The Plan will set out measures for the prevention of unauthorised access to construction sites, construction compounds and construction workers' accommodation.</p>	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ Consultation with the local community, PE ZSRMI, providers of local facility and stakeholders; ▪ Contractor and PIU review health and safety risks and update in response to changes. ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders 	<ul style="list-style-type: none"> ▪ Plan approved by PIU/Supervision Consultant; and ▪ Plan implemented by Contractor

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>The Plan will set out measures for ensuring community safety including measures such as signage, access restrictions; community safety briefings (e.g. in local schools) etc</p> <p>The Plan will be informed by consultation with the local community, PE ZRSMI, providers of local facility and local stakeholders.</p> <p>The Contractor to conduct due diligence investigation for all their security personnel to make sure they have appropriate licensing, experience and training.</p>			

4.2.15 Occupational Health and Safety Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B15	Occupational Health, and Safety Management Plan;	<p>The Contractor will be responsible for developing and implementing an Occupational Health and Safety Management Plan for each construction site, which sets out the measures to manage occupational risks;</p> <p>Each construction day will begin with a tool-box talk focusing on a single environment, health, or safety matter applicable to the current site activities or stage of construction;</p> <p>The Contractor will be responsible for taking all necessary precautions to maintain the safety of</p>	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ Consultation with the local community, PE ZSRMI, providers of local facility and stakeholders; ▪ Contractor and PIU review health and safety risks and update in response to changes. 	<ul style="list-style-type: none"> ▪ Plan approved by PIU/Supervision Consultant; and ▪ Plan implemented by Contractor

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>construction activities, construction plant, construction facilities, and the construction workforce. This includes provision of appropriate lighting, providing appropriate safety signage and barriers, and providing a first aid department to manage workplace accidents;</p> <p>The Plan will set out measures to manage potential occupational health and safety hazards including, but not limited to:</p> <ul style="list-style-type: none"> ▪ Exposure to chemicals (asphalt fumes, pulverized silica, rail lubricants, fuels, solvents, paints); ▪ Welding hazards (welding fume emissions, burns and radiation); ▪ Excavations; ▪ Confined spaces; ▪ Landslides; ▪ Vibration of heavy construction equipment; ▪ Dust, noise, fall hazards; ▪ Traffic accidents; ▪ Lifting of heavy materials (viaduct / bridge beams, rails, sleepers, etc.); ▪ Accidents with exposed rebars; ▪ Ergonomic hazards during construction; ▪ Explosion hazard; ▪ Environmental hazards (insects, wasps, bees, etc.); ▪ Electrocutions and arc fault burns; ▪ Electrical works. <p>The Health, Safety and Security Plan will include details of the medical facilities provided. It will identify the medical facilities in the local area that may be required for more severe incidents, and how</p>		<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders 	

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>to access them, when required. This provision will have been agreed with these facilities in advance.</p> <p>Regular health checks of construction workers will be undertaken, and a policy for infectious diseases (including Covid 19) developed.</p> <p>The plan will cover both existing risks and risks related to the Project such as the in-migration of construction workers, including increased impacts to women and vulnerable groups.</p>			

4.2.16 Construction Emergency Preparedness and Response Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B16	Construction Emergency Preparedness and Response Plan (CEPRP)	<p>The Contractor will prepare the Construction Emergency Preparedness and Response Plan (CEPRP) to identify and manage all potential emergency events.</p> <p>The CEPRP will comply with relevant North Macedonian regulatory requirements. The CEPRP will be based on an assessment of risk and follow the five-step approach described below:</p> <ul style="list-style-type: none"> ▪ Identify all potential emergency events; ▪ Evaluate the risk associated with the emergency event; ▪ Develop EPRP measures for the emergency event (for inclusion in the EPRP); 	<ul style="list-style-type: none"> ▪ Preparation – Contractor (Health and Safety Lead) ▪ Approval – PIU / Supervision Consultant 	<ul style="list-style-type: none"> ▪ Contractor to provide weekly progress report to the Supervision Consultant. ▪ Supervision Consultant to prepare monthly progress reports, signed off by PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Construction EPRP approved by the PIU prior to construction and implemented during construction.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ Implement the EPRP measures; and ▪ Monitor and continually review the EPRP measures. <p>Potential emergency events that could impact Project-related activities, personnel or assets and will be considered in the CEPRP will comprise but not be limited to:</p> <ul style="list-style-type: none"> ▪ Earthquakes; ▪ Landslides; ▪ Flooding; ▪ Wildfires; ▪ Extreme temperatures – heatwaves and low temperatures; ▪ Storms (wind storms, snow storms thunderstorms); ▪ Heavy fog events; ▪ Extreme rainfall. <p>The CEPRP will be reviewed after any emergency event or training exercise to provide opportunity for continual improvements.</p>			

4.2.17 Construction Traffic Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B17	Construction Traffic Management Plan (CTMP)	<p>The Contractor will prepare a Construction Traffic Management Plan (CTMP) to ensure all construction works, logistics and travel movements are planned to enable them to be delivered safely and in a manner that minimises congestion, road safety risks and disruption to all road users and local access.</p> <ul style="list-style-type: none"> ▪ CTMP shall be prepared taking into account opinions from local communities and implemented in consultation with road and traffic authorities and emergency services. ▪ The CTMP will set out mitigation measures to control the construction traffic, including criteria to ensure the Contractor selects suitable access and construction access routes for the site traffic. <p>The Contractor will:</p> <ul style="list-style-type: none"> ▪ Ensure road users are informed of any works which will affect access in advance of works commencing; ▪ Coordinate with local communities on the development and location of temporary access roads and routes, including those to be used by construction vehicles; ▪ Limit works on the road network to not occupy more than one single lane, therefore always enabling one- way traffic, where practicable; ▪ The timing of large-scale vehicles movements should avoid peak hours on the local road network. 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ Liaison with affected communities. ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Plan approved by PIU / Supervision Consultant; and ▪ Plan implemented by Contractor.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ Disclose the timetable for movement of any large construction vehicles, particularly any wide or long loads that may require additional road space ▪ Provide temporary road access around the construction areas, where necessary; ▪ Should temporary road access be necessary, roadblocks will be provided to prevent access to the areas where construction activities are taking place; ▪ Construct temporary vehicle bridges with sufficient capacity for the existing vehicle usage; ▪ Construct temporary pedestrian bridges which will include appropriate safety measures, such as railings and be a minimum width of 1m; ▪ Provide illuminated and non-illuminated signals and guardrails; ▪ All public roads and surfaces will be cleaned immediately in the event of contamination / spillage caused by the Contractor or sub-contractors; ▪ All public roads used for the Project will be cleaned, removing any debris caused by the movement of vehicles and materials for the Project; ▪ Damage caused by construction vehicles to public roads will be repaired in a timely manner; and ▪ The maintenance of construction vehicles will be carried out regularly and unnecessary use of the vehicles will be avoided. 			

4.2.18 Construction Worker’s Accommodation Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B18	Construction Worker’s Accommodation Management Plan	<p>Prior to the start of site works, the Contractor will be required to employ a HSE team who will develop a Construction Workers Accommodation Management Plan.</p> <p>The Construction Workers Accommodation Management Plan will include the following:</p> <ul style="list-style-type: none"> ▪ Coordination of all accommodation site activities with neighbouring land uses; ▪ The accommodation sites will be staffed and equipped with Accident and Emergency / Medical Emergency facilities for all workers, to avoid straining the available health facilities that serve local communities; ▪ Worker accommodation to be provided in a manner consistent with the principles of non-discrimination and equal opportunity. This includes safeguards against sexual harassment and other forms of gender-based violence ▪ The plan will cover accommodation sites, as well as any sites considered as associated facilities, and will require due diligence and approval; ▪ The plan will set out best practice measures, with a particular focus on the prevention of gender-based violence and the promotion of a gender-sensitive working environment; ▪ It will set out the arrangements for the provision of utilities (water, electricity and plumbing), wastewater and waste 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders. 	<ul style="list-style-type: none"> ▪ Plan approved by PIU / Supervision Consultant; and ▪ Plan implemented by Contractor.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		management, as well as telecommunications; and <ul style="list-style-type: none"> ▪ The construction camp shall be in compliance with all applicable national requirements and permits (e.g. environmental, water supply, wastewater discharge, electricity, access roads etc); ▪ Back-up generators will be available in the event of an emergency; and ▪ The Contractor will be responsible for maintenance, clean-up and reinstatement of accommodation sites and respecting the rights of local land users, as per the land exit protocol. ▪ Demonstration of compliance with the below national requirements and EBRD Guidance on Workers' accommodation: processes and standards (2009). 			

4.2.19 Employment, Labour Management and Monitoring Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B19	Employment, Labour Management and Monitoring Plan	To enhance employment opportunities for locals within the Project area, the Contractor will: <ul style="list-style-type: none"> ▪ Develop and implement an HR Policy which will set out his approach to managing the workforce consistent with national labour and 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by 	<ul style="list-style-type: none"> ▪ Plan approved by PIU / Supervision Consultant; and ▪ Plan implemented by Contractor.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>employment laws and the fundamental principles and standards from ILO conventions;</p> <ul style="list-style-type: none"> ▪ Develop Local Recruitment and Employment Plan to foster equal opportunities and encourage and maximize hiring of local workers; ▪ Communicate employment estimates, timeframes and vacancies clearly to local communities. <p>The Contractor will develop and implement a Labour Management and Monitoring Plan to:</p> <ul style="list-style-type: none"> ▪ Ensure that all workers (including sub-contractors) have employment contracts; ▪ Ensure that all workers (including sub-contractors) employment contracts are in line with both national legislation, applicable ILO standards and recommendations and PR2; ▪ Ensure all workers (direct and indirect) have access to grievance mechanism 	<ul style="list-style-type: none"> ▪ Approval – PIU / Supervision Consultant. 	<p>the PIU, for the Lenders.</p>	

4.2.20 Training Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B20	Training Plan	A Training Plan will be prepared for personnel and workers on the Project. The plan will include details	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and 	<ul style="list-style-type: none"> ▪ Supervision Consultant to prepare monthly progress reports, signed off by 	<ul style="list-style-type: none"> ▪ Plan approved by PIU / Supervision Consultant; and

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>of regular training programs for EHSS aspects of the Project including:</p> <ul style="list-style-type: none"> ▪ Applicable HR Policy provisions and procedures; ▪ Project-level and Worker Grievance Mechanisms, including the need to refer public grievances to the CLOs, ▪ Construction Workers' Code of Conduct, with emphasis on provisions intended to combat gender-based violence and harassment (GBVH) and sexual exploitation and assault (SEA), ▪ Materials management, and ▪ Environmental protection. ▪ Occupational Health and Safety <p>All workers will be required to undertake a construction site induction before commencing work. This training will explain the safety rules and controls in place on site, hazards that workers might be exposed to, and how to work safely on site.</p> <p>Regular toolbox talks will be delivered covering single environmental, health or safety aspect applicable to the Project, or stage of construction, via a brief presentation.</p> <p>Refresher training will be provided by the Contractor periodically to ensure all workers are up to date on best site practices.</p> <p>Contractors employed to provide security services will be trained on the implementation of the Voluntary Principles for Security and Human Rights.</p>	<ul style="list-style-type: none"> ▪ Approval – PIU / Supervision Consultant. 	<p>the PIU, for the Lenders.</p>	<ul style="list-style-type: none"> ▪ Plan implemented by Contractor.

4.2.21 Supply Chain Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B21	Supply Chain Management Plan;	<p>The Contractor shall ensure that:</p> <ul style="list-style-type: none"> ▪ All EHSS requirements for the Contractor, including Lender’s requirements, Macedonian legislation and the Project EHSS requirements, will apply to sub- contractors; ▪ All sub-contractors will be supplied with copies of the CESMP, CESMP sub-plans, and other plans with EHSS requirements; and ▪ All sub-contractors will be required to appoint a safety representative who will be available on the Site throughout the contract period, unless the Supervision Consultant gives the sub-contractor exemption from this in writing. <p>The Supply Chain Management Plan will also require the Contractor to:</p> <ul style="list-style-type: none"> ▪ Ensure that all sub-contractors have human resources policies and procedures on minimum working age, normal working hours, freedom to collective bargaining, good working conditions and eradicating risks of forced labour; ▪ Ensure sub-contractors have employment contract for all permanent and temporary employees in accordance with Labour law. and ▪ Undertake regular (every 6 months) monitoring of suppliers to avoid risks associated with child labour and forced labour. 	<ul style="list-style-type: none"> ▪ Preparation / Implementation – Contractor; and ▪ Approval – PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ Contractor to provide weekly progress report to the Supervision Consultant. ▪ Undertake 6 monthly monitoring of suppliers. ▪ Supervision Consultant to prepare monthly progress reports, signed off by the PIU, for the Lenders 	<ul style="list-style-type: none"> ▪ Supply Chain Management Plan is approved by the PIU / Supervision Consultant and reported to the Lenders; and ▪ Provisions are included in all sub-contractor agreements.

4.2.22 Management of Change and Procedure

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
B22	Management of Change and Procedure (MCP)	<p>Establish a Management of Change Procedure (MCP) for the design finalisation, any design changes required during construction or other changes during construction, including any additional land which is required outside of the expropriation corridor.</p> <p>Where relevant, the MCP should include the methodology for the assessment and identification of any additional mitigation measures that are required to manage the E&S impacts and ensure continued compliance with the project E&S requirements.</p> <p>The MCP shall be submitted for approval within 30 days of the contract commencement date.</p> <p>Undertake consultation on the design finalisation, and any design changes that have the potential to result in impacts on the local communities.</p>	<ul style="list-style-type: none"> ▪ Implementation - Contractor; and ▪ Approval - PIU / Supervision Consultant. 	<ul style="list-style-type: none"> ▪ PIU / Supervision Consultant. ▪ Updates / design changes to be provided / notified in monthly EHSS progress report to Lenders. 	<ul style="list-style-type: none"> ▪ MPC in place; and ▪ Management of design change report produced, and assessment of changes undertaken, as required.

5 Environmental and Social Management Plan During Operation

5.1 Development of an OESMP

PE ZSRMI, with support from the PIU will develop this ESMP into the Operational Environmental and Social Management Plan (OESMP) prior the start of the operational phase. The OESMP will set out the processes and responsibilities for implementation of the requirements of permits, licenses, lenders and regulations associated with the operation and maintenance of the Project.

5.2 OESMP Sub-Plans

The OSEMP shall include (but not be limited to) the following sub-plans:

- Stakeholder Engagement Plan;
- Operational Maintenance Plan;
- Tunnel Operation Management Plan;
- Operational Biodiversity Management Plan;
- Operational Soil Erosion Management Plan;
- Operational Waste Management Plan;
- Operational Noise and Vibration Management Plan
- Occupational Health, Safety and Security Plan;
- Community Health, Safety and Security Plan;
- Operational Emergency Preparedness and Response Plan;
- Contractor Management Plan.

The EHSS framework for each of the sub-plans is described in detail in Chapters 5.2.1 – 5.2.11. of this ESMP.

5.2.1 Stakeholder Engagement Plan (SEP)

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D1	Stakeholder Engagement Plan (SEP)	<p>PE ZSRMI will update the Project SEP for the operational phase;</p> <ul style="list-style-type: none"> ▪ The SEP will be implemented and regular consultation activities with local communities will be organised; ▪ The CLO shall manage consultation activities and workshops and implement the SEP with local communities; ▪ Consultation events will be organised with locally affected people (including women vulnerable groups) regularly during the first year of operation and as and when required thereafter; ▪ The SEP will be updated on an annual basis and/or in a case of any significant changes occur. ▪ Contact details for the CLO will be disclosed at the rail stations. 	<ul style="list-style-type: none"> ▪ Preparation – PE ZSRMI with support from the PIU ▪ Approval - PE ZSRMI. 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare annual progress report for the Lenders 	<ul style="list-style-type: none"> ▪ Approval and implementation of SEP during operational phase.

5.2.2 Operational Maintenance Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D2	Operational Maintenance Plan (OMP)	<ul style="list-style-type: none"> ▪ Maintenance of the Project will be the responsibility of PE ZSRMI and will involve planned maintenance and system testing, as well as ad-hoc maintenance and repairs; ▪ Maintenance activities will be planned to be delivered safely and in a manner that minimises disruption where possible; ▪ A maintenance regime for the Project will be developed and implemented. Inspections must be conducted and managed by suitably qualified and experienced personnel and in line with appropriate North Macedonian and international standards; ▪ A specific programme of inspection and maintenance will be developed for all structures including viaducts, bridges, tunnels, overpasses and underpasses, as well as railway tracks (including inspection of track buckle), drainage systems, and all safety features of the Project. ▪ The maintenance and inspection programme will include measures to control operational noise and vibration, e.g. regular rail grinding and profile grinding of the rail head. The Plan should cross-reference the Operational Noise and Vibration Management Plan. ▪ The maintenance and inspection programme will include climate-resilience maintenance: monitoring and inspection of railway tracks on track buckle or deformation, deterioration of materials including signage, destabilisation of 	<ul style="list-style-type: none"> ▪ PE ZSRMI / Contractor ▪ Approval - PE ZSRMI 	<ul style="list-style-type: none"> ▪ Inspection and maintenance records to be kept; and ▪ PE ZSRMI to prepare annual progress reports for the Lenders. 	<ul style="list-style-type: none"> ▪ Operational Maintenance Plan prepared by the PE ZSRMI and implemented during operational phase.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>overhead lines, scour of structures, shrinking or cracking of soil, etc.</p> <ul style="list-style-type: none"> ▪ The maintenance and inspection programme will include station accessibility and facilities ▪ Regular checking of SF6 leakage in the electrical equipment of the traction power stations Kratovo and Kriva Palanka will be conducted. ▪ The Plan will set out the hazardous materials management procedure including the storage requirements for hazardous materials required for the maintenance. ▪ A spill response procedure will be developed and incorporated into the Plan, including requirements for spills to be reported, contained and cleaned. ▪ Spill kits will be available and accessible to assist with spill management and clean up. 			

5.2.3 Tunnel Operation Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D3	Tunnel Operational Management Plan	The Project comprises 24 tunnel structures of which 4 will be longer than 1km. The longest is the cross-border tunnel Deve Bair (2.3km). The majority of the tunnels will pass underneath undeveloped hilly	<ul style="list-style-type: none"> ▪ Preparation / Implementation - PE ZSRMI with Consultant support 	<ul style="list-style-type: none"> ▪ Inspection and maintenance records to be kept; and 	<ul style="list-style-type: none"> ▪ Tunnel Operational Management Plan prepared by the PE ZSRMI and

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>areas. The only exceptions are two adjacent tunnels underneath the Kriva Palanka town.</p> <p>PE ZSRMI will prepare a Tunnel Operational Management Plan which will include the following requirements;</p> <ul style="list-style-type: none"> ▪ A tunnel inspection routine will be specified. ▪ Working condition ventilation will be maintained; ▪ Firefighting equipment and other facilities will be maintained and provided in a working condition; ▪ Tunnel staff will be adequately trained in case of emergencies, including rescue, recovery and prevention of access to additional vehicles; ▪ Regular cleaning of tunnels will be ensured; ▪ Ensure that escape walkways, exit doors to the gallery and passages are not blocked. ▪ Blasting will be practiced in a way to prevent an occurrence of employee injuries and negative impact on the facilities near the tunnels. 		<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare annual progress reports for the Lenders. 	<p>implemented during the operational phase.</p>

5.2.4 Operational Biodiversity Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D4	Operational Biodiversity Management Plan	<p>Develop and implement the full BMP for the operational phase in line with the outline BMP. The full operational BMP will cover actions to safeguard and conserve biodiversity, that could be affected by the planned activity. Compliance with the plan will be the responsibility of PE ZSRMI. The full BMP will include specific actions to be implemented through the lifetime of the Project and enhance biodiversity in the area and include:</p> <ul style="list-style-type: none"> ▪ Surveys of changes identified in the BMP (Chapter 5.2) will be undertaken, comprising monthly walkovers during year 1 of operation and then with decreasing frequency. Additionally, should any areas of increased perceived collision risk be identified during the pre-construction surveys, these will be added as a monitoring component; ▪ Survey efforts will comprise monitoring of identified areas (Chapter 5.2) to assess the adequacy of the mitigation, and inform any amendments required to ensure continued efficacy of these measures; and ▪ Adaptive management will be informed by findings from monitoring activities. Where it is identified that BMP targets are not being met, PE ZSRMI will be responsible for rectifying this through appropriate adaptive management. These measures may include: <ul style="list-style-type: none"> ▪ Increased fauna crossing points installations; 	<ul style="list-style-type: none"> ▪ Preparation - PE ZSRMI with Consultant support 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare quarterly and annual progress reports for the Lenders. ▪ The operational surveying and monitoring requirements are set out in the BMP. 	<ul style="list-style-type: none"> ▪ Development and implementation of full BMP for operational phase.

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ Increased planting, and/or refined planting locations; ▪ Supplementary seed-collection and plant propagation; ▪ Targeted limits on train speeds; and ▪ Invasive non-native species management. 			

5.2.5 Operational Soil Erosion Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D5	Operational Soil Erosion Management Plan (OSEMP)	<ul style="list-style-type: none"> ▪ To prevent soil erosion, loss and degradation along the Project alignment the Operational Soil Management Plan (OSEMP) will be prepared. It will include but not be limited to: <ul style="list-style-type: none"> ▪ Following significant rain events, the railway alignment will be inspected for signs of erosion and sediment mobilisation; ▪ Slope stability (cuttings and embankments) will be regularly inspected and maintained; ▪ Erosion control measures (including drainage and erosion control blankets) will be regularly inspected and maintained. ▪ The OSEMP will include measures for revegetation and/or maintenance of vegetation to increase the stability of potentially loose materials and surfaces which may develop during the operational phase of the Project. 	<ul style="list-style-type: none"> ▪ Preparation / Implementation - PE ZSRMI with Consultant support 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare annual progress reports for the Lenders. 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare and implement Plan during operational phase.

5.2.6 Resource Efficiency and Pollution Prevention and Control

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D6	Procedure for management of chemicals for plants (along the railway) removal	Set up, maintain and continually review a procedure for management of chemicals for removal of plants along the railway. The procedure should provide careful selection of chemicals and replacement of toxic with less toxic chemical or consideration of alternative manner of plants removal. The objective of the procedure is to avoid or minimise the use of hazardous substances and materials, and consider the use of less hazardous substitutes for such substances and materials so as to protect human health and the environment from their potentially harmful impacts.	<ul style="list-style-type: none"> Preparation E&S department; Approval - PE ZSRMI Management Board 	<ul style="list-style-type: none"> E&S department; to report to the Lenders on status. 	<ul style="list-style-type: none"> Establishment procedure for selection of less toxic chemical for removal of plants.

5.2.7 Operational Waste Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D7	Operational Waste Management Plan (OWMP)	<ul style="list-style-type: none"> The Operational Waste Management Plan (OWMP) will be developed and implemented in the Project operational phase by PE ZSRMI. All waste generated will be managed in accordance with the waste hierarchy (avoid, reuse, recycle, recover, treat, dispose). Dedicated waste storage areas will be established at maintenance facilities, including the Kriva Palanka station and Kratovo traction power 	<ul style="list-style-type: none"> Preparation / Implementation - PE ZSRMI with Consultant support 	<ul style="list-style-type: none"> PE ZSRMI to prepare annual progress reports for the Lenders. 	<ul style="list-style-type: none"> PE ZSRMI to prepare and implement Plan during operational phase.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>station. Waste storage areas will include areas for segregation of wastes and contained storages for hazardous wastes. Waste storage areas will be clearly signed and secured.</p> <ul style="list-style-type: none"> ▪ Materials will be reused or recycled where possible (e.g. concrete sleepers, ballast, scrap metal, timber, cables will be recycled). ▪ Waste containing hazardous substances, including lead acid batteries and waste oils will be managed in accordance with the North Macedonia regulations. ▪ Regular cleaning and maintenance of wastewater collection infrastructure and treatment units (septic tank, oil separators) in Kriva Palanka in Židilovo and disposal of the waste will be included in the Plan; ▪ Workers will be trained on solid waste management practices including requirements not to leave wastes on site at the end of the work or burn or dump any waste, ▪ Adequate number of properly contained litter bins and containers properly marked with type of wastes will be provided at the Kriva Palanka station and Židilovo halt. ▪ Regular inspection of solid waste management practices will be conducted. 			

5.2.8 Operational Noise and Vibration Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D8	Operational Noise and Vibration Management Plan (ONMP)	<ul style="list-style-type: none"> ▪ The Operational Noise and Vibration Management Plan (ONVMP) will be developed and implemented in the Project operational phase by PE ZSRMI. ▪ The Plan will consider adjusting the train speeds where necessary especially during the night-time and avoiding acceleration or braking at noise-sensitive locations, etc. ▪ If necessary, PE ZSRMI will liaise with 'Railways of Republic of North Macedonia Transport (RNMT)' to additionally control operational noise and vibration (e.g. usage of resilient wheels, regular shaping of wheels, improvement of the stiffness of vehicle suspension systems, use of disk brakes instead of block, reduction in train speed, etc.). ▪ PE ZSRMI will regularly maintain the noise barriers; ▪ Operational noise and vibration monitoring will be conducted quarterly during the first year of operations and thereafter in response to noise or vibration related complaints and additional mitigation provided accordingly; ▪ Plan to include the procedure in case of complaints on noise or vibration. ▪ In case of noise-related complaints in the local communities of Tlinci and Konopnitsa, PE ZSRMI to collaborate with the road management company (Public Enterprise for State Roads - 	<ul style="list-style-type: none"> ▪ Preparation / Implementation - PE ZSRMI with Consultant support 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare annual progress reports for the Lenders. 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare and implement Plan during operational phase.

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		PESR) if complaints are related to the cumulative noise issues and their mitigation.			

5.2.9 Operational Occupational Health, Safety and Security Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
	Operational Occupational Health, Safety and Security Plan	<p>To ensure compliance with national OHS requirements and EBRD/EIB standards and to minimise accidents and incidents and ensure occupational safety, the following measures will be implemented:</p> <ul style="list-style-type: none"> ▪ Develop and implement Operational Occupational Health, Safety and Security Plan to: <ul style="list-style-type: none"> ▪ ensure identification and prevention of accidents, injury and ill-health to workers; ▪ ensure that workers are provided with relevant information, instruction and training relating to health and safety hazards, risks, protective and preventive measures and emergency arrangements that are necessary for their health and safety throughout the operation phase; ▪ ensure that workers are provided with a safe and healthy workplace; 	<ul style="list-style-type: none"> ▪ PE ZSRMI 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare annual progress reports for the Lenders. 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare and implement Plan during operational phase.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ ensure that OSH arrangements are planned and implemented with the assistance of a person responsible for OSH, following the hierarchy of risk control and provide personal protective equipment at no cost to the workers; ▪ ensure that health and wellbeing of its workers is monitored. 			

5.2.10 Human Resources Policies and Working Relationships

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D9	Operational Occupational Health, Safety and Security Plan	<p>To reduce and mitigate effects associated with labour risks, the following measures will be implemented:</p> <ul style="list-style-type: none"> ▪ Develop and implement Human Resources and Working Relationships Policies to: <ul style="list-style-type: none"> ▪ Ensure that all workers have employment contracts; ▪ Ensure that all workers employment contracts are in line with national legislation, applicable ILO standards and recommendations and PR2; and ▪ Ensure all workers (direct and indirect) have access to grievance mechanism human resources policy and procedures. 	<ul style="list-style-type: none"> ▪ PE ZSRMI 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare annual progress reports for the Lenders. 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare and implement Plan during operational phase.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<ul style="list-style-type: none"> ▪ Provide and implement a grievance mechanism for employees and contractors and any suppliers; <ul style="list-style-type: none"> ▪ A zero-tolerance process will be in place for discrimination against women workers; ▪ Provide training to human resource personnel of PE ZSRMI to address and deal with discrimination issues in the workplace; ▪ Describe a zero-tolerance process will be in place for discrimination against women workers; ▪ Provide training to human resource personnel of PE ZSRMI to address and deal with discrimination issues in the workplace; ▪ ▪ Ensure employees are aware of their rights to join local trade unions; and ▪ Undertake independent audits and inspections of the stations and operational workspace every 6 months to ensure compliance with both national legislation and applicable ILO standards and recommendations. 			

5.2.11 Operational Community Health, Safety and Security Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D10	Operational Community Health, Safety and Security Plan (OCHSSP)	<p>PE ZSRMI will develop and implement an Operational Community Health, Safety and Security Plan to mitigate the community health, safety and security risks;</p> <p>The OCHSSP development will include consultation with local communities to ensure any potential issues are addressed, particularly trespassing and electrocution hazards;</p> <p>The OCHSSP will provide and implement a grievance mechanism for the local community (as detailed in the SEP).</p> <p>To protect third parties from electrical hazards adequate physical barriers and signage will be installed in the immediate areas of the settlement.</p> <p>Potential exposure to electromagnetic fields in Pero Čičo settlement (Section 1) against the reference values adopted by the WHO will be evaluated. If increased EMF levels are confirmed, mitigation should be considered (engineering measures, compensation, etc.);</p> <p>Adverts will be issued (inclusive of newsletters issued to affected communities) with details of the new crossings (overpasses and underpasses);</p> <p>Signage for the new crossings will be displayed along the Project alignment;</p> <p>All the new crossings will be maintained and inspected regularly for any potential damage, in accordance with the Operational Maintenance Plan;</p> <p>The Plan will cross-reference the Emergency Preparedness and Response Plan particularly</p>	<ul style="list-style-type: none"> Preparation / Implementation - PE ZSRMI 	<ul style="list-style-type: none"> PE ZSRMI to prepare annual progress reports for the Lenders. 	<ul style="list-style-type: none"> PE ZSRMI to prepare and implement Plan during operational phase.

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		related to potential accidents in transport of dangerous goods in the Kriva Palanka town.			

5.2.12 Operational Emergency Preparedness and Response Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D11	Operational Emergency Preparedness and Response Plan (OEPRP)	<p>An Operational Emergency Preparedness and Response Plan (OEPRP) will be developed and implemented to address risks such as:</p> <ul style="list-style-type: none"> ▪ Accidents in dangerous goods transport (spill of liquid substances, spill of powder materials, release of gas, fire, use of absorbers, safe disposal of contaminated spill clean-up materials, etc); ▪ Train derailment; ▪ Flash floods; ▪ Wildfires; ▪ Extreme weather events; ▪ Electrification-related emergencies (e.g. power loss in overhead lines, broken catenary, derailed pantograph, etc.); <p>The OEPRP will be developed and implemented in liaison with 'Railways of Republic of North Macedonia Transport' (RNMT) which in charge of freight railway transport in North Macedonia.</p>	<ul style="list-style-type: none"> ▪ Preparation / Implementation - PE ZSRMI and RNMT 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare annual progress reports for the Lenders. 	<ul style="list-style-type: none"> ▪ PE ZSRMI and RNMT to prepare and implement Plan during operational phase.

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No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
		<p>The OEPRP will be developed in conjunction with the national and local authorities and emergency services (state Directorate for Protection and Rescue, local authorities and local emergency responders).</p> <p>The Plan will specify the emergency response training and practice drills.</p> <p>The emergency response control measures / arrangement will be identified in the risk assessment. The following emergency response arrangements will be set out in the OEPRP, where relevant, but not limited to:</p> <ul style="list-style-type: none"> ▪ Site evacuation (including medical evacuations), emergency escape routes and assembly points; ▪ Emergency equipment (e.g. firefighting equipment, lifesaving and rescue equipment); ▪ Control of energy sources; ▪ Location of main valves and main switches; ▪ Emergency communication protocol; ▪ Site re-integration (recovery); ▪ Post-emergency event investigation protocols. 			

5.2.13 Contractor Management Plan

No.	Environmental / Social Aspect / Concern	Proposed Mitigation Measures	Responsibility		Target / Indicator
			Preparation / Implementation	Monitoring	
D13	Contractor Management Plan	<p>To reduce and mitigate effects associated with the operational supply chain, the following measures will be implemented:</p> <ul style="list-style-type: none"> ▪ Develop a Contractor Management Plan to cover the operation stage, and as a minimum to cover the following: <ul style="list-style-type: none"> ▪ Ensure that any tendering process includes clauses and policies on minimum working age, normal working hours, freedom to collective bargaining, good working conditions and eradicating risks of forced labour; and ▪ Include labour management clauses (as specified in bullet point above) in procurement contracts. ▪ E&S requirements for contractors 	<ul style="list-style-type: none"> ▪ PE ZSRMI 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare annual progress reports for the Lenders. 	<ul style="list-style-type: none"> ▪ PE ZSRMI to prepare and implement Plan during operational phase.

6 Key Performance Indicators

Indicator	Responsibility	Frequency of Monitoring/ Reporting	Type	Target
Oversight and Assurance				
Percentage and number of audits / inspections completed vs planned by Contractor/Supervision Consultant and PIU	PIU/ Supervision Consultant/ Contractor	Quarterly	KPI	100%
Overdue actions from formal EHSS inspections		Quarterly	Measure	
Non-conformance Reporting (NCR)				
Number of open NCRs versus the number of closed NCRs by severity	Contractor	Monthly	Measure	
NCR findings responded to within agreed timeframes	Contractor	Monthly	KPI	100%
EHSS Monitoring				
Percentage of EHSS monitoring undertaken and reported versus planned	Contractor	Monthly	KPI	100%
Proportion of emissions and discharge monitoring results in accordance with the Project EHSS standards	Contractor	Monthly	KPI	100%
Training				
EHSS training delivered in accordance with planned training activities	PIU, Supervision Consultant, Contractor	Monthly	KPI	95%
Health and Safety induction and required personal protective equipment (PPE) provided for all new construction workers	Contractor	Monthly	KPI	100%
Waste Management				
Amount and Percentage of waste recycled/reused versus the Amount and Percentage of waste landfilled	Contractor	Monthly	Measure	
Social performance				

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Indicator	Responsibility	Frequency of Monitoring/ Reporting	Type	Target
Engagement: number of stakeholder meetings/community awareness sessions	PIU and Contractor	Monthly	Measure	
Value of materials and services purchased in country	Contractor	Monthly	Measure	
Percentage of complaints resolved in less than 30 days	PIU and Contractor	Monthly	KPI	90%
No access to land prior to EHSS assessment approval, and completion of Land Entry Protocol	Contractor	Monthly	KPI	0
Number of complaints received by category	PIU and Contractor	Monthly	Measure	
EHSS Incident notification and reporting				
Percentage and number of EHSS incidents categorised by severity	Contractor	Monthly	Measure	
Number of reported accidents, incidents and near misses	Contractor	Monthly	KPI/Measure	
Environmental Management				
Number of Hazardous Chemicals, Fuels, Oils and Lubricants Spills/Leaks to Water and spills >50L and time period within which it was reported as an incident.	Contractor	Monthly	KPI	0
Storage areas for fuel and chemicals designed and operated in compliance with the CESMP	Contractor	Monthly	KPI	100%
Percentage of sites in compliance with site specific erosion and sediment control measures in method statements	Contractor	Monthly	KPI	100%
Change Management Procedure				
Contractor will submit the management of Change Procedure for approval within 30 days of the contract commencement date.	Contractor	n/a	Measure	
Percentage and number of change requests approved verses rejected by category	Contractor	Monthly	Measure	
Employment				

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Indicator	Responsibility	Frequency of Monitoring/ Reporting	Type	Target
Percentage of workers (including sub-contractors) with employment contracts	Contractor	Monthly	KPI	100%
Percentage of worker complaints resolved in less than 30 days	Contractor	Monthly	KPI	90%
Out of unskilled staff employed from affected community, % that is employed from affected villages	Contractor	Monthly	Measure	
Percentage of semi-skilled staff employed from affected provinces	Contractor	Monthly	Measure	
Percentage of skilled staff employed from a national level	Contractor	Monthly	Measure	
Number of worker complaints	Contractor	Monthly	Measure	
Number of worker stoppages or strikes	Contractor	Monthly	Measure	