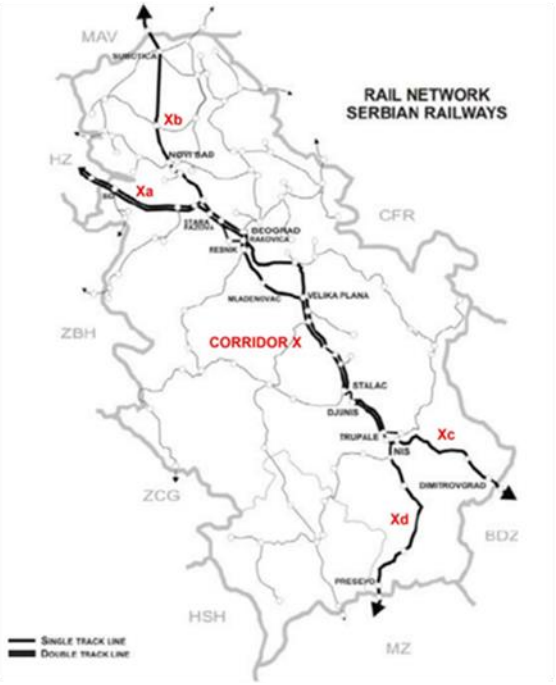
CONSULTANTS AND ENGINEERS
INSPIRED BY THE FUTURE



ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

ANNEX TO THE SUPPLEMENTARY STUDY

Gap Analysis for Corridor X Railway – Belgrade-Nis: Stalac-Djunis Section, Republic of Serbia

12 July 2022

Table of Contents

List of Abbreviations

CESMP	Construction Environmental and Social Management Plan
E&S	Environmental and Social
EBRD	European Bank for Reconstruction and Development
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EU	European Union
OESMP	Operational Environmental and Social Management Plan
OHS	Occupational Health and Safety
PIU	Project Implementation Unit
RAP	Resettlement Action Plan
RoS	Republic of Serbia
SEP	Stakeholder Engagement Plan
SRI	Serbian Railway Infrastructure

1 INTRODUCTION

The European Bank for Reconstruction and Development (EBRD) is considering providing finance to the Republic of Serbia (RoS) for the benefit of Serbian Railways Infrastructure (SRI). The loan will be used to finance the rehabilitation and upgrade of the approx. 243 km-long railway line connecting Belgrade to Nis (Corridor X) with the aim to increase the speed while enhancing quality of passenger and freight rail services.

The entire project is classified as an "A" category project. It is expected to be co-financed by European Investment Bank (EIB) and the European Union (EU) through the Western Balkans Investment Framework or other EU mechanism. The loan will be tranched based on a schedule of subsection rehabilitation.

The **first tranche** will be committed to finance the works of the **Stalac-Djunis subsection** (the Project). The existing 18.6 km railway line from Stalac to Djunis[1] is a single-track subsection on the part of Corridor X between Belgrade and Nis. Construction of a new double-track railway line 17.7 km long for speeds up to 160 km/h is planned. The alignment will be significantly changed as the Project plans almost complete abandonment of the existing railway route and use of a new corridor. Stalac and Djunis railway stations will be fully reconstructed. A detailed description of the Project is given in the Supplementary Study (to which this Environmental and Social Management Plan – ESMP is an Annex).

An international Environmental and Social Impact Assessment (ESIA) was developed in 2016, followed by a national EIA (Environmental Impact Assessment) in 2018. An independent gap analysis review of the ESIA and other relevant documentation was completed in 2022 against EBRD, EIB and EU standards and best practice. The review revealed that additional collection of information/data was needed in order to define additional potential Project impacts and required mitigation actions. Therefore, **a Supplementary Study was developed**, additional impacts identified, and appropriate mitigation measures included in this ESMP as well as in the Project's Environmental and Social Action Plan (ESAP). The ESMP and ESAP also contain mitigation measures relevant to impacts identified in previous E&S assessment studies.

Under Lenders' requirements, the following will comprise the **Project's disclosure package which refers specifically to the Stalac-Djunis subsection**:

- ESIA (2016)
- National EIA Study (2018)
- Supplementary Study with accompanying ESMP (this document)
- Environmental and Social Action Plan (ESAP)
- Resettlement Action Plan (RAP) for LOT 2[2]
- Non-technical Summary (NTS) of the Project
- Corridor-level Stakeholder Engagement Plan (SEP) whose annex will refer specifically to the Stalac-Djunis subsection

2 SCOPE

The objectives of this ESMP are to:

- ensure that the Project will comply with national, EU and Lenders' requirements
- set out the key environmental and social (E&S) issues or sensitivities related to the Project (as identified throughout previous E&S assessment studies and the Supplementary Study);

[1] The subsection itself is 18.6 km long. However, if parts before Stalac and after Djunis are included in order to fit into the existing railway line, it is about 22 km long.

[2] There has been no land acquisition needed for LOT 1 of the Project – the land needed for the exit and entrance portals to Tunnel 4 was already owned by SRI, whereas land needed for access roads is public land. Therefore, a RAP was prepared for LOT 2 only.

- describe the mitigation measures and management procedures (as identified throughout previous E&S assessment studies and the Supplementary Study);
- 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 procedures.

This ESMP is applicable to the following stages of the Project's lifecycle:

1. preparation of Main Design (so called Design for Construction Permit according to the national law),
2. pre-construction and construction, and
3. operation and maintenance.

It includes mitigation and monitoring requirements identified in the ESIA, the national EIA and the Supplementary Study.

3 IMPACTS AND RISKS ADDRESSED BY THIS ESMP

In order to address all the impacts identified in the 2016 ESIA, the 2018 national EIA and the Supplementary Study, a **Construction Environmental and Social Management Plan (CESMP)** will be developed and will include the development of the following **subplans**:

Subplan	Impacts/risks to be addressed
Construction Compound Selection and Management Plan	- Inadequate construction site organisation - Unsuitable drainage from construction compounds/ construction workers accommodation - Security personnel do not have the appropriate permits/ licencing, training and experience
Construction Biodiversity Management Plan	- Permanent loss of natural and semi-natural habitats within the railway footprint - Temporary disturbance and fragmentation of fauna habitats and construction collisions - Increased sediment load in Juzna Morava River

Construction Air Quality and Dust Management Plan	- Emission of construction dust and engine exhaust gases as a result of:
	  - Demolition works
	  - Earthworks
	  - Transport and disposal of excavated materials
	  - Movement of construction mechanisation and transport vehicles – GHG emissions

Construction Noise and Vibration Management Plan	- Increased noise levels near residential buildings due to excavation works - Increased vibration levels near residential buildings due to ground-borne vibration, particularly from blasting and heavy vehicles movement when there are irregularities in the road surface - Negative impacts as a result of increased noise levels generated from concrete batch plants, as a focal point for the delivery of aggregates and cements, as well as heavy vehicles and mixer truck movements - Negative impact on workers from increased levels of noise during construction activities and use/movement of construction equipment - Increased construction-related noise and vibration will affect local fauna

Construction Water and Soil Management Plan	- Dewatering and changing of groundwater regime (direction of flow and velocity), as well as spring yield
	- Changing surface water regime and flow due to risk of erosion and riverbed modification
	- Reduction in soil, ground and surface water quality due to:
	  - Accidental release of fuels, oils, chemicals or hazardous materials to the ground with subsequent leaching to subsurface
	  - Emissions of drainage water from tunnel tubes generated during construction activities
	  - Inadequately and uncontrolled discharge/treatment of effluent and sanitary wastewater from construction site

Subplan	Impacts/risks to be addressed
	○ Installation of abutments and piers, as well as construction of bridges indicating localised excavations and bank erosion and resulting in significant sediment run-off ○ Surface run-off and washout at worksites ○ Inadequate disposal and treatment of municipal, construction and other waste categories ○ Temporary realignments of the streams > Soil compaction and erosion as a result of using heavy machinery and equipment > Removal of riparian vegetation affecting the stability of the banks and increasing erosion and sedimentation > Deforestation that may cause soil erosion > Permanent loss of soil along the right-of-way > Temporary occupation of land for construction activities (transport and access roads, landfills, areas for workers) > Soil dewatering
River Crossing Plan	> Construction of railway structures in the riverbed > Negative impact of construction machinery and materials on water quality and biodiversity
Construction Waste Management Plan including Decommissioning Waste Management Plan	> Environmental damage and risk to human health due to contamination caused by improper materials, waste and chemicals management generated from: ○ Waste generated at the construction site, including municipal waste ○ Decommissioning of the existing railway ○ Any demolition work on station buildings
Construction Spoil Management Plan	> Poor spoil and waste handling and storage/ disposal arrangements
Construction Planting Management Plan	> Changes to the existing landscape and visual impacts as a result of: ○ Clearance localised areas of tree and shrub vegetation and removal of land cover ○ Increased level of "urbanisation" due to construction mechanisation ○ Adverse change in land use along the railway route ○ Temporary occupation of land for construction activities (transport and access roads, landfills, areas for workers)
Construction Traffic Management Plan	> Road and railway traffic disruptions and safety > Risks of restriction to access to community infrastructure, roads and cemeteries in the Project area > Risks of damage to public roads
Workers' Accommodation Management Plan	> Living conditions of workers > Importation of external workforce into the Project area > Impacts of workers' housing facilities on surrounding communities
Cultural Heritage Management Plan	> Potential impacts on tangible and intangible cultural heritage > Encountering previously unfound archaeological heritage in the Project area
Construction Health, Safety and Security Plan	> Safety risks due to unauthorised access to construction compounds and work sites > Presence of temporary workers in the local area > OHS risks
Construction Labour and Employment Plan	> Labour and employment related risks (for both Contractor's and sub-contractors' workers) including risk of non-compliance with Lenders' requirements on grievance mechanism for workers
Construction Workers' Code of Conduct	> Labour influx risks > Gender-based violence and harassment risks
Blasting Management Plan (if needed)	> Negative impact of blasting activities on the environment (biodiversity, air pollution, disturbing the terrain stability) > Mining activities can endanger the safety of the population and workers
Construction Emergency Preparedness and Response Plan	> Water and soil contamination caused by improper materials/ chemicals management and accidental spillage > Negative impacts of climate change on the Project as a result of: ○ Flooding of the construction area and consequent damage to infrastructure and construction equipment

Subplan	Impacts/risks to be addressed
	○ Land subsidence caused by droughts and floods which can cause damage to construction equipment, machinery and materials ○ Heat stroke and increased risk of fire may temporarily suspend the Project activities and cause ignition and damage of equipment containing hazardous substances and melting of plastic parts
Training Plan	*A training plan will be developed to create appropriate staff training program to implement all of the previously mentioned subplans and to minimise negative impacts on the environment and local communities.*

In order to address all the impacts identified in the 2016 ESIA, the 2018 national EIA and the Supplementary Study, and **Operational Environmental and Social Management Plan** (OESMP) will be developed and will include the development of the following **subplans**:

Subplan	Impacts to be addressed
Operational Biodiversity Management Plan	> Permanent fragmentation of habitats > Potential disturbance of specific biological functions (nesting, breeding, foraging) by noise or light pollution, > Electrocution on power lines or collision of fauna with the railway, > Potential contamination of vegetation by herbicides
Operational Air Quality Management Plan	> Reduction in air quality (dust emissions, hazardous emissions from waste materials, fossil fuel emissions) as a result of demolition works, earthworks, transport and disposal of excavated materials during reconstruction and maintenance activities
Operational Noise and Vibration Management Plan	> Negative impact as a result of increased railway noise in the zone with residential receptors in the vicinity of the proposed Stalac station > Negative impact as a result of ground-borne vibration in the zone with residential receptors > Potential disturbance of specific biological functions by noise and vibration effects > Impact on workers from increased level of noise and vibration from rolling stock and machinery
Operational Water and Soil Management Plan	> Reduction in water and soil quality as a result of: ○ Accidental spillages or leaks from trains ○ Accumulation of heavy metals from herbicides along the railway line, as well as contamination of surface water during application of herbicides ○ Minor leaking of oil, grease and other chemicals from the rolling stock ○ Accumulation of sediment in the area of bridge piers in the Juzna Morava River ○ Discharge of accidentally contaminated run-off from the track drainage system and during the bridge maintenance works ○ Discharge of untreated sanitary wastewater or contaminated run-off from station facilities
Operational Waste Management Plan	> Environmental damage and contamination caused by improper materials/ waste/ chemicals management coming from: ○ Passengers that will use the stations (municipal waste) ○ Track and ancillary structures maintenance activities
Operational Maintenance Plan	> Traffic jams and disruptions due to damage of the railway infrastructure > Increased concentration of harmful substances in the air due to tunnels ventilation systems failure > In case of an emergency, difficult access to the accident site due non-maintenance of railway infrastructure and emergency exits in tunnels
	>
Operational Health, Safety and Security Plan	> OHS risks for regular railway workers (such as drivers) and maintenance workers > Local community safety risks during railway operation > Risk of non-compliance of security personnel with Lenders' requirements (if such personnel is engaged at newly constructed stations)
Operational Cultural Heritage Plan	> Operational maintenance activities could lead to disturbances or damage to known or previously unknown cultural heritage
Operational Emergency Preparedness and Response Plan	> Water and soil contamination caused by improper materials/ chemicals management as a result of train crash, train breakdowns, and accidental spillage > Increasingly frequent climate change can lead to:

Subplan	Impacts to be addressed
	○ Physical damage of the railway infrastructure as a result of floods, landslides and fires and the consequent closure of the railway traffic ○ Trains damaged by floods and fires, and disruption of railway flow ○ Reduced visibility in case of fire. Fire also generates GHG emissions
Gender Plan	> Potential gender-based violence and harassment against women during regular railway operations as well as maintenance works if worker influx is anticipated > Potential discrimination against SRI female workers as drivers > Possible concerns among women for use of underpasses as pedestrians, especially at night if the underpasses are not appropriately designed

4 ROLES AND RESPONSIBILITIES

SRI will utilise this ESMP during Project execution to achieve appropriate and effective management of E&S issues. SRI will have the ultimate responsibility for the Project and will oversee the implementation of the Lenders' requirements during design and construction (i.e., oversee the Contractor, the subcontractors and other involved third parties). SRI will be responsible for creating a Project Implementation Unit (PIU) to implement the Project.

The PIU will be responsible for the overall implementation of the Project-level grievance mechanism to ensure that all grievances and/or objections (raised by affected stakeholders or communities) are received, acknowledged and addressed as per the grievance mechanism set out in the SEP. The Contractor will support this implementation.

The Contractor will predominantly be responsible for ensuring that all its work and staff activity is compliant with national legislation, policies and standards, the permits provided by national and local regulators and the Lenders' requirements. The Contractor will utilise this ESMP and applicable sections of other plans including the SEP and RAP to develop a CESMP.

SRI will be responsible for utilising this ESMP and applicable sections of other plans including the SEP and RAP to develop an OESMP prior to the start of the operational phase.

5 CONSTRUCTION ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		Contractor (Preparation of Main Design)				
1.	Management of Change Procedure	The Contractor will establish a Management of Change Procedure 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. Where relevant, this will 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's requirements.	> Both lots	> Implementation – Contractor > Approval – PIU/ Supervision Engineer	> PIU / Supervision Engineer > Any significant design changes to be submitted by the PIU to the Lenders	> Procedure in place > Management of design change report produced, and assessment of changes undertaken
2.	Potential Effects on Groundwater Quality, Flow, and Recharge	The Contractor will undertake a detailed geotechnical investigation, as part of Main Design development and before the start of construction works, to understand terrain geological and hydrogeological conditions. The Hydrogeological Excavation Code procedure shall be used which foresees development of preliminary studies and considering various excavation modes and procedures, including but not limited to: > Identification of the affected classified waterbodies and the assessment of the Area of Influence > Hydrogeological balance at the catchment level; > Permeability definition for each Rock Mass Zone by in situ tests and geostructural approaches; > Prediction of the expected water inflow, and type thereof, for homogeneous tunnel stretches; > Analysis of the impact of the tunnel drainage into the water natural resources; > Definition of type and mode for the prevention of the water drainage operated by the tunnel (grouting, controlled drainage, partial or full sealing of the tunnel from water, waterproofing procedure), to be incorporated in the design as current works, in order to mitigate, reduce or avoid water drainage; > Water level monitoring before, during and after tunnelling for controlling the impacts on ecosystems (streams, rivers, creeks, spring waters, underground water); > Mitigation measures for the residual impacts on the natural water resources and reuse of the water drained.	> Both lots	> Implementation – Contractor	> Contractor and Supervision Engineer to include the findings and conclusions in the monthly reports for the PIU	> Geotechnical investigations conducted and appropriate measures included in the Main Design
3.	Baseline data on surface water quality, groundwater	The Contractor will: > conduct one-time preconstruction baseline monitoring of groundwater quality in piezometers previously used for hydrogeological research using the overall methodological approach	> Lot 2 for all requirements > Lot 1 for baseline ground water	> Implementation – Contractor	> Contractor and Supervision Engineer to include the	> Environmental baseline report on soil, surface and groundwater

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
	quality, soil quality, and noise and vibration levels in the Project area	to monitoring for the implementation of Water Framework Directive (WFD) as defined in the *Guidance Document No. 7 Monitoring under the Water Framework Directive*[3]. Minimum physical-chemical parameters to be monitored include: pH, turbidity, dissolved oxygen (DO), electrical conductivity, total suspended solids (TSS), chloride, alkalinity, total hardness, calcium, magnesium, zinc and iron. Include also ecological and quantitative parameters. > conduct baseline surface water quality measurements in the settlements of Cerovo and Trubarevo, where the existing and proposed railways run parallel to the Juzna Morava River. Monitoring will be conducted in line with the the *Guidance Document No. 7 Monitoring under the Water Framework Directive*. Minimum physical-chemical parameters to be monitored include: pH, smell, colour, dissolved oxygen (DO), electrical conductivity, suspended solids, chemical oxygen demand (COD), biochemical oxygen demand, ammonia, nitrates, nitrites, total nitrogen – N, total phosphorus – P, sulphates, Cd, Cu, Cr, Zn, Ni, Fe, Pb, Mn, TOC, oils and fats, mineral oils, Hg. Include also ecological and quantitative parameters. > conduct baseline soil quality monitoring along the railway alignment (at approx. 0.5-1.0 m from the alignment), in the settlements of Stalac, Trubarevo and Djunis at locations where the new railway follows the existing one. Also, it is necessary to conduct baseline soil quality monitoring at least two more locations that deviate from the existing railway alignment, and which pass through agricultural areas or where existing pollution is visually noticed. Minimum parameters to be monitored include: pH, P, K, Na, Fe, Al, Ca, organic matter, clay, Be, V, Cd, Cr, Cu, Ni, Pb, Zn, Hg, As, Ba, Co, Mo, Sb, Se, Ti, Te, Ag, Sn. > determine the noise and vibration baseline levels of the site and the surrounding area, by measurements which must be conducted by the accredited organizations. The measurements must be in compliance with Serbian legalisation and the standards SRPS ISO 1996-1 and SRPS ISO 1996-2.	analysis, baseline soil quality monitoring, noise and vibration baseline levels		results and conclusions in the monthly reports for the PIU	quality, and noise and vibration measurements prepared > Baseline monitoring reports approved by the Supervision Engineer
4.	Design standards and considerations	During the development of the Main Design, the Contractor will ensure that it complies with applicable national design standards, which will include designing appropriate environmental parameters (flood, ground stability) including climate change. All design standards defined in the Location Conditions for Stalac-Djunis subsection shall also be considered. Some of these include: > Elements of protective steel fences on the overpass should be designed in accordance with the provisions of the standard SRPS EN	> Lot 2 for all requirements > Lot 1 for applicability of national and TSI tunnel requirements	> Implementation – Contractor	> Supervision Engineer to check the Project design and report to the PIU	> Design complies with national design standards, Location Conditions, EN European/Serbian (SRPS) standards and TSI standards

[3] https://op.europa.eu/en/publication-detail/-/publication/95072480-dbe7-46cb-9d4f-d3e6e559ed87/language-en

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		1317. The designer is obliged to determine the required level of retention, depending on traffic conditions and areas of required protection. > Predict bridge pillars and support structures that will create the least resistance to water runoff, and which will be hydraulically shaped and parallel to the streams of the river flow. > Drainage of atmospheric water from pavement surfaces should be done by transverse and longitudinal falls with collection and treatment in the mineral oil and grease separator and/or sand traps before discharge into the watercourse. > Abutments of the proposed bridges will be designed to retain habitats along the waterways and associated movement of species. To enable full compliance with the national *Law on Protection against Non-ionising Radiation*, it is recommended, where possible, in particular at railway stations, to apply protective film for alternating and permanent magnetic fields (e.g. amorphous cobalt alloy film for protection against low-frequency alternating magnetic field radiation) to protect employees from low-frequency and high frequency electric fields, cobalt tapes or other acceptable solutions. Furthermore, to enable compliance with the national *Regulation on Limits of Non-ionising Radiation*, it is recommended to plan, in cooperation with the radio communications agency, the installation of at least one sensor at stations to enable continuous monitoring of the levels and limits of non-ionising electromagnetic radiation at these locations. The Contractor will review the updated relevant EN European/Serbian (SRPS) standards (which have been revised since the Preliminary Design was developed), including but not limited to: > SRPS EN 13803:2017 (Railway applications - Track - Track alignment design parameters - Track gauges 1 435 mm and wider); > SRPS EN 16704-2-1:2017 (Railway applications - Track - Safety protection on the track during work - Part 2-1: Common solutions and technologies - Technical requirements for Track Warning Systems (TWS); > SRPS EN 16586-1:2021 (Railway applications - Design for PRM use - Accessibility of persons with reduced mobility to rolling stock - Part 1: Steps for access and egress); > SRPS EN 50119:2020 (Railway applications - Fixed installations - Electric traction overhead contact lines).				> Minutes of meetings during final design stage with the local municipal/city authorities and local communities on the issue of underpasses

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		The Contractor will also ensure that the Main Design complies with the Technical Specifications for Interoperability (TSIs), including but not limited to the TSI for persons with disabilities and with reduced mobility. Specifically for the planned two underpasses, the Contractor shall ensure during the final design stage that the underpasses: > Are of adequate width and height for passage of agricultural machinery > Are designed to feel safe (ensuring visibility from one side to the other, allowing maximisation of light penetration etc.) > Have adequate lightning both inside and at the entrances of the underpass During the final design stage, SRI and the Contractor will consult with the Municipality of Cicevac and the City of Krusevac on the issues of underpass sufficiency, dimensions and safety considerations. In addition, meetings will be held in local communities along the Project footprint in the final design stage, to clearly present all planned underpasses and overpasses, hear the views of local residents in relation to access to their land and make changes if possible, to accommodate their needs. Before the start of construction, the same process will be organised to ensure that people affected by the Project are informed of design decisions including explanation of rationale for such decisions (from technical, financial, safety and other aspects) and that they have information about how and where they can access their land on the other side of the railway (construction site) and the contact details of the Contractor for any grievances.				
5.	Design of access roads	The Contractor shall plan new access roads or realignment of existing roads with considerations to minimise impacts, taking into account the requirements of the Location Conditions. The Contractor shall pay particular attention to the following two locations in the final design stage: > location of the planned realignment of state road no. 215 (Krusevac–Djunis–Deligrad) – to ensure connection between the existing local road and the new (realigned) part of the state road and maintain the existing road communication to avoid cutting off of the local road which would endanger access to farmland. > location of the Church of "Sveta Nedelja" (near the planned exit of Tunnel no. 3 and entrance of Tunnel no. 4, as well as the planned access road to Tunnel no. 4.) – to prevent cutting off of access to the existing road infrastructure which leads to the Church by ensuring an adequate access road to this facility.	> General requirements applicable to both lots > State road no. 215 applicable to Lot 2 > Church applicable to Lot 1	> Implementation – Contractor	> Supervision Engineer to check the Project design and report to the PIU	> Access road design complies with the requirements of Location Conditions with consideration to minimising access

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
6.	Design of Noise Protection Structures	The noise protection measures have been defined in the 2018 national EIA study for all residential and other sensitive objects which will be exposed to a noise level which is larger than the limits levels established by Serbian and/or EU legislation. Noise barriers are planned on both sides of the railway line in total length of 748 meters. The barriers have been modelled using CadnA software and proposed locations are as follows: > Stalac (left of the track chainage 174+247 – 174+315) – Height 2.5 m > Stalac (left of the track chainage 174+315 – 174+371) – Height 3.5 m > Stalac (left of the track chainage 174+371 – 174+490) – Height 2.5 m > Stalac (left of the track chainage 175+102 – 175+216) – Height 3.5 m > Stalac (right of the track chainage 175+255 – 175+343) – Height 3.0 m > Stalac (right of the track chainage 176+692 – 176+799) – Height 3.5 m > Stalac (right of the track chainage 176+893 – 176+977) – Height 3.0 m > Stalac (right of the track chainage 177+168 – 177+281) – Height 3.5 m The design of noise barriers shall comply with provisions of the National and European legislation, as well as corresponding standards: COMMISSION REGULATION (EU) No. 1304/2014, SRPS EN 16272-1, SRPS EN 16272-2, SRPS EN 16272-3-1, SRPS EN 16272-3-2, SRPS EN 16727-1, SRPS EN 16727-2-1, SRPS EN 16727-2-2, SRPS EN 16727-3, SRPS EN 16951-1 and SRPS EN 16951-2. The acoustic panels that will be used for noise barriers shall have sound absorption of minimum 12 dB (class A4 in accordance with SRPS EN 16272-1) and soundproofing of minimum 25 dB (class B3 in accordance with SRPS EN 16272-2). All elements of noise barriers shall be grounded. Efficiency of the grounding system for the chosen type of noise barriers shall be verified by professional accredited institution. The lightning charge current test shall be carried out to reach the effective value of 40 kA and pulse duration of 100 ms minimum. The acoustic panels shall have service life of minimum 20 years without major changes in their acoustic and non-acoustic performances. The acoustic panels and/or complete noise barriers shall be suitable for installation next to the railway lines with maximum permitted speeds of 160 km/h. For residential and other sensitive buildings which protection by noise barriers is not economical or technically possible, and for buildings where exceeding noise level occurs even after installation of noise barriers, some	> Noise barriers applicable to Lot 2 > Noise Study as an integral part of the Study of Technical Measures for Environmental Protection for both lots	> Preparation and implementation – Contractor > Approval by technical control entity (a company or other legal entity or entrepreneur who meets the requirements for technical documentation required by national law)	> Supervision Engineer to check the Project design regarding noise and report to the PIU	> Noise mitigation is included in the design. > Noise impacts meet national and EU legislative limits.

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		other protection measures are planned such as replacement of doors and windows with ones with better sound insulation[4]. The buildings will be selected based on the indoor noise level measured inside the building by an accredited independent laboratory. If the permissible levels are exceeded the decision on required refurbishment works will be made by a civil engineering expert. Decision on the type of sound insulation (sealing glass) will be made separately for each case, with a note that small sound insulation will not resolve the above-mentioned problems while big sound insulation is not economic due to very high prices. For each building protected by replacement of doors and windows with those having better sound insulation, closed fresh air supply system should be provided as well. In addition to replacement of doors and windows on the buildings, the facades should be provided with adequate soundproofing. Proposed noise mitigation measures at the source, include retrofitting freight trains with composite brake blocks with noise reduction potential by 8-10 dB(A). Proposed noise mitigation measures at transmission path, include the noise barriers with noise reduction potential by 5-15 dB(A) and insulation of house joinery and facade with noise reduction potential by 10-30 dB(A). The Contractor will develop the *Study of Technical Measures for Environmental Protection*, as part of the Main Design (so-called Design for Construction Permit), which will cover noise issues through a separate chapter – Noise Study. The Project will include the noise barriers optimisation (location, height and length), as well as optimization of the other noise protection measures. The Project shall cover the entire railway section Stalac-Djunis (it can be divided in the subsection according to the construction work organization – two separate "design and build contracts"), with additional site evaluation of the individual properties and further refinement of the noise model. Since a Noise Study will be an integral part of the Study of Technical Measures for Environmental Protection, the				

[4] When windows and/or doors are closed, noise levels in residential premises shall not exceed 35 dB(A) during the day, i.e. 30 dB(A) during the night, fully in accordance with the Law on Environmental Noise Protection (''Official Gazette of the RS", Nos. 36/09 and 88/10). If the estimated noise levels near residential and other sensitive buildings (which are not protected by the noise barriers) do not exceed the permissible exposure levels for more than 1.0 dB, noise monitoring will be planned as a protection measure, provided that the SRI must acts in strict compliance with the obtained results. If the estimated noise levels near residential and other sensitive buildings (which are not protected by the noise barriers) exceed the permissible exposure levels for more than 1.0 dB, joinery replacement and/or facade insulation will be planned as a protection measure. For residential and other sensitive buildings, where exceeding noise level occurs even after installation of noise barriers, noise monitoring will be planned as an additional protection measure. The monitoring should confirm efficiency of the noise barriers. In case of excessive values, the SRI shall take passive protection measures. Joinery will be replaced and/or facades repaired only if the joinery and/or facades do not meet the required specifications governing the acoustic insulation.

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		SRI shall decide on way the Study shall be prepared considering the two proposed options: > Option 1: Transfer the obligation to the Contractor for future railway reconstruction activities to prepare updated Noise Study (as a part of the Study of Technical Measures for Environmental Protection) for the whole subsection Stalac-Djunis. Defined noise barrier can be then given to the Contractor on LOT 2 to further design them in the Study of Technical Measures for Environmental Protection for LOT2. The same will be done by contractor for LOT1. The mechanism how the measures defined by the LOT1 Contractor will be incorporated by the LOT2 Contractor must be defined in advance; or > Option 2: Engage independent consultant to prepare updated Noise Study (as a part of the Study of Technical Measures for Environmental Protection) for the whole subsection in cooperation with Contractors on LOT1 and LOT2.Redefined noise barriers can be then given to the designers on both LOTs to further design them in the Study of Technical Measures for Environmental Protection. The mechanism how the measures will be incorporated by the designers on both LOTs must be defined in advance.				
Contractor (Pre-Construction and Construction)						
7.	Development of a Construction Environmental and Social Management Plan (CESMP)	The Contractor will elaborate the ESMP to prepare a CESMP and submit it to the Supervision Engineer and PIU for approval prior to taking possession of the work site. The CESMP will include the Management of Change Procedure established during the finalisation of the design. 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. The CESMP will include the relevant subplans (see item 11 below). The Contractor will also be required to implement the relevant provisions of RAP (LOT2) and SEP, which is to be reflected in the CESMP as well.	> Both lots	> Preparation and implementation – Contractor > Approval – PIU and Supervision Engineer	> Contractor and Supervision Engineer to prepare monthly reports for the PIU on status of CESMP performance	> CESMP developed and approved by the PIU/ Supervision Engineer
8.	Development of subplans of the CESMP	As part of the CESMP, the Contractor will prepare the following subplans: > Construction Compound Selection and Management Plan > Construction Biodiversity Management Plan > Construction Air Quality and Dust Management Plan > Construction Noise and Vibration Management Plan > Construction Water and Soil Management Plan	> Defined below under each subplan item	> Preparation and implementation – Contractor > Approval – PIU and Supervision Engineer	> Supervision Engineer/PIU	> Subplans developed and approved as part of the Contractor's CESMP

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> River Crossing Plan > Construction Waste Management Plan, including Decommissioning Waste Management Plan > Construction Spoil Management Plan > Construction Planting Management Plan > Construction Traffic Management Plan > Workers' Accommodation Management Plan > Cultural Heritage Management Plan > Construction Health, Safety and Security Plan > Construction Labour and Employment Plan > Construction Workers' Code of Conduct > Blasting Management Plan (if needed) > Construction Emergency Preparedness and Response Plan > Training Plan				> The following subplans sent to and approved by the Lenders: 1) Construction Compound Selection and Management Plan, 2) Construction Biodiversity Management Plan, 3) Construction Waste Management Plan, including Decommissioning Waste Management Plan, 4) Construction Spoil Management Plan, 5) Workers' Accommodation Management Plan, and 6) Construction Water and Soil Management Plan
9.	Construction Compound Selection and Management Plan	The Contractor will be responsible for negotiating agreements with landowners, to temporarily use land for construction compounds and construction access in accordance with the RAP. Construction compounds will be selected in consultation with affected communities. Construction compounds should be located away from sensitive receptors to the extent possible to minimise any adverse impacts as a result of construction activities.	> Both lots	> Preparation and Implementation – Contractor > Approval – PIU / Supervision Engineer	> The Contractor and Supervision Engineer to prepare monthly reports on the construction sites and construction compounds	> Construction Compound Selection and Management Plan developed and approved by the PIU / Supervision Engineer and Lenders, and

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		The Contractor will be responsible for the provision of utilities (water, electricity and plumbing), wastewater and waste management as well as telecommunications to construction compounds, in accordance with the national requirements. Suitable drainage from construction compounds/construction workers accommodation must be provided including cut-off valves, ditches or drains and sustainable drainage system, or equivalent, with suitable sized treatment facilities such as settlement or detention basins. In case of engagement of security personnel at construction compounds, the Contractor will conduct due diligence investigations for all their security personnel to make sure they have the appropriate permits / licencing, training and experience. They will also be given training on the construction-site specific issues as set out in the Training Plan. The Contractor will ensure that the construction site will be left clean after the completion of the construction works. Upon completion, areas used as construction compounds will be returned to their original use and state. Workers' accommodation will meet the requirements set out in the item below.			organisation for the PIU, based on conducted weekly visual inspections	implemented by the Contractor
10.	Construction Biodiversity Management Plan	The Contractor will prepare a Construction Biodiversity Management Plan prior to commencement of works and implement the Plan throughout construction. The Plan 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 during the pre-construction phase. The Plan and its changes, if any, will be approved by SRI and the Lenders before start of works. The following measures have to be implemented during the construction phase: > Prohibit activities that may cause substantial turbidity of the Juzna Morava River, other rivers and streams in the Project area for longer than three days; > Clear demarcation of vegetation for clearance in order to preserve marginal habitats; > Creating refined EAAA maps for all PBFs and CHs; > Clearance of forest vegetation will be undertaken in accordance with the requirements set by the forest management body "Srbijašume"; > On-site speed limits must be enforced to avoid direct mortality of animals; > Prevent loss of purple cyclamen (*Cyclamen purpurascens*); > At least 5% of cut down trees must be left in the forest to stimulate stag beetle;	> Both lots	> Preparation and Implementation – Contractor > Approval – PIU / Supervision Engineer	> PIU /Supervision Engineer > Monthly reporting on Plan action/ monitoring outcomes; > Ecological Clerk of Works (ECoW) approval reports that confirm alignments have been checked and cleared prior to access	> Construction Biodiversity Management Plan developed and approved by the PIU / Supervision Engineer and Lenders, and implemented by the Contractor

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> Works in the watercourses will be timed with due regard to mitigate potential impacts to migratory fish, mammals, birds, amphibians and invertebrates; > Vegetation clearance must be avoided during bird breeding season (March- June), where this is not possible pre-clearance checks will be undertaken to identify any active nesting sites; > Intensive Project construction works will not be undertaken at dusk, dawn and at night near the identified sensitive habitats, to avoid disturbance to nocturnal and crepuscular fauna; > Any tree above 100mm in diameter is to be checked by the appointed expert ecologist for the potential of roosting bats prior to removal; > Small river island located between tunnels (coordinates 43°38'50.15"N 21°27'9.56"E) must be preserved for its importance to European pond turtle (*Emys orbicularis*), floating tree trunks must be installed to ensure new sunbathing spots for turtles; > Daily walkover of construction sites must be done by an employed ecologist/environmental associate and if any tortoises are found they must be relocated to a suitable habitat and away from other roads and sources of danger; > If snake hibernaculums, tortoise[5] or turtle eggs are found, an expert ecologist must be engaged to determine mitigation and relocate snakes or eggs if necessary, Institute for Nature Conservation of Serbia must be informed; > Where lighting is required, it will be directional, non-UV and used only when necessary; > In order to prevent fauna from entering, the construction site must be fenced with a wire fence at least 1,5 m tall, the bottom 30 cm of the fence must be made of preformed metal sheets, recycled plastic lumber or (perforated) scored plastic and will prevent smaller fauna from entering the site; > Rotating mirror perch deterrents or perch deflectors such as spikes and brushes should be used to prevent birds from perching on power-poles; > In the time frame from 48 to 24h before commencing vegetation clearing, qualified ecologist shall do a walkover of the site. On-site speed limits must be enforced to avoid direct mortality of animals;				

[5] A number of tortoises were found during rapid 2022 surveys, indicating that the population at Mojsinje Mountains is considerable. Due to this species' conservation status, targeted mitigation is needed. They can include: fencing of access roads during construction, daily walkover of construction sites by an employed ecologist/environmental associate and if any tortoises are found they must be relocated to a suitable habitat and away from other roads and sources of danger

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> A site wide ban on workers bringing vegetation or soil from outside the site area must be imposed to prevent dispersion of non-native invasive species; > During the land preparation and construction phase biodiversity monitoring, presence of invasive alien species in the area must also be monitored; > Statuses of habitats and associated species populations must be monitored throughout land preparation and construction. Where necessary, habitat and species-specific measures will be developed and implemented with an adaptable management approach.				
11.	Construction Air Quality and Dust Management Plan	The Contractor will develop a Construction Air Quality and Dust Management Plan, which will include at least the following measures to mitigate the negative impacts of railway construction on air quality: > The site layout will be planned so that machinery and dust causing activities are, as far as reasonably practicable, located away from receptors (such as residential properties); > Regular daily visual monitoring of air quality (dust deposition, dust flux) especially 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. Daily on-site inspections should also include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of the construction site boundary, with cleaning to be provided if necessary; > In case of strong winds and complaints from the population about the amount of dust generated, reduce the intensity of works that generates dust; > All dust and air quality grievances will be recorded by the Contractor, using the Project Grievance Mechanism, and causes identified. Appropriate 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; > The application of dust reduction measures and trucks with sprinkles will be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions; > Barriers will be used along the construction site boundary to mitigate the spread of dust at any sensitive environmental receptors and where strong winds could cause the blowing of dust and debris; > Sand and gravel materials need to be transported in covered trucks; vehicles transporting materials will not be overloaded; > 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;	> Both lots	> Preparation and implementation – Contractor > Approval – PIU / Supervision Engineer	> Records of population complaints on dust generation and deterioration of air quality > The Contractor and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Number of complaints on dust generation and deterioration of air quality > Plan developed by the Contractor and approved by the PIU prior to construction and implemented during construction by the Contractor

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> Machine speeds on construction site will be limited; > Machines and vehicles to be used in construction activities must have use/operation permits; > Machines and vehicles need to be regularly maintained; > High quality fossil fuels (with low percentage of sulphur and lead) need to be used as motor fuel for machinery and equipment; > 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. > Bonfires and the burning of waste will be prohibited; > 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 revegetated to stabilise surfaces as soon as practicable; > Where practicable, covers will only be removed in small areas during work and not all at once; > Mixing of large quantities of concrete and bentonite will be undertaken in enclosed or shielded areas; > 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; > 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. > Scabbling (roughening of concrete surfaces) will be avoided if possible; > 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; > In case of demolition operations, effective water suppression will be used > Water-assisted dust sweeper(s) will be used on the access roads and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper to be in frequent use; > Dry sweeping of large areas will be avoided;				

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> On-site haul routes will be inspected for integrity and necessary repairs instigated to the surface as soon as reasonably practicable; > In case of cognition about the other on-going projects in the vicinity, whose works can cumulatively generate large amounts of dust, organise an agreement on the schedule of execution of works with the contractor and the supervising engineer of that project in order to avoid the simultaneous execution of works that generate large amounts of dust.				
12.	Construction Noise and Vibration Management Plan	The Contractor will develop a Construction Noise and Vibration Management Plan, which will include the following measures to mitigate the negative impacts of railway construction on noise and vibration: > Construction working hours will be limited in line with national legislation on working hours/days and holidays. > Trainings of the engaged staff will be prepared and held, with aim of raising awareness of environmental protection, potential problems, solutions and good practices in order to avoid problems occurring; > Local residents will be informed of the planned works and the potential periods of disruption; > All construction equipment will comply with the requirements of EU Directive 2000/14/EC (must have CE marking); > All construction equipment and vehicles will be maintained in good working order; > Noisy construction equipment and equipment generating a lot of vibration will be located as far as possible from sensitive receptors; > Noisy construction equipment must be fitted with noise muffling devices that will reduce sound levels; > Internal construction access roads will be kept well maintained; > External construction access road should avoid passing near residential and other sensitive buildings, where is possible; > Restriction of the maximum speed on the internal and external construction access roads; > Transport and construction management will be used to avoid the cumulative effects of noise and/or vibration along construction roads and/or construction site; > Avoid simultaneous use of equipment that generate a lot of noise and/or vibration; > Noisy construction works and/or the work that makes a lot of vibration near sensitive receptors will be organized in such a way that the exposure time is as short as possible (schedule and resource planning); > In case where noisy works need to be performed at night or during a longer period than one day in the vicinity of the sensitive objects, a temporary noise barrier shall be used around the working area;	> Both lots	> Preparation and implementation – Contractor > Approval – PIU / Supervision Engineer	> Contractor and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractor and approved by the PIU prior to construction and implemented during construction by the Contractor > Number of noise and/or vibration complaints received > Noise and vibration impacts meet national and EU legislative limits

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> Reversing alarms that do not have a tonal component (i.e. broadband) will be used, if applicable; > Low or non-vibratory piling equipment such as rotary or bored piling will be used; > The requirement for vibratory compaction and using static force compaction, such as smooth-wheeled or sheepsfoot rollers, will be reduced; > Managing of the explosive type and weight, delay-timing variations, size and number of holes, distance between holes and rows, method and direction of blast initiation will be reduced blasting vibration; > Selection of demolition methods not involving vibration impact, where is possible. Before and during the Construction works, the Contractor should carry site inspection in order to ascertain information on the condition of the Site and the surrounding area, with regards to the construction works and their impact on the environment and the local population, with special regards to sensitive objects. The Contractor must determine the noise and vibration baseline levels of the Site and the surrounding area, by measurements which must be conducted by the accredited organizations. A publicly available database with noise and vibration baseline collected data needs to be established. In case of local residents' and workers' complaints during construction works, periodical measurement of noise and vibration shall be performed to determine whether the generated level exceeds permitted limit values, and by comparing the measurement results with the baseline data, the degree of impact of works.				
13.	Construction Water and Soil Management Plan	The Contractor will be responsible for development and implementation of a Construction Water and Soil Management Plan. The Plan will include at least the following measures: > Suitable construction site drainage system will be provided including cut-off valves, ditches or drains and sustainable drainage systems, or equivalent, with suitably sized treatment facilities. If required by relevant authorities, oil separators will be used; > The maximum width of the work corridor will be clearly defined and limitations of haul routes for material supply will be strictly limited; > Appropriate specifically designed areas for the temporary stockpiling of construction materials will be identified including "no-go" areas or specific sensitive locations (ecology receptors, sloping areas or areas that are susceptible to erosion, river flood plains); "no-go" areas boundaries will be physically demarcated;	> Both lots	> Preparation and implementation – Contractor > Approval – PIU / Supervision Engineer	> Records on spillage and monitoring performed > Contractor and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractor and approved by the PIU/Supervision Engineer and Lenders prior to construction, and implemented by the Contractor > Number of complaints on reduced water and soil quality

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> Handling and storage of agricultural and forestry soils will include the separate handling and storage of different soils, particularly topsoil and subsoils; > Topsoil removal and stockpiling will be ceased if topsoil is saturated with water; soil compaction and long-term damage to soil structure will be avoided by handling soils that are in a suitably dry condition and not during wet weather; > Topsoil stockpiles will have adequate height and slope gradient and their erosion will be prevented by controlled compacting to the level that presents no threat of development of anaerobic processes; > Clearance operations and soil stripping will be organised to minimise erosion risks (e.g., movement of machinery in parallel to contour lines; starting from higher ground and moving downward); > Regular visual 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; > Monitoring of surface water quality should include weekly and during rainfall events visual inspection of site erosion, drainage management measures, drainage discharge points, record of colour of site water discharge and manual in-site turbidity monitoring at discharge points (using portable turbidity meter). Monitoring is required in 2 key areas: within the works and downstream the works; > In case of noticeable turbidity and deterioration of water quality, as well as deterioration of soil quality in the event of an accidental spillage of hazardous substances, engage an external laboratory to conduct water and/or soil quality monitoring, and compare the monitoring result with baseline conditions, as well as the quality status defined by the EU and national requirements; > 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 ground and surface water infrastructure such as supply systems, irrigation systems, flood defences and drainage ditches must be rectified by the Contractor; > 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;				

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> Stockpiles will be contained with bunds or sediment fences and cover stockpiles when not in use; > Sediment barriers should be positioned between earthworks and the watercourse to prevent sediment from washing into the river; > Envisage the construction of retaining walls in places defined by the Project design; > Access roads should be located away from watercourses (min. 50 m), to avoid water pollution due to dust generated by machinery transport, as well as water pollution in case of accidents; > Fuels and potentially hazardous construction materials will be stored in special enclosed facilities with external cut-off drainage. No materials will be stored within 30 m of a watercourse; > Waste fuels and other fluid contaminants will be collected in leak-proof containers prior to removal from site to an approved processing facility; > 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. Washing and cleaning of vehicles must be performed on specially designated areas. Concrete mixing and washing areas will be located more than 10 m from any watercourse. Wastewater from these areas will not be discharged to a watercourse and will be disposed off-site; > Spill kits in the form of oil absorbent booms will be kept on site to be deployed in the event of a spillage, and site staff will be trained in their use; > Clearance of vegetation on the channel banks will be limited. Where works are required on the watercourse banks, or in-channel, vegetation clearance will be restricted to the working area and should be undertaken only immediately prior to the commencement of those works and in agreement with the relevant authority to avoid breeding/nesting/mating season of sensitive species. Gradual vegetation will be re-established as soon as practicable, using seeded biodegradable fibre matting to encourage re-vegetation after works on, or near, the banks; > Works within or adjacent to the watercourses will be avoided as far as practicable; > In case of need to extract sand or earth from the watercourses, the consent of the competent authority must be obtained; > Creation of steep slopes and large exposed areas in the proximity of the rivers will be minimised;				

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> Earthworks and works in/around watercourses will be avoided during high flow events and during heavy rainfall to reduce the risk of fine sediment release, erosion and increased flood risk; > The Contractor will implement measures to minimize the risk of erosion by building temporary drainage canals and embankments; > 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; > Construction equipment will be regularly checked for oil and fuel leaks; > Ensure no waste materials are dumped into the river; > Ensure no wastewater from batching plants is discharged to the watercourse; > Discharge of wastewater into groundwater is not allowed; > Protect watercourses inside or near the construction site with a fence to prevent material disposal into the watercourses; > Provide portable toilets at construction site for workers; > Properly operate and regularly maintain sanitary and drainage facilities; > Removal of obstacles and coarse material that could slow down the watercourse due to accumulation and increase the risk of floods; > In case of needs for water pumping, erosion protection measures should be defined; The Contractor will also implement all other measures included in the Construction Emergency Preparedness and Response Plan, Construction Planting Management Plan, Construction Waste Management Plan and Report on Hydrogeological Investigations.				
14.	River Crossing Plan	The Contractor will develop a River Crossing Plan to include environmental requirements and control measures during the construction works near the waterways, including the in-water works, as well as other requirements set in the Water Conditions issued by the Ministry of Agriculture, Forestry and Water Management- Water Directorate (no 325-05-00581/109/2021-07 from 21.12.2021): > Predict bridge pillars and support structures that will create the least resistance to water runoff, and which will be hydraulically shaped and parallel to the streams of the river flow; > In case of deep erosion in the zone of riverbanks, envisage technical solutions that will provide support structures and pillars to stabilize the	> Lot 2	> Preparation and implementation – Contractor > Approval – PIU / Supervision Engineer	> Contractor and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractor and approved by the PIU prior to construction and implemented during construction by the Contractor > Number of accidents caused by river crossings

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		river flow upstream and downstream of the bridge and along the riverbed; > Watercourse will be clear of obstruction and debris to reduce blockage risk; > If there is disturbance to the riverbed then work should not be carried out during fish spawning and fish hatching periods; to be agreed with the nature protection authority; > Store the natural riverbed material during the construction phase and keep it clean. When construction is complete use the stored bed material to restore the riverbed; > Restore any affected banks by re-establishing native riparian vegetation. > River Crossing Plan should cover both accidental and intended impacts due to water crossings and define roles and responsibilities.				
15.	Construction Waste Management Plan	The Contractor will prepare a Construction Waste Management Plan to cover all activities associated with the production of wastes during construction and maximise reuse and recycling, including: > The Plan will identify the specific types and quantities of waste likely to arise during the construction process, including at least municipal and construction waste; as well as excavated, construction and demolition materials; > The majority of excavated materials to be generated will be reused either as engineering fill material or in the environmental mitigation earthworks of the Project; > If possible and needed, the surplus excavated material will be used in other construction projects or flood protection in the region; > Temporary settlement for workers will be equipped with containers for municipal waste and containers for recycling waste; > All generated waste must be classified and separated as inert, non-hazardous or hazardous waste, and their mixing will not be permitted. Materials stored on site will be stored neatly and safely; > The Contractor will provide waste segregation facilities; > Temporary landfills for construction waste should be formed at the locations where the construction works are being performed, which will be closed after the completion of the works and returned to their original condition. All construction waste will be disposed of at a location to be determined in accordance with the national requirements; > Plastic sheeting will be used to prevent leaching from waste soils and aggregates where these are not contained within skips or other storage vessels;	> General requirements applicable to both lots > Decommissioning requirements applicable to Lot 2	> Preparation and implementation – Contractor > Approval – PIU / Supervision Engineer	> Records on generated and disposed waste by types > The Contractor and Supervision Engineer to prepare monthly reports for the PIU on the status of Plans performance	> Plans developed by the Contractor and approved by the PIU and Lenders prior to construction and implemented during construction by the Contractor > Waste disposed in accordance with legal requirements and good practices

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> Liquid wastes will be stored on hard-surfaced areas with secondary containment to prevent spillages; > Any removal of waste from site will be done by licensed sub-contractors in compliance with the national requirements on transfer, treatment and disposal of waste and accompanied with appropriate documentation; > During dry or windy weather, material stockpiles will be dampened down using a water spray to minimise the potential for wind pick-up; > In case of demolition works, a pre-demolition asbestos survey will be undertaken on all buildings to be demolished or refurbished to identify the presence of any asbestos-containing materials that may be present. Where identified, asbestos-containing materials will be removed by licensed asbestos removal contractor and managed in accordance with the national requirements on asbestos-containing waste; > Construction Waste Manahement Plan will contain the **Decommissioning Waste Management Plan** for the existing railway line that will be prepared and maintained by the lead contractors. The Plan will identify the specific types and quantities of waste likely to arise during the decommissioning work, including: tracks, wooden sleepers, and other hazardous and non-hazardous materials. Waste generated from the decommissioning of the existing railway line will be re-used, where appropriate, treated or safely disposed in accordance with the national requirements. Wooden sleepers will be separated from track accessories. The Contractor will be responsible for separating the wooden sleepers, while SRI will be responsible for their final disposal. The metal components of the track accessories will be reused/recycled (by Contractor). > Management of waste rails, i.e. iron and steel is carried out in a manner and according to a procedure that does not pose a risk of pollution of water, soil or air. It is forbidden to dispose metal waste on landfills for municipal waste. The location of the landfill for the disposal of waste rails should be defined according to national requirements; > Decommissioned wooden sleepers will be temporarily stored near the decommissioning areas, covered and protected from rainfall or lined with run-off collectors. Waste sleepers to be stored on hard surface and covered against rainfall and fire. Waste sleepers will be delivered to a licensed waste sub-contractor as soon as possible and in compliance to the national and the EU requirements on transfer, treatment and disposal of waste, accompanied with appropriate documentation.				

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
16.	Construction Spoil Management Plan	A Construction Spoil Management Plan will be developed prior to commencement of the generation of surplus earthworks containing commitments and supporting evidence. Measures in the Plan will include: > Soil/material calculations/balance > Description of the excavated soils and excavated spoil in terms of potential reuses and relative quantities involved by materials categories; > Where and, if appropriate, how excavated materials will be stored or temporarily stockpiled for reuse; > The intended final (re)use of excavated soils and materials, with clear distinction between: (i) excavated soil and materials reused for construction purposes, and (ii) excavated soils and material that is surplus to requirements or unsuitable for reuse in fill and embankments; > 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; > Construction spoil areas must not be located within any Priority Biodiversity Features/Critical Habitat areas; > Drainage from higher areas will be diverted around stockpile areas to prevent erosion; > Fertile topsoil will be stored in stockpiles using measures to prevent degradation, erosion, contamination and compaction. It will either enable agricultural land that is temporarily required during construction to be returned to agricultural use on completion of construction, or for landscaping on land that is permanently required.	> Both lots	> Preparation and implementation – Contractor > Approval – PIU / Supervision Engineer	> Records on generated and reused and/or disposed excavated spoils > Contractor and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractor and approved by the PIU and Lenders prior to construction and implemented by the Contractor > Spoil reused or disposed in accordance with legal requirements or good practices
17.	Construction Planting Management Plan	The Contractor will develop a Construction Planting Management Plan to cover landscaping actions and restore the construction site to its original condition. The Plan will include at least the following measures: > Planting activities will be implemented during, or as soon after construction in order to keep the construction site clean after the competition of the construction works; > Where topsoil is to be stripped and stored on site temporarily for reuse, the stockpile mounds will be stored at a maximum height of 2 m, in order to preserve the structural integrity of the soil; > The Plan will outline the tasks to establish and maintain the trees, grass and vegetation in the Project area, especially for returning to the original condition after the completion of construction works. Species type, density and number of plants for shrub and tree planting, as well	> Both lots	> Preparation and implementation – Contractor > Approval – PIU / Supervision Engineer	> Contractor and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractor and approved by the PIU prior to construction and implemented during construction by the Contractor

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		as seed mixes, quantity and sowing rates for seed mixes (such as grass or wildflower) will be defined; > Vegetation around the crossing entrances will be linked to natural vegetation by low shrubs or herbaceous vegetation; the crossing entrances will be covered by natural soils, where appropriate and concrete will be avoided; > Replacement tree planting / woodland planting will be carried out within disturbed areas noted as being subject to loss. This replacement planting will be located as close to the area of loss as practicable; > Planting measures will be designed to provide enhancement to local landscape character; > Planting measures will also be designed to provide connectivity within the wider landscape where possible; > Planting should make use of species of local/regional provenance; > Habitats under impact from construction of tunnels 3 and tunnel 4 shall be revegetated after completion of works with plant species supporting clouded Apollo (*Parnassius mnemosynae*): *Corydalis* spp.; > *Aristolochia* spp. must be planted in habitats adjacent to existing ones in order to ensure net gain of habitats for southern festoon (*Zerynthia polyxena*); > Measures to mitigate landscape character effects should also be included. > Compensatory planting for ecological habitats lost to ensure net gain of sensitive habitats will need to be approved as part of the overall planting plan approval process; > Landscape plans, including proposed habitat creation areas and species lists will be agreed with the Ecological Clerk of Works (Contractor), Environmental Expert (Supervision Engineer), and Environmental/Biodiversity Specialist (PIU).				
18.	Construction Traffic Management Plan	The Contractor will prepare a Construction Traffic Management Plan 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. The Plan will set out mitigation measures to control the logistics of construction traffic, including criteria to ensure the Contractor selects suitable access and construction access routes for the site traffic. The Contractor will: > Ensure access to all community infrastructure, roads and cemeteries in the Project area – in case of any unavoidable temporary access	> Both lots	> Preparation/ Implementation – Contractor > Liaison with affected communities – Contractor > Approval – PIU / Supervision Engineer	> Supervision Engineer to prepare monthly progress reports, signed off by the PIU	> Plan approved by PIU / Supervision Engineer > Plan implemented by Contractor > Number of traffic accidents > Number of local roads damaged and repaired

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		restrictions, the Contractor will inform the Municipality of Cicevac and City of Krusevac and the public in advance of works commencing; > Coordinate with the Municipality of Cicevac and City of Krusevac and 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; > 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; > Provide illuminated and non-illuminated signals and guardrails; > Immediately clean all public roads and surfaces in the event of contamination/ spillage caused by the Contractor or sub-contractors; > Ensure that all public roads used for the Project are cleaned, removing any debris caused by the movement of vehicles and materials for the Project; > Repair any damage caused by construction vehicles to public roads in a timely manner; and > Carry out maintenance of construction vehicles regularly and avoid unnecessary use of the vehicles.				
19.	Workers' Accommodation Management Plan	The Contractor will develop a Workers' Accommodation Management Plan in compliance with: > IFC/EBRD Guidance on Workers' accommodation: processes and standards (2009); > National requirements and permits (e.g., environmental, water supply, wastewater discharge, electricity, access roads, etc.).	> Both lots	> Preparation / Implementation – Contractor > Approval – PIU / Supervision Engineer	> Supervision Engineer to prepare monthly progress reports, signed off by the PIU > Checklist on Workers' Accommodation (Annex I of the	> Plan approved by PIU /Supervision Engineer and Lenders > Plan implemented by Contractor

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
					Guidance) filled in and sent to the Lenders	
20.	Cultural Heritage Management Plan	The Cultural Heritage Management Plan will be used to inform all the requirements, procedures, resources and skills and timeline needed to minimise adverse cultural heritage effects. The Plan will outline the cultural heritage management principles and procedures to be followed during construction and operation in accordance with the Project's policies and Serbian legal requirements. The Plan will include: > All the requirements of the Institute for Protection of Cultural Monuments in Kraljevo: o SRI or the Contractor must inform the Institute about the planned earthworks not later than 15 days before the beginning of works; o Supervision of all earthworks by an archaeologist must be ensured in the zones around the archaeological sites; the archaeologist is entitled to suspend the works in case of any chance finds and order protective archaeological research; o If chance finds are encountered during any other works (which are not under the supervision of an archaeologist), the Contractor must immediately suspend works, take protection measures to prevent any damage and inform the Institute on the same day; o The Institute must be consulted for any additional works on railway facilities (such as station buildings); > Actions and measures to manage risks and impacts to the following cultural heritage sites: o The three sites listed in the official opinion of the Institute for Protection of Cultural Monuments in Kraljevo, which will require archaeologist supervision and measures to ensure that construction activities, including movement of machinery, will not have an impact on the site: ▪ Archaeological site Medieval Town of Trubarevo – the wider protection zone is about 200 m from the new railway route; ▪ Church of "Sveti Pantelejmon" (cemetery church) – about 100 from the new railway route; ▪ Archaeological site "Nikoljac" – about 150 m from the new railway route;	> Both lots (depending on location of cultural heritage site)	> Preparation / Implementation – Contractor > Liaison with the Institute for Protection of Cultural Monuments in Kraljevo and the Municipality of Cicevac – Contractor > Approval – PIU / Supervision Engineer	> Supervision Engineer to prepare monthly progress reports, signed off by the PIU	> Plan approved by PIU / Supervision Engineer > Plan implemented by Contractor

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		○ Church of "Sveta Nedelja" - located near the planned exit of Tunnel no. 3 and entrance of Tunnel no. 4, as well as the planned access road to Tunnel no. 4. Due to this proximity, it will be necessary to pay particular attention to prevent cutting off of access to the existing road infrastructure which leads to the Church by ensuring an adequate access road to this facility. ○ Church of "Svetih Arhangela" – located north-east from the existing railway at approx. 650m; an annual cultural event "Pod krilima Arhangela" (Under the Wings of Archangel) is held here every year in July and the access road leading to this church could potentially be affected by heavy traffic; therefore, the Contractor shall liaise with the relevant authorities and plan the works in accordance with the annual event to minimise any impacts. > Actions and measures to manage risks and impacts to other local cultural events in the Project area such as the regular kayaking competition held on the Juzna Morava River near Stalac, by liaising with the Municipality of Cicevac and plan the works in accordance with important dates. > Actions and measures to manage risks and impacts to the water springs that are considered to be intangible cultural heritage as they are believed to cure blind and visually impaired people by liaising with the Municipality of Cicevac to understand the specific locations of the springs and the access paths used by people to reach the springs. 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. 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 Institute for Protection of Cultural Monuments in Kraljevo. Following the completion of investigation by the Institute, 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 workers in order to prevent any physical intervention, will be implemented. The Contractor will liaise with the Institute for Protection of Cultural Monuments in Kraljevo during the preparation of the Cultural Heritage Management Plan and the Main Design, and will send these to the Institute prior to the commencement of construction. In case the Institute requires additional mitigation requirements, the Contractor shall revise the Cultural Heritage Management Plan to include such measures. Any substantial				

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		changes in the Project will require the issuing of a new official opinion by the Institute.				
21.	Construction Health, Safety and Security Plan	The Contractor will be responsible for developing and implementing a Health, Safety and Security Plan which sets out the measures to manage occupational and community health and safety risks, cross referencing the following subplans of the CESMP: > Construction Air Quality and Dust Management Plan > Construction Noise and Vibration Management Plan > Construction Water and Soil Management Plan > Construction Waste Management Plan > Construction Traffic Management Plan > Construction Emergency Preparedness and Response Plan The Plan will set out measures for the prevention of unauthorised access to construction sites, construction compounds and construction workers' accommodation. The Contractor shall organise regular tool-box talks focusing on a single environment, health or safety matter applicable to the current site activities or stage of construction. The Contractor will be responsible for taking all necessary precautions to maintain the safety of construction activities, construction plant, construction facilities, the construction workforce and the local communities. This includes provision of appropriate lighting, providing appropriate safety signage and barriers, and providing a first aid department to manage workplace accidents. The Plan will set out measures to manage potential occupational health and safety hazards including, but not limited to: > Working in proximity to the existing operational railway line > Exposure to chemicals; > Welding hazards; > Excavations; > Confined spaces; > Landslides; > Dust, noise, fall hazards; > Traffic accidents; > Lifting of heavy materials; > Ergonomic hazards during construction; > Explosion hazards; > Environmental hazards (snakes, insects, wasps, bees, etc.);	> Both lots	> Preparation / Implementation – Contractor > Approval – PIU / Supervision Engineer	> Consultation with the local community, SRI, providers of local facility and local stakeholders. > Contractor and PIU will review health risks and update in response to changes. > Supervision Engineer to prepare monthly progress reports, signed off by the PIU	> Plan approved by PIU /Supervision Engineer > Plan implemented by Contractor > Number of community and worker grievances raised during construction phase > Number of workers injuries

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> Electrical works. The Plan will include details of the medical facilities provided on-site. It will also identify the medical facilities in the local area that may be required for more severe incidents, and how to access them, when required. This provision will have been agreed with these facilities in advance. Regular health checks of construction workers will be undertaken. A policy for HIV/AIDS related diseases will be developed if deemed necessary by SRI based on the Contractor's assessment. Contractor to conduct due diligence investigation for all their security personnel to make sure they have appropriate licensing, experience and training. 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.				
22.	Construction Labour and Employment Plan	To enhance employment opportunities for locals within the Project area, the Contractor will, to the extent possible, employ local workers by providing preference to suitably qualified and experienced applicants from local communities that are in close proximity to the Project. The Contractor will develop and implement a Construction Labour and Employment Plan, which will include: > Details of: (i) employment opportunities for locals; (ii) how employment opportunities will be advertised; (iii) the recruitment process which will be transparent and fair, non-discriminatory and provides equal opportunities for both men and women; (iv) the training opportunities which will be provided for graduates and employees on technical, health and safety and manual work where suitable. > A requirement that all workers (including sub-contractors) have employment contracts and that these contracts are in line with national legislation, applicable ILO standards and PR2; > A requirement that all workers have access to human resources policy and procedures; > A requirement that all workers (including sub-contractors) must comply with Compliance with the Construction Workers' Code of Conduct (this will be included in the employment contracts); > Details of the grievance mechanism for all workers (including sub-contractors) in line with Lenders' requirements.	> Both lots	> Preparation / Implementation – Contractor, with support from the PIU > Approval – PIU / Supervision Engineer	> Supervision Engineer to prepare monthly progress reports, signed off by the PIU, for the Lenders > Independent labour audit at regular frequency by specialised labour expert in the Supervision Engineer 's team	> Plan approved by PIU / Supervision Engineer > Plan implemented by Contractor

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
23.	Public grievances	The Contractor will: > keep the Project grievance form available at construction sites to be publicly available at all times, hand out the form as requested and explain the grievance mechanism to the concerned citizen(s) and forward the filled-in form to SRI for purposes of further processing > directly address any grievances in relation to construction activities	> Both lots	> Implementation – Contractor	> Supervision Engineer to prepare monthly progress reports, signed off by the PIU	> Number of grievances received by the Contractor and forwarded to SRI > Number of grievances resolved on site by the Contractor
24.	Acquisition of temporary land	The Contractor will be responsible for ensuring the acquisition of temporary land needed during construction works in case publicly owned land is not available. The Contractor will in such cases acquire the right to temporarily use land through negotiations and amicable agreements with landowners, and regularly notify the Supervision Engineer about this process, as defined in the RAP.	> Both lots (the RAP refers to Lot 2 but its principles for acquisition of temporary land take should be applied for Lot 1 as well)	> Implementation – Contractor > Approval – PIU / Supervision Engineer	> Supervision Engineer	> Review by SRI to confirm implementation
25.	Construction Workers' Code of Conduct	The Contractor will develop a Construction Workers' Code of Conduct. It will be clearly displayed at different Project areas and posted in the Contractor's vehicles and machinery driving cabs. Contractor's and subcontractors' personnel will be made aware of and acknowledge their understanding of the Worker's Code of Conduct by initialling it prior to the start of any physical work at any Project Area. Compliance with the Code of Conduct shall be a condition in all workers' employment contracts. The Code of Conduct will include provisions intended to combat gender-based violence and harassment. The Code of Conduct will include a list of acts considered as requiring a disciplinary procedure by the Contractor, or by the Supervision Engineer if the Contractor is not acting in due course. The Contractor will establish a record for each case of serious misconduct, indicating all action taken regarding the incident, and immediately inform the Supervision Engineer.	> Both lots	> Preparation / Implementation – Contractor > Approval – PIU / Supervision Engineer	> Supervision Engineer to review records of misconduct and prepare monthly progress reports, signed off by the PIU	> Completion of Code of Conduct and subsequent implementation
26.	Blasting Management Plan (if needed)	In case of blasting activities, the Contractor will develop a Blasting Management Plan prior to construction works to eliminate hazards and reduce potential negative impacts. The Blasting Management Plan should:	> Both lots	> Preparation and implementation – Contractor	> Records of blasting activities conducted on	> Blasting Management Plan developed by the Contractor

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> Set out key national and EU policies, laws and standards related to blasting activities; > Define roles and responsibilities; > Identify and classify potential risk in construction phase; > Define expected blasting area, as well as blasting patterns and specifications; > Define blasting process procedure (including measures for environmental protection, as well as protection of population and workers' safety); > Define auditing and reporting procedure; > Define the maintenance and control of this plan.		> Approval – PIU / Supervision Engineer	the construction site > Contractor and Supervision Engineer to prepare monthly reports for the PIU on the status of performance	and approved by the PIU prior to construction and implemented during construction
27.	Construction Emergency Preparedness and Response Plan	The Contractor will develop a Construction Emergency Preparedness and Response Plan prior to construction works to eliminate hazards and reduce potential negative impacts. The Plan: > Sets out key Serbian and EU policies, laws and standards related to emergency response to reduce negative impacts on society or the environment; > Defines roles and responsibilities; > Identifies and classifies potential emergencies in the construction phase, including spill management, erosion management and flood management; > Lists the activities, measures and equipment needed to respond to emergencies; > Defines the implementation of trainings for emergency preparedness; > Defines media ways of communication in emergency situations; > Defines the procedure of mitigation and recovery after emergency situations; > Defines the maintenance and control of this plan. The Contractor shall review the Plan after any emergency situation or training exercise to provide opportunity for its continual improvements.	> Both lots	> Preparation and implementation – Contractor > Approval – PIU / Supervision Engineer	> Records of emergencies that occurred on the construction site > Contractor and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractor and approved by the PIU prior to construction and implemented during construction > Number of emergencies, the success and timeliness of response
28.	Training Plan	A Training Plan will be prepared for personnel and workers on the Project. The Plan will include details of training programs for E&S aspects of the Project including: > Applicable HR policy provisions and procedures, > Project-level and Worker Grievance Mechanisms, > Construction Workers' Code of Conduct, with emphasis on provisions intended to combat gender-based violence and harassment, > Protection of known cultural heritage and chance finds, > Emergency preparedness and response, > Materials management,	> Both lots	> Preparation and implementation – Contractor > Approval – PIU / Supervision Engineer	> Records on training performed > Contractor to prepare monthly reports for the PIU on the status of the training implementation	> Plans developed by the Contractor and approved by the PIU prior to construction, training organised prior to the construction and, if necessary, during

No.	E&S aspect/ concern	Proposed mitigation measure	Applicable to (Lot 1, Lot 2 or both lots)	Responsibility		Target/indicator
				Preparation/ implementation/Approval	Monitoring	
		> Environmental protection, and > Ecological sensitivities of the Project area, invasive species and health and safety recommendations regarding poisonous, venomous or otherwise dangerous flora and fauna. 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. 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. In accordance with the roles and responsibilities defined in the Construction Emergency Preparedness and Response Plan, the Contractor is obliged to provide training for employees regarding emergency responding, before the start of construction phase. In case of and after the emergency situation, the Contractor is obliged to repeat the training in order to update the applicable practices and improve them, if necessary. Refresher training will be provided by the Contractor periodically to ensure all workers are up to date on best site practices.				construction by the Contractor

6 OPERATIONAL ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

(all requirements applicable to both lots)

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
SRI (Operation)					
1.	Development of an Operation Environmental and Social Management Plan (OESMP)	SRI will prepare an OESMP. The OESMP will include the SRI's existing operational procedures and will set out E&S processes and measures and define responsibilities for implementation of the requirements of permits, approvals, licenses, Lenders' and national requirements associated with the Project operation and maintenance.	> Preparation and implementation – SRI > Approval – PIU	> PIU	> OESMP developed prior to operation phase and implemented in the operation phase
2.	Development of OESMP subplans	Prior to operation and as part of the OESMP, SRI will prepare the following plans: > Operational Biodiversity Management Plan > Operational Air Quality Management Plan > Operational Noise and Vibration Management Plan > Operational Water and Soil Management Plan > Operational Waste Management Plan > Operational Maintenance Plan > Operational Health, Safety and Security Plan > Operational Cultural Heritage Management Plan > Operational Emergency Preparedness and Response Plan > Gender Plan	> Preparation and implementation – SRI > Approval – PIU, representatives of relevant SRI sectors and SRI management	> PIU	> Plans developed prior to operation phase and implemented in the operation phase
3.	Operational Biodiversity Management Plan	SRI will develop and implement an Operational Biodiversity Management Plan that will cover actions to safeguard and conserve biodiversity that could be affected by the railway operation. The Plan must be developed and approved by SRI and the Lenders prior to commencement of railway operation. Compliance with the plan will be the responsibility of PIU. The full Plan will include specific actions to be implemented through the lifetime of the Project and support biodiversity in the area and include: > Monthly walkovers during year 1 of operation must be done in order to monitor ecological conditions of the area (assess the adequacy of the mitigation, fencing, animal mortality, revegetation success) and then with decreasing frequency; > Biodiversity Management Plans are living documents and should be updated in case monitoring brings up additional concerns;	> Preparation and approval – SRI PIU (with the assistance of an external biodiversity specialist)	> Operational surveying and monitoring requirements as set out in the Plan	> Plan developed, sent to and approved by the Lenders, and implemented in the operation phase

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		> Reports on all monitoring activities (revegetation and offset implementation progress, field reports with recommendations, if any, and photographs) should be submitted to the Lenders as a part of Six-monthly Environmental and Social Report unless there is an important issue needing immediate action; > Vegetation of bio-corridors in the areas of abutments will be maintained to provide habitat continuity alongside the riverbanks for terrestrial species; > Track verges should be mown with mowing schemes that are adapted to butterfly requirements during operation. A single stretch of tracks and tracks verges should be mown every 2–3 years in order to increase the abundance of flowering plants, to prevent succession and to provide shelter sites with taller vegetation; > In forest areas, at least 30 bird nest boxes shall be installed within three months after start of railway operation; > To ensure net gain for bat species old trees must be preserved as much as possible, new ones must be planted and at least 30 bat boxes shall be installed in forested areas of Mojsinje Mountain within three months after start of railway operation; > Right-of-way maintenance will be based on the integrated vegetation management which ensures effective vegetation control while considering environmental and human health values; > Noxious weeds or invasive plants will be controlled by adopting an appropriate regime which identifies and remedies areas of weed growth which might threaten nearby agricultural areas; > Application of herbicides prohibited by the Stockholm Convention on Persistent Organic Pollutants will be avoided (except under the conditions noted in the Convention); > The area of vegetation control will be kept minimised to avoid the growth of successional species and reduce the likelihood of the establishment of invasive species along the tracks; > Maintenance clearing of riparian vegetation will be avoided or minimized in line with *Water Management Strategy for the territory of the Republic of Serbia until 2034*[6]; > Food, organic waste and animal carcass, if any, will be regularly removed from the railway; > Adaptive management will be informed by findings from monitoring activities. Where it is identified that the Plan's targets are not being met, SRI will be responsible for rectifying this through appropriate adaptive management. These measures may include: o Increased planting, and/or refined planting locations; o Seed-collection and plant propagation; and o Increased invasive non-native species management.			

[6] Official Gazzette of RS, No. 03/17

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
4.	Operational Air Quality Management Plan	The SRI will develop and implement an Operational Air Quality Management Plan, which will include at least the following measures to mitigate the negative impacts of railway reconstruction on air quality: > Maintenance and reconstruction works should be carried out in favourable weather conditions, in order to limit the spread of dust; > Sand and gravel materials need to be transported in covered trucks; vehicles transporting materials will not be overloaded; > Machines and vehicles to be used in reconstruction activities must have use/operation permits; > Machines and vehicles need to be regularly maintained; > High quality fossil fuels (with low percentage of sulphur and lead) need to be used as motor fuel for machinery and equipment; > 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; > Separate hazardous from non-hazardous waste and store it adequately in order to reduce the release of harmful emissions into the atmosphere. Take all other measures for waste treatment and disposal as described in the Operational Waste Management Plan below; > Bonfires and the burning of waste will be prohibited; > In case of demolition operations, effective water suppression will be used > In case of excavation works, perform field revitalization and revegetation In case SRI subcontracts reconstruction and maintenance activities, it should transfer the obligation to the Contractor for future railway reconstruction activities to prepare an Operational Air Quality Management Plan.	> Preparation and implementation – SRI or Contractor > Approval – PIU, representatives of relevant SRI sectors and SRI management	> PIU	> Plan developed prior to operation phase and implemented in the operation phase > Number of air quality complaints received
5.	Operational Noise and Vibration Management Plan	The SRI will develop an Operational Noise and Vibration Management Plan in order to prevent negative noise and vibration impacts along the railway alignment. The Plan will include the following measures: > The noise monitoring shall be performed in the zones of residential and other sensitive buildings located in the immediate vicinity of the railway. In selecting the measuring points, following shall be included in the monitoring: structures that were not considered affected during calculations, structures protected with noise barriers and structures protected by applying passive protection measures. Measuring points representative for the analysed area shall be selected, but in case of justified complaints of local population, the number of measuring points can be increased. Parameters of environmental noise levels that are to be monitored are as follows: Equivalent noise level LAeq,T [dB], Referent noise level	> Preparation – Contractor (the Main Design)[7] > Approval – technical control entity (a company or other legal entity or entrepreneur who meets the requirements for technical documentation required by national law and determined by SRI) and PIU > Implementation – SRI	> Monitoring of noise and/or vibration to be performed by an accredited organisation (third party) engaged by SRI	> Plan developed prior to operation phase and implemented in the operation phase. > Number of noise and/or vibration

[7] The previously mentioned Study of Technical Measures for Environmental Protection defines environmental protection measures for the operation phase as well.

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		LRaeq,T [dB] and Residual noise level [dB]. The noise monitoring should be conducted at least once every year; > The noise barriers characteristics shall be controlled at least once in five years. Control shall be performed in accordance with: ISO 10847, EN 16272-4, SRPS CEN/TS 16272-5, SRPS EN 16272-6 and SRPS CEN/TS 16272-7; > Visual control of noise barriers shall be carried out at least once a calendar year. Control may be performed on a selected sample but the sample has to be always different. If the control shows particularly bad spots, they shall be controlled at the annual basis, regardless of the selected sample; > Vibration monitoring should be performed in the switching area of the Stalac and Djunis stations. The monitoring locations will be established at selected residentials and other sensitive buildings up to 35 m from nearest station switch (out of the railway infrastructure belt). The vibration levels should be monitored at the most affected façade and/or room (closest to the railway vibration source). The vibration measurements can be done following the principles outlined in ISO 14837-1. Vibration monitoring should be conducted once during year 1 of operation.			complaints received
6.	Operational Water and Soil Management Plan	The SRI will develop an Operational Water and Soil Management Plan in order to prevent water and soil pollution, soil erosion, loss and degradation along the railway alignment. The Plan will include the following measures: > Run-off from the railway line will be contained by the track drainage system; > Application of herbicides will be managed to reduce unnecessary overuse and to reduce the risk of leaching to soil and groundwater; > The areas where the use of herbicides is prohibited should be defined (e.g., in areas of sensitive vegetation, zones near the rivers); > Regular control and maintenance of drainage structures will be conducted to check they do not become clogged with debris or sediments; > Untreated buffer zones or strips will be established along the Juzna Morava River and the streams to reduce the risk of unintentional drift or run-off; > Usage of surface water and soil-polluting substances (paints, de-icing fluids, track grease) during the maintenance of bridges will be controlled and any run-off contained and treated; > Integrity of the septic tanks for sanitary wastewater in Stalac and Djunis stations will be tested in regular intervals; > Sanitary wastewater from the station facilities will not be discharged to surface water recipients without prior treatment. The septic tanks will be regularly cleaned by local licensed companies and sludge disposed in accordance with national requirements; > If required by the competent authority, contaminated surface run-off from the station parking areas in Stalac and Djunis will be treated in oil and silt traps prior to discharge to surface water recipient;	> Preparation and implementation – SRI > Approval – PIU, representatives of relevant SRI sectors and SRI management	> Inspection and maintenance records to be kept	> Plan developed prior to operation phase and implemented in the operation phase > Number of complaints on reduction of water and soil quality

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		> Regular maintain sediment traps and basins, drainage channels and treatment systems; > Regular maintain slope stability (cuttings and embankment); > Verge vegetation will be planted along the affected waterways to minimise soil erosion and reduce suspended matter in surface run-off; > Monitor the soil quality in case of spills and in accordance with the national *Decree on the program of systematic monitoring of soil quality, indicators for assessing the risk of land degradation and methodology for the development of remediation programs;* > Monitor the water quality in case of spills and in accordance with the national *Law on Waters.* > In case of dismantling the existing railway (at locations where the new route deviates from the existing one) and land reuse for agricultural or sports-recreational purposes, it is first necessary to examine the soil quality to determine the possible level of contamination, and then conduct soil decontamination activities, if needed.			
7.	Operational Waste Management Plan	SRI will update and continue to implement a three-year Operational Waste Management Plan in accordance with the national *Law on Waste Management*. The updated Plans shall include the following mitigation measures: > Public waste bins inside the stations' facilities will be provided; > Waste containers for use by the track maintenance personnel and railway station tenants will be provided and waste will be segregated; > Appropriate collection and disposal of waste products including oil from railway maintenance activities. Used oil should be sent for recycling to the Belgrade Oil Refinery; > Hazardous waste from the track maintenance will be segregated and temporarily stored inside a properly equipped space. Hazardous waste will be delivered to licensed subcontractors in a way compliant to the Serbian regulatory requirements on transfer, treatment and disposal of waste and accompanied with appropriate documentation; > Keep records of the annual amount of waste collected by types; > In case of dismantling the existing railway (at locations where the new route deviates from the existing one) waste must be properly classified (hazardous and non-hazardous) and then adequately disposed by hiring an authorized company.	> Preparation and implementation – SRI > Approval – PIU, representatives of relevant SRI sectors and SRI management	> Inspection and maintenance records to be kept	> Plan developed prior to operation phase and implemented in the operation phase > Number of complaints on inadequate waste disposal
8.	Operational Maintenance Plan	SRI will develop an Operational Maintenance Plan to include: > Regular maintenance of the railway will be the responsibility of SRI, and will involve maintenance and system testing, as well as ad-hoc maintenance and repairs; > Regular maintenance activities will be planned to enable them to be delivered safely and in a manner that minimises disruption where practicable. All repairs and maintenance of railway infrastructure in conditions in which there will be no traffic disruption, if possible;	> Preparation and implementation – SRI > Approval – PIU, representatives of relevant SRI sectors and SRI management	> Inspection and maintenance records to be kept	> Plan developed prior to operation phase and implemented in the

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		> All maintenance activities should be done in accordance with the national *Rulebook on Technical Conditions and Maintenance of the Lower Parts of Railway Infrastructure* and the *Rulebook on Technical Conditions and Maintenance of the Upper Parts of Railway Infrastructure;* > A robust maintenance regime for the Project elements will be developed and implemented based on the adopted *Rules of Procedure for Safety Management of the Joint Stock Company for Management of Public Railway Infrastructure "Serbian Railway Infrastructure" Belgrade (2022)*. Inspections must be conducted and managed by suitably qualified and experience engineers and in line with appropriate national and international standards; > Ventilation system in tunnels should be regularly maintained; > Firefighting equipment and other facilities in tunnels will be maintained and provided in a working condition; > Exit doors to the gallery and passages in tunnels should not be blocked; > This plan will set out the storage requirements for materials required for the maintenance of the Project, including current and planned storage locations and procedures; and > SRI will ensure that a sufficient resource of qualified and competent personnel is available to plan, conduct, supervise and interpret the results of any inspection and maintenance programs.			> operation phase > Annual number of traffic disruptions as a result of inadequate maintenance
9.	Operational Health, Safety and Security Plan	To mitigate any health and safety risks, SRI will implement an Operational Health, Safety and Security Plan which will include provisions on: > OHS risks and measures for regular railway workers (such as drivers) and maintenance workers as required by the EU Railway Safety Directive and provisions of ISO 45001; > Workers' code of conduct; > Grievance mechanism for local communities; > Measures to mitigate health, safety and security of the local communities including consultations with local communities to ensure that the installed crossings are working effectively; > Security personnel requirements (if engaged at newly constructed stations) in line with the Lenders' requirements.	> SRI	> PIU	> Plan prepared and implemented Plan during the operational phase
10.	Stakeholder Engagement Plan (SEP)	SRI will update the Project SEP as necessary. SRI will implement the SEP during operational activities.	> SEP update – SRI	> PIU	> SEP updated as needed and implemented during the operational phase
11.	Operational Cultural Heritage Management Plan	Any maintenance activities with the potential to impact known cultural heritage assets will be planned carefully and in liaison with the Institute for Protection of Cultural Monuments in Kraljevo as required by national legislation.	> Preparation – SRI > Implementation – SRI and maintenance contractor	> PIU	> Plan prepared by SRI and implemented by SRI and/or

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		SRI will ensure that those undertaking maintenance activities are aware of the potential for previously undiscovered buried heritage remains to exist when undertaking any intrusive below ground activity.			maintenance contractor
12.	Gender Plan	To mitigate gender related effects, SRI will develop a Gender Plan for the operation phase based on the national legal framework (Law on Prevention of Harassment in the Workplace and the Law on Gender Equality). It is advisable to include the recommendations of the European Transport Workers' Federation (ETF) and Community of European Railway and Infrastructure Companies (CER) on integration of women in the railway sector. The Gender Plan will include (but will not be limited to) the following provisions to ensure: ○ a zero-tolerance process for discrimination against women workers, particularly female workers as drivers; ○ the maintenance of infrastructure and train facilities which are accessible for elderly, disabled and those with reduced mobility (both men and women) and pregnant women; ○ consultations with locally affected women on their issues about the operational phase of the Project – in particular perceptions of safety at stations and underpasses; ○ effective employee and public grievance mechanisms; ○ preventing any gender-based violence and harassment during regular railway operations as well as during maintenance works	> SRI	> PIU	> SRI to prepare and implement Plan during the operational phase
13.	Operational Emergency Preparedness and Response Plan	SRI is obliged to prepare a detailed Operational Emergency Preparedness and Response Plan prior to the operational phase commencing to achieve appropriate and effective emergency preparedness and response activities for foreseeable emergency events should they arise. The Plan should: > Sets out key national and EU policies, laws and standards related to emergency response to reduce negative impacts on society or the environment; > Defines roles and responsibilities; > Identifies and classifies potential emergencies in operation phase, including train crash, train breakdowns, spill management, erosion management and flood management; > Lists the activities, measures and equipment needed to respond to emergencies (e.g., In case of train breakdown transporting dangerous goods (in powder, granular or liquid state), the traffic must be disrupted and a request for safety remove of dangerous goods sent to a specialised service. The following protection measures should be applied: limit the spillage of hazardous substances, catch leaking liquid into intervention vessels or cisterns, install barriers in streams and canals, prevent spillage in water and sewer pipes, use special sorbents and others substances for decontamination of the terrain and remediation of consequences at the place of spillage of hazardous substances); > Defines the implementation of trainings for emergency preparedness;	> Preparation and implementation – SRI > Approval – PIU, representatives of relevant SRI sectors and SRI management	> Records of accidents and the manner of resolving an emergency	> Plan developed prior to operation phase and implemented in the operation phase > Number of emergencies, the success and timeliness of response

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		> Defines media ways of communication in emergency situations; > Defines the procedure of mitigation and recovery after emergency situations; > Defines the maintenance and control of this plan. The Plan must also include requirements for consultation with the national emergency services and authorities and agreement of roles and responsibilities in the context of emergency response. SRI will review the Plan after any emergency situation or training exercise to provide opportunity for continual improvements.			