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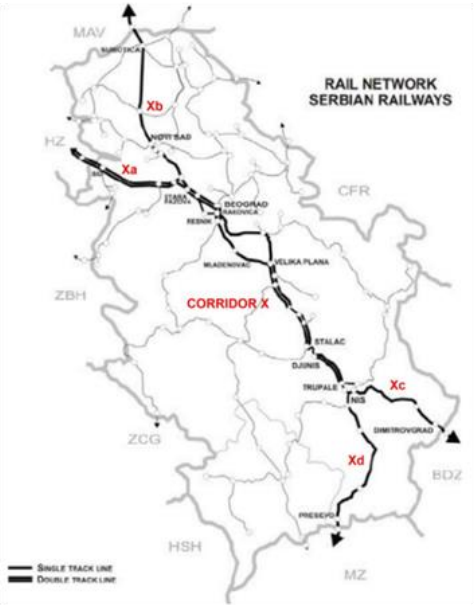

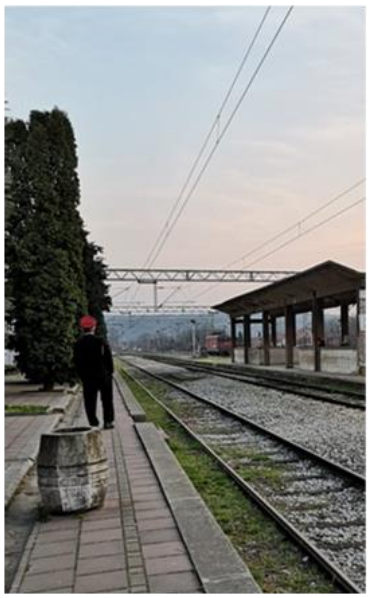

FRAMEWORK ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

ANNEX TO THE CORRIDOR E&S ASSESSMENT REPORT

Corridor Level Environmental and Social Assessment for the Belgrade-Nis High Speed Railway Corridor, Serbia

July 2022

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List of Abbreviations

CESMP	Construction Environmental and Social Management Plan
CH	Critical habitat
E&S	Environmental and Social
EAAA	Ecologically appropriate area of analysis
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
NG	Net gain
NNL	No net loss
NTS	Non-technical Summary
OESMP	Operational Environmental and Social Management Plan
OHS	Occupational Health and Safety
PBF	Priority biodiversity feature
PIU	Project Implementation Unit
RAP	Resettlement Action Plan
RoS	Republic of Serbia
RPF	Resettlement Policy Framework
SEP	Stakeholder Engagement Plan
SRI	Serbian Railway Infrastructure

1 INTRODUCTION

The European Bank for Reconstruction and Development (the "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 rail infrastructure of Rail Corridor X** ("Corridor X"), the railway line connecting Belgrade to Nis (the "Project"). The Project is expected to be co-financed by (i) EIB and (ii) the EU through the Western Balkans Investment Framework ("WBIF") or other EU mechanism. The entire project is classified as an "A" category project.

The Project involves a combination of upgrading the design speed to up to 160/180/200 km/h (depending on the sections) and doubling of the single tracks. The Belgrade-Nis rail route will be fully electrified. Thanks to the improved infrastructure, the travel time between Belgrade and Nis will be significantly reduced, safety will be improved, as well as the capacity and comfort of the passenger and freight services. This will increase competitiveness of rail transport, especially for international and transit freight traffic, allowing significant modal shift to rail as low carbon intensity sector. This modal shift from road-based transport will have a significant impact in terms of lowered carbon emissions.

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. Tranches to finance other subsections of Corridor X will be uncommitted.

Under Lenders' requirements, the following will comprise the **Project's disclosure package**:

- This Corridor E&S Assessment Report
- Corridor E&S Scoping Report
- Corridor RPF
- Corridor ESAP
- Corridor ESMP
- Corridor SEP
- Corridor NTS
- Draft ESIA for Stalac-Djunis subsection (2016)
- National EIA Study for Stalac-Djunis subsection (2018)
- Supplementary Study with accompanying ESMP for Stalac-Djunis subsection
- ESAP for Stalac-Djunis subsection
- NTS for Stalac-Djunis subsection
- RAP for Stalac-Djunis subsection for LOT 2

2 SCOPE

The **objectives** of this Framework 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 the Corridor E&S Assessment) which need to be further analysed through subsection specific ESIAs,
- describe the mitigation measures and management procedures, and 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.

Given that this is a Framework ESMP, a detailed monitoring program and subsection specific mitigation measures (captured in a section-specific ESMP) will be provided in the ESIA developed for each Project subsection in the next phase.

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

1. preparation of Project design documents,
2. preparation of subsection specific ESIAs,
3. pre-construction and construction, and
4. operation and maintenance.

3 IMPACTS AND RISKS ADDRESSED BY THIS ESMP

The table below lists a summary of the Project impacts and risks identified in the Corridor E&S Assessment, which need to be further analysed and addressed in the ESIA stage.

In order to address all the impacts identified in the Corridor E&S Assessment Report, a **Construction Environmental and Social Management Plan (CESMP)** and an Operational Waste Management Plan (OESMP) will be developed and will include the development of the issue specific **subplans. The content of each subplans will further be specified in the ESIA development stage to include site specific measures that are generally identified in this Framework ESMP.** If any of the plans is left out in the ESIA, appropriate justification must be given and approval from the Lenders sought.

It should be noted that this list is not exhaustive, and that additional impacts and risks may be identified during the ESIA stage.

Topic	Phase	Summary of impacts/risks
Inadequate Project design and planning of works	Pre-construction	> Inadequate Project design and planning of works may impact habitats, flora and fauna
Lack of up-to-date baseline data	Pre-construction	> Lack of up-to-date baseline data on flora and fauna may result in previously avoidable loss
Potential effects on groundwater quality, flow and recharge	Pre-construction	> Negative impact on groundwater regime (direction of flow and velocity) as well as on spring yield due to the construction of tunnels > Reduction in groundwater quality
Lack of data on surface water quality, groundwater quality, soil quality, and noise and vibration levels in the Project area (near the railway alignment)	Pre-construction	> There is no baseline data to be used to follow the impact of the Project implementation on the environment
Closure of stations and halts	Pre-construction	> Impacts on local communities which rely on railway transport, especially communities where vulnerable categories live and which may not have alternative transport options available.
Closure of level crossings	Pre-construction	> Impacts on people currently using the level crossings on the existing railway, especially for agriculture purposes.
Land acquisition and resettlement	Pre-construction	> Acquisition of private land and relocation of households/ businesses.
Habitat loss and alteration	Construction	> Most sensitive receptors are small waterbodies that may be affected by (i) drying out and (ii) disruption of connection with rivers. The areas affected also include railway relocation areas.
Spread of invasive species	Construction	> Invasive plant species are common and well established in the Project area, the construction may facilitate their spread.

Topic	Phase	Summary of impacts/risks
Mortality of fauna	Construction	> Animals may collide with the large machinery moving on construction sites
Noise and vibration impact on fauna during sensitive periods (breeding, nesting…)	Construction	> Construction works will produce noise and vibration that may temporarily affect flora and fauna.
Pollution by organic waste, chemicals	Construction	> Use of herbicides, pesticides, spillages of chemicals and accumulation of organic waste at the construction site may cause adverse impacts on flora and fauna.
Air quality	Construction	> Reduction in air quality due to: (i) emissions of construction dust as a result of demolition works, earthworks, transport and disposal of excavated materials, (ii) emissions of exhaust gases from combustion processes in construction equipment and vehicles.
Noise and vibration levels in the Project area of influence	Construction	> Impact on workers, residents, and fauna from increased levels of noise and ground-borne vibration during construction works as a result of tunnelling, earthworks, pilling or potential blasting. > Structural damage from vibration caused by equipment and operation methods employed including potential use of explosives.
Water quality	Construction	> Reduction in water quality due to: (i) erosion, riverbed modification and sediment run-off, (ii) uncontrolled discharge of effluent from construction areas, (iii) inadequately and uncontrolled discharge/ treatment of sanitary wastewater, (iv) emissions of drainage water from tunnel tubes, (v) surface run-off and washout at worksites, (vi) works and maintenance of construction vehicles, (vii) depositing of waste, into the watercourses, (viii) sediment release into watercourses. > Construction activities taking place in locations where the railway crosses the river (e.g., bridges) may temporarily disturb the watercourse flow and connectivity.
Terrain stabilisation and soil quality	Construction	> Reduction in terrain stabilisation as a result of: (i) deforestation, (ii) soil dewatering, (iii) using heavy machinery and equipment. > Temporary disturbance to local land use due to land take for construction activities, as well as negative impact of dust on crops in nearby. > Reduction in soil quality as a result of: (i) direct discharge of wastewater, (ii) accidental spillage of fuel and oils from equipment and other chemicals used on construction site (iii) inappropriate waste/spoil disposal, (iv) loss of fertile topsoil.
Project impacts on landscape and visual values	Construction	> Changes to the existing landscape and visual impacts due to the construction works and as a result of: (i) clearance of localised areas of tree and shrub vegetation and removal of land cover, (ii) increased level of "urbanisation" due to presence of construction mechanisation, fences and other construction structures, (iii) demolition of properties along the railway alignment, (iv) adverse changes in land use along the railway route.
Waste generation	Construction	> Contamination of environment due to leakage and spillage of wastes associated with poor spoil and waste handling, transportation, and storage/disposal arrangements of different type of waste generated during construction activities (demolition waste, excavated materials, food, packaging, office waste, sanitary waste). > Environmental damage caused by improper materials/ chemicals management and accidental spillage.
Project impact on climate and climate change impacts on Project	Construction	> Environmental pollution due to GHG emissions form construction activities (construction materials used and equipment). > Negative impacts of landslides, floods, droughts and fires on construction materials and activities.
Impacts on cultural heritage	Construction	> Construction related impacts and nuisances such as noise, vibration and dust. > Access roads leading to some cultural heritage sites could potentially be affected by heavy traffic, as it is assumed that these roads will be used for the passage of machinery during construction works. > Possibility of chance finds

Topic	Phase	Summary of impacts/risks
Temporary occupation of land, and land use/access restrictions	Construction	> Temporary occupation of privately owned land for construction of access roads and placement of staff, machines and material > Damage to land plots, natural or other assets due to temporary disposal of excavation materials and heavy machinery parks > Temporary access restrictions and reducing the ability of local farmers, public facilities and businesses to operate as normal
Labour and working conditions	Construction	> Potential risks of lack of implementation of HR policies and procedures by contractors (informal work, child labour, forced labour, etc.)
Increased employment opportunities	Construction	> Temporary local employment opportunities for nearest local communities > Possible opportunity for employment of Roma population to work on construction, especially in Nis
OHS	Construction	> Exposure of workers to risks related to activities performed on construction sites, such as demolition and excavation, electrical workers, works at heights, etc.
Worker influx and GBVH	Construction	> Worker camps with a large number of workers on sites > GBVH risks, especially in smaller communities
Traffic safety risks and damage to local roads	Construction	> Increased volume of traffic on existing local road network due to construction works, likely leading to traffic limitations, delays and increased road safety risks. > Potential damage to local roads by heavy traffic > Safety risks for households living along the railway
Habitat fragmentation	Operation	> Existing railway is already causing habitat fragmentation; however, the new railway will be fenced which will present an even bigger obstacle to fauna movement and habitat connectivity. > The impact can be mitigated during Project design but the impact itself arises during operation.
Fauna mortality	Operation	> Fauna mortality during the operation of the railway may be caused by collision with trains and electrocution on powerlines. The most sensitive groups are birds, mammals (bats) and reptiles.
Fauna disturbance	Operation	> Fauna disturbance during operation will mainly be caused by noise, vibration and light pollution.
Environmental contamination	Operation	> High concentration levels of toxic metals, PAHs, and herbicides could be found in the vicinity of railways. Potential accidents, such as leakages of different types of chemicals (e.g. petroleum products, biocides, fertilizers) from storage tanks may occur. These pollutants can end up in terrestrial and aquatic ecosystems leading to a series of adverse effects on biodiversity.
Air quality	Operation	> Reduction in air quality due to reconstruction and maintenance works (as defined for construction phase).
Noise and vibration levels in the Project area of influence	Operation	> Impact on residents and biological functions from increased levels of noise, vibration and micro-pressure effect from railway traffic. > Impact on workers from increased level of noise and vibration from rolling stock and machinery during maintenance activities.
Water quality	Operation	> Reduction in water quality due to: (i) discharge of untreated sanitary wastewater or contaminated run-off from station facilities, (ii) accumulation of sediment in the area of bridge piers, (iii) discharge of accidentally contaminated run-off from the track drainage system and during the bridge maintenance works, (iv) accidental spill of hazardous material resulting from railway traffic accidents, (v) contamination of surface water during application of herbicides.
Soil quality	Operation	> Reduction in soil quality as a result of: (i) direct discharge of surface run-off, (ii) accidental fuel and oil spills, (iii) application of herbicides. > Damage of railway infrastructure as a result of terrain instability (landslides and seismic activity).
Waste generation	Operation	> Contamination of environment due to leakage and spillage of wastes associated with poor waste handling, transportation and storage arrangements of waste generated during operation phase (municipal and packaging waste from passengers that will use the stations, track maintenance waste and ancillary infrastructure waste).
Project impact on climate and climate change impacts on Project	Operation	> Negative impacts of landslides, floods, droughts and fires on railway infrastructure.

Topic	Phase	Summary of impacts/risks
Cultural heritage	Operation	> Operational maintenance activities could lead to disturbances or damage to known cultural heritage or previously undiscovered buried heritage
Gender aspects	Operation	> Effects of closure of stations/halts on women in rural areas who often depend on transport service providers > Risks of potential GBVH against women when using underpasses as pedestrians, especially at night

4 ROLES AND RESPONSIBILITIES

SRI will utilise this Framework ESMP during preparation of Project design, ESIAs and ESMPs for each Project subsection in the next phase. **The intended readers of this Framework ESMP are project designers, ESIA consultants and contractors selected for construction works.**

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 Contractors, the subcontractors and other involved third parties). SRI will be responsible for establishing 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 Contractors will support this implementation.

The Contractors 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 to develop a Construction Environmental and Social Management Plan (CESMP).

SRI will be responsible for developing an Operational Environmental and Social Management Plan (OESMP) prior to the start of the operational phase.

5 CONSTRUCTION ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
Preparation of Project Design Documents					
1.	Design standards and considerations	During the development of design documents, SRI will ensure that the design complies with applicable national design standards, which will include designing appropriate environmental parameters (flood, ground stability) including climate change. These can include: (i) elements of protective steel fences on the overpass should be designed in accordance with the provisions of the standard SRPS EN 1317. The designer is obliged to determine the required level of retention, depending on traffic conditions and areas of required protection, (ii) 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, (iii) 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, (iv) abutments of the proposed bridges will be designed to retain habitats along the waterways and associated movement of species. All design standards defined in the Location Conditions that will be obtained shall also be considered. The relevant EN European/Serbian (SRPS) standards for railway design will also be taken into account, along with Technical Specifications for Interoperability (TSIs), including but not limited to the TSI for persons with disabilities and with reduced mobility. Specifically for the planned underpasses and overpasses, it shall be ensured that they: > 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. Municipal/city authorities will be consulted on the issues of closure/upgrading of level crossings and underpass/overpass 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 Contractors for any grievances.	> Implementation – project designers	> 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 > Noise mitigation is included in the design. > E&S impacts meet national and EU legislative limits. > Access road design complies with the requirements of Location Conditions with consideration to minimising access > 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	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		The Project design in the area of Vrtiste needs to be reconsidered. It is a wetland habitat very valuable for fauna, especially birds. The current railway layout crosses directly over it and would inevitably cause direct loss of habitat and changes to hydro regime. New access roads or realignment of existing roads shall be designed with considerations to minimise impacts, taking into account the requirements of the Location Conditions (once issued for each subsection). Also, it is necessary to avoid the construction of temporary access roads for construction site needs in the immediate vicinity/through identified cultural and archaeological heritage sites and protected areas to the extent possible. All planned bridges and culverts must have a satisfactory hydraulic profile for the passage of *high waters*. The railway structures must be protected from the harmful effects of water by building protective structures (stone embankments, retaining walls, stabilisation sills, etc.). At the crossing points of the railway line and the defensive embankment, it is necessary to enable the unhindered passage of construction machinery in order to maintain the embankment and watercourse bed (excavator, truck, mower) so that the lower edges of the bridge structure will be at least 3.0 m above the crown of the embankment. Anticipate the protection of the railway embankment and a sufficient number of culverts on the Velika Plana-Gilje section, and especially Paracin-Stalac, where the railway line represents an obstacle for the smooth flow of water during floods. The Contractors 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 Belgrade-Nis (it can be divided in the subsection according to the construction work organisation) with additional site evaluation of the individual properties and further refinement of the noise model. The design of noise barriers shall comply with provisions of the National and European legislation, the Technical Specifications for Interoperability (TSI), as well as corresponding standards: SRPS EN 16272-1, SRPS EN 16272-2, SRPS EN 16272-3-1, SRPS EN 16272-3-2, SRPS EN 16727-1, SRPS EN 16727-2-1, SRPS EN 16727-2-2, SRPS EN 16727-3, SRPS EN 16951-1 and SRPS EN 16951-2. The acoustic panels that will be used for noise barriers shall have sound absorption of minimum 12 dB (class A4 in accordance with SRPS EN 16272-1) and soundproofing of minimum 25 dB (class B3 in accordance with SRPS EN 16272-2). All elements of noise barriers shall be grounded. The 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 the installation next to the railway lines with maximum permitted speeds up to 200 km/h. For			

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		residential buildings and other sensitive buildings for which protection by noise barriers is not economical or technically possible, and for buildings where exceeding noise level occurs even after installation of noise barriers, some other protection measures shall be planned such as replacement of doors and windows with better sound insulation.			
2.	Subsection(s) specific ESIAs and ESAPs development	SRI to ensure that **subsection(s) specific ESIAs and ESAPs** are developed and approved by SRI and Lenders. In addition to standard ESIA scope of work, the following specific guidelines and recommendations are given for the phase of ESIA development per subsections: 1. Analysis of impacts of planned **new access roads** and necessary deviations to existing roads once this information becomes available 2. Analysis of community severance impacts during both construction and operation phases 3. Visits to all settlements with **stations and halts** planned to be closed and carrying out consultations with these local communities to better understand use of these stations/halts and the impacts of closure, including whether these settlements have alternative transport options 4. Analysis of locations of all **level crossings** to be closed and locations of planned underpasses or overpasses and carrying out consultations with these local communities to understand impacts on local population, particularly impacts on agricultural activities per subsection 5. In addition to analysis of vulnerable categories, organising focus groups with **Roma people living in Mladenovac** where Roma people live by the railway station and may need to be relocated before construction can begin, and further consultations with the National Council of the Roma Minority in Serbia 6. The railway will be fenced in full; therefore, **identification of locations of fauna passages** must be performed based on the baseline surveys covering all four seasons in order to minimise habitat fragmentation 7. Critical habitats and priority biodiversity features are present in the Project AoI, therefore the ESIA will need to ensure that the objectives of **no net loss/net gain** of such features are reached SRI to ensure that, for each subsection, a national EIA (satisfying the requirements of the national regulation including the Law on EIA) and an international ESIA (satisfying Lenders requirements) are prepared. It is recommended to use the same document (English and Serbian versions) for both sets of requirement.	> Implementation – SRI (with the help of external consultancy) > Approval: national authorities (EIA) and Lenders (ESIA)	> PIU	> Full compliance with national, Lenders' requirements and standards achieved > National EIAs, ESIAs and ESAPs for Project subsections developed and approved
3.	Management of Change Procedure	The Contractors 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.	> Implementation – Contractors > 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
4.	Potential Effects on Groundwater	The Contractors will undertake a detailed geotechnical investigation to understand terrain geological and hydrogeological conditions. The Hydrogeological Excavation Code procedure	> Implementation – Contractors	> Contractors and Supervision Engineer	> Geotechnical investigations

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
	Quality, Flow, and Recharge	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.		to include the findings and conclusions in the monthly reports for the PIU	conducted and appropriate measures included in the design documents
5.	Baseline data on surface water quality, groundwater quality, soil quality, and noise and vibration levels in the Project area	The Contractors will: > conduct baseline groundwater analysis in piezometers previously used for hydrogeological research using the overall methodological approach to monitoring for the implementation of Water Framework Directive (WFD) as defined in the *Guidance Document No. 7 Monitoring under the Water Framework Directive*[1]. 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 at the locations where the existing and proposed railways run over or nearby watercourses. Monitoring will be conducted in line with the *Guidance Document No. 7 Monitoring under the Water Framework Directive*. Detailed locations and monitoring frequency will be defined in Project specific ESMPs for each subsection. 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 12pprox.. 0.5-1.0 m from the alignment), at locations where the new railway follows the existing one. Also, it is necessary to conduct baseline soil quality monitoring at locations that deviate from the existing railway alignment, and which pass through agricultural areas or where existing pollution is visually noticed. Detailed locations and monitoring frequency will be	> Implementation – Contractors	> Contractors and Supervision Engineer to include the results and conclusions in the monthly reports for the PIU	> Environmental baseline report on soil, surface and groundwater quality, and noise and vibration measurements prepared > Baseline monitoring reports approved by the Supervision Engineer

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

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		defined in Project specific ESMPs for each subsection. 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 organisations. The measurements must be in compliance with Serbian legalisation and the standards SRPS ISO 1996-1 and SRPS ISO 1996-2. *Note: Sampling points and frequency of measurements shall be determined in the ESIA development stage for each subsection.*			
Contractors (Pre-Construction and Construction)					
6.	Development of a Construction Environmental and Social Management Plan (CESMP)	The Contractors 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 Contractors 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 below).	> Preparation and implementation – Contractors > Approval – PIU and Supervision Engineer	> Contractors and Supervision Engineer to prepare monthly reports for the PIU on status of CESMP performance	> CESMP developed and approved by the PIU/ Supervision Engineer
7.	Development of subplans of the CESMP	As part of the CESMP, the Contractors 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 > 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	> Preparation and implementation – Contractors > Approval – PIU and Supervision Engineer	> Supervision Engineer/PIU	> Subplans developed and approved as part of the Contractors's CESMP > The following subplans sent to and approved by the Lenders: 1) Construction Compound Selection and Management Plan, 2) Construction Biodiversity Management Plan, 3) Construction

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		> Training Plan			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
8.	Construction Compound Selection and Management Plan	The Contractors will be responsible for negotiating agreements with landowners, to temporarily use land for construction compounds and construction access in accordance with the future RAPs to be developed for each subsection. 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. The Contractors 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 Contractors 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 Contractors 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.	> Preparation and Implementation – Contractors > Approval – PIU / Supervision Engineer	> The Contractors and Supervision Engineer to prepare monthly reports on the construction sites and construction compounds organisation for the PIU, based on conducted weekly visual inspections	> Construction Compound Selection and Management Plan developed and approved by the PIU / Supervision Engineer and Lenders, and implemented by the Contractors

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		Workers' accommodation will meet the requirements set out in the item below.			
9.	Construction Biodiversity Management Plan	The Contractors 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: > As the Plan will be developed prior to construction, it must include the plan for pre-construction biodiversity surveys that must cover all four seasons for the most representative results; > Major impact that may arise as a result of large infrastructural projects, especially large linear project such as railroads, is habitat fragmentation that can be minimized by construction of wildlife passages in the form of underpasses or overpasses. Pre-construction surveys shall identify key areas for each group of animals and inform the Project design on where such corridors shall be built and for which target group; > Prohibit activities that may cause substantial turbidity of rivers and streams in the Project area for longer than three days; > In the places where the railway crosses marsh habitats, it is necessary to provide water culverts, so that the hydrographic regime of the surrounding habitats remains unchanged. All interventions in regularly flooded areas, on wet meadows and within wetland habitats must be reduced to the necessary minimum and, upon completion of the works, the hydrographic regime must be returned to its original state. This applies especially to the sections Rakovica-Resnik-Ripanj (Subsections 1 and 2) and Jagodinski rit (Subsection 3). > Clear demarcation of vegetation for clearance in order to preserve adjacent habitats; > Creating refined ecologically appropriate areas of analysis (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; > A portion of cut down trees must be left in the forest to stimulate saproxylic beetles in localities important for such species, amount and localities should be determined through pre-construction surveys; > Works in the watercourses will be timed with due regard to mitigate potential impacts to migratory fish, mammals, birds, amphibians, and invertebrates: > Work near water bodies should be minimized during the spawning period and migrations of fish (during April and May); > Work near ponds and canals (reproductive centers) should not be performed during the reproductive period of amphibians (spring);	> Preparation and Implementation – Contractors > 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 Contractors

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		> 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 and clearance will be done progressively to allow animals to escape; > From the end of March to the beginning of June, most of the large mammal species raise their young, high noise and vibration of construction work sites can have a devastating impact on the development and survival rate of the young therefore construction should be minimized as much as possible in areas identified as important for mammals. Such areas shall be identified during preconstruction surveys and encompass areas where mammals migrate, feed, breed and raise offspring; > Project construction will be minimised at dusk, dawn and at night whenever possible to avoid disturbance to nocturnal and crepuscular fauna; > Prevent erosion and minimize washing and leaking of solids from surrounding area (by grass plantation, interception and drainage, application of mulch coverage, use of lattice plots, concrete prefabricated panes or gypsum); > Minimize watercourse regulation, habitat and riverbed alterations; > Any tree above 100 mm in diameter measured at breast height following good forestry practice is to be checked by the appointed expert ecologist for the potential of roosting bats prior to removal; > Daily walkover of construction sites should be done by an employed Ecological Clerk of Works/environmental associate and if any animals are found they must be relocated to a suitable habitat and away from other roads and sources of danger; > Identification of hotspots of amphibians and reptiles (reproductive centers, sunbathing and hibernation sites) for planned sections of the railway and their clear marking if they are at an appropriate distance from the works must be performed; > If bird nests, bat roosts, snake hibernaculums, tortoise or turtle eggs are found, an expert ecologist must be engaged to determine mitigation and relocate specimens if necessary/needed; Institute for Nature Conservation of Serbia must be informed; > The most at-risk from collisions with trains will be birds of prey, but also birds that migrate near water surfaces. By building protective panels in certain locations, this negative impact can be reduced. It is necessary to build protective panels along the entire length of the bridges that will cross the Juzna Morava, but also for the renovation of the existing ones that cross Velika Morava River. Protective panels can protect large birds of water habitats, but they can also be beneficial for preserving the property of the Serbian railways, because a collision at high speed can cause great material damage; > 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;			

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		> The critical locations are the ones in which the electric pole is the highest object (e.g. scarce vegetation cover) so the birds take up positions on their top; therefore quality electrical insulation is necessary; > In order to reduce noise level rail dampers, under-sleeper pads—USPs, rail fastenings, and/or noise barriers should be used; > 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; > 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; > Introduction and spread of invasive species by machinery must be prevented by implementation of good practice e.g. washing of vehicles prior to entering water and natural habitats; > During the land preparation and construction phase biodiversity monitoring, presence of invasive alien species in the area must also be monitored; > Waste and spoil must not be disposed of in priority biodiversity features' (PBFs) and critical habitats' (CHs) ecologically appropriate areas of analysis (EAAAs); > There must be no net loss (NNL) of biodiversity values identified as PBFs and there must be net gain (NG) of CHs; > Access roads, worker accommodation and similar structures may not be built in EAAA of PBFs or CHs, or in protected areas unless there is no other feasible alternative. In such case, extensive mitigation and, when necessary, adequate and reciprocal offsetting strategies must be implemented to ensure the NNL/NG. Such strategies may entail afforestation or rehabilitation and management of adjacent habitats of equal or higher ecological value; > 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.			
10.	Construction Air Quality and Dust Management Plan	The Contractors 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;	> Preparation and implementation – Contractors > Approval – PIU / Supervision Engineer	> Records of population complaints on dust generation and deterioration of air quality > The Contractors 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 Contractors and approved by the PIU prior to construction and implemented during

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
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		> All dust and air quality grievances will be recorded by the Contractors, 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 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; > 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;			construction by the Contractors

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		> 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; > 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.			
11.	Construction Noise and Vibration Management Plan	The Contractors 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 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;	> Preparation and implementation – Contractors > Approval – PIU / Supervision Engineer	> Contractors and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractors and approved by the PIU prior to construction and implemented during construction by the Contractors > 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	Responsibility		Target/indicator
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		> Noisy construction works and/or the work that makes a lot of vibration near sensitive receptors will be organised 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; > 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; > monitoring of the high-risk structures (houses located very close to the works, cultural-heritage objects, etc.) to ensure there is no structural damage done. Before and during the Construction works, the Contractors 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 Contractors 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.			
12.	Construction Water and Soil Management Plan	The Contractors 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;	> Preparation and implementation – Contractors > Approval – PIU / Supervision Engineer	> Records on spillage and monitoring performed > Contractors and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractors and approved by the PIU/Supervision Engineer and Lenders prior to construction, and implemented by the Contractors > Number of complaints on

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
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		> At the locations of intersection of the existing water supply and sewerage network with the planned railway alignment, existing pipes must be protected and/or relocated if passing through the railway belt; > 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 Contractors will be responsible for identifying the source of pollution, containing the pollution and preventing further spread. The Contractors 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 Contractors; > The positioning of stockpiles near to watercourses will be avoided, they will be a minimum of 30m from any watercourse, and they will be located outside areas at fluvial flood risk; > Stockpiles will be contained with bunds or sediment fences and cover stockpiles when not in use; > 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;			reduced water and soil quality

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		> 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; > Construction machines must be parked in specially designated plots; > 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; > 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 Contractors will implement measures to minimise 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 watercourses; > Ensure no wastewater from batching plants is discharged to the watercourse;			

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
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		> 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. In the sanitary protection zones, provide a drainage system with channels, with the following supporting elements: (i) railway channels that are made of concrete, with larger dimensions than those required for the drainage of the *railway body*, (ii) the use of a waterproof membrane at the bottom of the embankment, (iii) the use of separators with a precipitator and leave space for the installation of tertiary purification, if needed in the future, (iv), provide for a water gate at the entrance to the separator that can be closed in case 23 fan incident. The Contractors 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.			
13.	River Crossing Plan	The Contractors 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 that will be set in the Water Conditions issued by the Ministry of Agriculture, Forestry and Water Management-Water Directorate: > Determine the way of crossing and the type of works on each watercourse; > Secure and stabilise riverbed, provide stabilisation thresholds and other protective equipment on locations where river training is needed; > 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 stabilise the 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.	> Preparation and implementation – Contractors > Approval – PIU / Supervision Engineer	> Contractors and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractors and approved by the PIU prior to construction and implemented during construction by the Contractors > Number of accidents caused by river crossings
14.	Construction Waste Management Plan	The Contractors 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:	> Preparation and implementation – Contractors	> Records on generated and	> Plans developed by the Contractors and

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		> 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 Contractors 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; > It is forbidden to burn or bury waste on the construction site; > Plastic sheeting will be used to prevent leaching from waste soils and aggregates where these are not contained within skips or other storage vessels; > 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 Management 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 Contractors 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;	> Approval – PIU / Supervision Engineer	disposed waste by types > The Contractors and Supervision Engineer to prepare monthly reports for the PIU on the status of Plans performance	approved by the PIU and Lenders prior to construction and implemented during construction by the Contractors > Waste disposed in accordance with legal requirements and good practices

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
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		> 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.			
15.	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 (conduct an E&S screening before selecting a temporary or permanent location for spoil disposal), 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; > Temporary and permanent Construction spoil areas must not be located within any PBF/CH EAAAs; > 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.	> Preparation and implementation – Contractors > Approval – PIU / Supervision Engineer	> Records on generated and reused and/or disposed excavated spoils > Contractors and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractors and approved by the PIU and Lenders prior to construction and implemented by the Contractors > Spoil reused or disposed in accordance with legal requirements or good practices
16.	Construction Planting Management Plan	The Contractors 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;	> Preparation and implementation – Contractors > Approval – PIU / Supervision Engineer	> Contractors and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractors and approved by the PIU prior to construction and implemented

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		> 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; > It is possible to enrich the landscape by partially replacing the vegetation cover through railway verges, these narrow stripes of planted species can provide shelter for many species, minimize noise and vibration pollution naturally, along with many other beneficial ecosystem services. At the same time, the verges act like barriers for invasive species and allergen spreading. > 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 as seed mixes, quantity and sowing rates for seed mixes (such as grass or wildflower) will be defined for each subsection according to specific species present in the area; > 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; > 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 (Contractors), Environmental Expert (Supervision Engineer), and Environmental/Biodiversity Specialist (PIU).			during construction by the Contractors
17.	Construction Traffic Management Plan	The Contractors 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 Contractors selects suitable access and construction access routes for the site traffic. The Contractors will:	> Preparation/ Implementation – Contractors > Liaison with affected communities – Contractors > 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 Contractors > Number of traffic accidents > Number of local roads damaged and repaired

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		> Ensure access to all community infrastructure, roads and cemeteries in the Project area – in case of any unavoidable temporary access restrictions, the Contractors will inform the local authorities and the public in advance of works commencing; > Coordinate with the local authorities 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 Contractors 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; > Carry out maintenance of construction vehicles regularly and avoid unnecessary use of the vehicles.			
18.	Workers' Accommodation Management Plan	The Contractors 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.).	> Preparation / Implementation – Contractors > Approval – PIU / Supervision Engineer	> Supervision Engineer to prepare monthly progress reports, signed off by the PIU > Checklist on Workers' Accommodation (Annex I of the Guidance) filled in and sent to the Lenders	> Plan approved by PIU /Supervision Engineer and Lenders > Plan implemented by Contractors
19.	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.	> Preparation / Implementation – Contractors > Liaison with the relevant institute for	> Supervision Engineer to prepare monthly progress reports, signed off by the PIU	> Plan approved by PIU / Supervision Engineer

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		The Plan will include: > All the requirements of the relevant institute for protection of cultural monuments (as part of the Location Conditions to be issued for each subsection) > Actions and measures to manage risks and impacts to any additional cultural heritage sites identified in the subsection specific ESIAs > Actions and measures to manage risks and impacts to local cultural events in the Project area by liaising with local authorities and plan the works in accordance with important dates. A Chance Finds Procedure will be prepared and implemented by the Contractors 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 relevant institute for protection of cultural monuments. The Contractors will liaise with the relevant institute for protection of cultural monuments during the preparation of the Cultural Heritage Management Plan and the Main Design for each subsection, and will send these to the Institute prior to the commencement of construction. In case the Institute requires additional mitigation requirements, the Contractors shall revise the Cultural Heritage Management Plan to include such measures.	> protection of cultural monuments and local authorities – Contractors > Approval – PIU / Supervision Engineer		> Plan implemented by Contractors
20.	Construction Health, Safety and Security Plan	The Contractors 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 Contractors 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 Contractors 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.	> Preparation / Implementation – Contractors > Approval – PIU / Supervision Engineer	> Consultation with the local community, SRI, providers of local facility and local stakeholders. > Contractors 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 Contractors > Number of community and worker grievances raised during construction phase > Number of workers injuries

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		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.); > 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. Contractors 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.			
21.	Construction Labour and Employment Plan	To enhance employment opportunities for locals within the Project area, the Contractors 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 Contractors 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;	> Preparation / Implementation – Contractors, 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 (every 6 months) by specialised labour expert hired by the Supervision Engineer	> Plan approved by PIU / Supervision Engineer > Plan implemented by Contractors

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		> 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.			
22.	Public grievances	The Contractors 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	> Implementation – Contractors	> Supervision Engineer to prepare monthly progress reports, signed off by the PIU	> Number of grievances received by the Contractors and forwarded to SRI > Number of grievances resolved on site by the Contractors
23.	Acquisition of temporary land	The Contractors will be responsible for ensuring the acquisition of temporary land needed during construction works in case publicly owned land is not available. The Contractors 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 and in the Resettlement Policy Framework.	> Implementation – Contractors > Approval – PIU / Supervision Engineer	> Supervision Engineer	> Review by SRI to confirm implementation
24.	Construction Workers' Code of Conduct	The Contractors will develop a Construction Workers' Code of Conduct. It will be clearly displayed at different Project areas and posted in the Contractors's vehicles and machinery driving cabs. Contractors'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 Contractors, or by the Supervision Engineer if the Contractors is not acting in due course. The Contractors will establish a record for each case of serious misconduct, indicating all action taken regarding the incident, and immediately inform the Supervision Engineer.	> Preparation / Implementation – Contractors > 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
25.	Blasting Management Plan (if needed)	In case of blasting activities, the Contractors will develop a Blasting Management Plan prior to construction works to eliminate hazards and reduce potential negative impacts. The Blasting Management Plan should: > Set out key national and EU policies, laws and standards related to blasting activities;	> Preparation and implementation – Contractors	> Records of blasting activities conducted on the construction site	> Blasting Management Plan developed by the

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		> 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	> Contractors and Supervision Engineer to prepare monthly reports for the PIU on the status of performance	Contractors and approved by the PIU prior to construction and implemented during construction
26.	Construction Emergency Preparedness and Response Plan	The Contractors 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 Contractors shall review the Plan after any emergency situation or training exercise to provide opportunity for its continual improvements.	> Preparation and implementation – Contractors > Approval – PIU / Supervision Engineer	> Records of emergencies that occurred on the construction site > Contractors and Supervision Engineer to prepare monthly reports for the PIU on the status of Plan performance	> Plan developed by the Contractors and approved by the PIU prior to construction and implemented during construction > Number of emergencies, the success and timeliness of response
27.	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, > 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.	> Preparation and implementation – Contractors > Approval – PIU / Supervision Engineer	> Records on training performed > Contractors to prepare monthly reports for the PIU on the status of the training implementation	> Plans developed by the Contractors and approved by the PIU prior to construction, training organised prior to the construction and, if necessary, during construction by the Contractors

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/Approval	Monitoring	
		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 Contractors 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 Contractors 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 Contractors periodically to ensure all workers are up to date on best site practices.			

6 OPERATIONAL ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
SRI (Operation)					
1.	Development of an Operation Environmental and Social Management Plan (OESMP)	SRI will 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, wildlife crossings, animal mortality, revegetation success) and then with decreasing frequency; > Monthly monitoring must include targeted monitoring of ecologically sensitive Vrtiste area with special focus on status of habitats, bird populations and invertebrates, as well as water regime;	> 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	
		> Monitoring of fish stocks at chosen river crossings should be carried out every three years from the completion of construction phase for as long as the railway is operational. Selection of rivers to be monitored shall be determined upon completion of section-specific pre-construction surveys and E&S documentation that shall identify points of concern (e.g. large bridges over ecological corridors Juzna and Velika Morava, well preserved streams etc.); > Biodiversity Management Plans are living documents and should be updated in case monitoring brings up additional concerns; > 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 Environmental and Social Report unless there is an important issue needing immediate action; > Monitoring must include success rate of measures implemented to ensure no net loss of PBFs and net gain of CHs as this is a key requirement; > Vegetation of bio-corridors in the areas of abutments will be maintained in a way that will 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; > Bird nest boxes shall be installed within three months after start of railway operation, number and place to be decided; > To ensure net gain for bat species old trees must be preserved as much as possible, new ones must be planted and the need for installation of bat boxes shall be reviewed for each subsection; > Right-of-way maintenance will be based on the integrated vegetation management which ensures effective vegetation control while considering environmental and human health values; > Wildlife passages must be maintained and passable at all times; > 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;			

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		> 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*[2]; > 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.			
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 Contractors for future railway reconstruction activities to prepare an Operational Air Quality Management Plan.	> Preparation and implementation – SRI or Contractors > 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

[2] Official Gazette of RS, No. 03/17

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
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 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. > The vibration monitoring plan should be performed along the railway line Belgrade-Nis and should include monitoring survey in the period 3-6 months after opening of each railway section. The monitoring locations will be established at selected residentials and other sensitive buildings up to 30 meters from open track, up to 40 meters from the nearest station switch, and up to 30 meters in the tunnel area. All monitoring locations should be 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. If the permitted limits are exceeded, SRI should apply appropriate mitigation measures, as described below (vibration and ground-borne noise protection measures) and/or additional mitigation measures (e.g., open or geofoam-filled trenches, underground barriers, reducing the trains speed, enhanced track maintenance). > 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 other protection measures are planned such as replacement of doors and windows with ones with	> Preparation – Contractors (the Main Design)[4] > 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 complaints received

[4] 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	
		better sound insulation[3]. 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 At the vehicle level, vibration and ground-borne noise emission can be lowered by improving roundness of the wheels, stiffness of the vehicle suspension systems, reducing of the unsprung mass, reducing of speed and using resilient wheels. The SRI, as infrastructure manager, has direct control only over speed, while other measures can only be controlled indirectly by the network access fee. At the track level, vibration emission can be lowered by rail enhancements (e.g. control of the railhead roughness, using of the rail pads), reduction of breaks in the running surface of a rail (rail joints, continuous welded rails, switches and crossings), fasteners enhancements (e.g. using of the elastic elements to prevent direct contact between the rail foot and sleeper), sleepers and ballast enhancements (e.g. using of the elastomeric pads between the sleepers and the ballast). As an alternative to ballasted tracks in tunnels other technologies can be used, such as the floating slab tracks. Once the new rails are laid, preventive grinding shall be required to remove initial roughness on rail surface together with a layer with non-uniform content of carbon as well as irregularities due to superimposed tolerance in the course of track laying (including adjustment of both, direction and reference level). In the course of railway operation, running surface of a rail shall be flat and smooth. During the repair of rails all upsweeps and downsweeps at welding points shall be removed. Maintenance plans shall include regular rail grinding.			

[3] 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	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		On transmission path, barriers can be used with materials or without materials (e.g. open trench), which are able to attenuate propagation of vibration waves. In urban areas it can be realized as underground barriers near the rail track. It is also possible to mitigate the ground vibration intervening in the geotechnical characteristics of the soil proprieties (stiffening to improve the soil absorption capacity) under the track, around the track, or between the source and the receiver. Regarding potential micro-pressure effects in tunnel, the protection methods that can be applied are: > The installation of a tunnel hood at the tunnel entrance. > The use of side branches in the tunnel. > The installation of a shelter with slits between two adjacent tunnels. > Reduce speed train. > The reduction of the cross-sectional area of the train (not applicable in the project). > The optimizing of the train nose (not applicable in the project).			
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 stations (where installed) 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 will be treated in oil and silt traps prior to discharge to surface water recipient; > Regular maintain sediment traps and basins, drainage channels and treatment systems;	> 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 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; > All maintenance activities should be done in accordance with the national *Rulebook on Technical Conditions and Maintenance of the Lower Parts of Railway*	> 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

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
		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.			> 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. In particular, specific stakeholder identification and engagement arrangements for each subsection shall be added to the SEP appendix. 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 relevant institute for protection of cultural monuments as required by national legislation. 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.	> Preparation – SRI > Implementation – SRI and maintenance contractor	> PIU	> Plan prepared by SRI and implemented by SRI and/or maintenance contractor

No.	E&S aspect/ concern	Proposed mitigation measure	Responsibility		Target/indicator
			Preparation/ implementation/ Approval	Monitoring	
12.	Gender Plan	To mitigate gender related effects, SRI will develop a Gender Plan for the operation phase. In addition to the national legislation already in force in Serbia, 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; > 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.	> 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	
		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.			