SFG2017

FEDERATION OF BOSNIA AND HERZEGOVINA ROAD SECTOR MODERNIZATION PROJECT

Environmental and Social Management Framework

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ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK FOR FOR THE FBH ROAD SECTOR MODERNIZATION PROJECT (ESMF)

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LIST OF ABBREVIATIONS

BH – Bosnia and Herzegovina
BFC – Beneficiary Feedback Commission
CFD – Central Feedback Desk
EA – Environmental Assessment
EIA – Environmental Impact Assessment
EP – Environmental Permit
ESIA – Environmental Social Impact Assessment
ESMF – Environmental Social Management Framework
ESMP – Environmental Social Management Plan
FBH – Federation of Bosnia and Herzegovina
FMoET – Federal Ministry of Environment and Tourism
FMoPP – Federal Ministry of Physical Planning
MoCT BH – Ministry of Communications and Transport of Bosnia and Herzegovina
MoFTER BH – Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina
OG – Official Gazette
OP – Operational Policy
PAP – Project Affected Person
PC Roads FBH – Public Company Roads of the Federation of Bosnia and Herzegovina
PEIA – Preliminary Environmental Impact Assessment
RAP – Resettlement Action Plan
RPF – Resettlement Policy Framework
MP – Main Project
SOP – Site Organization Plan
TD – Tender Documentation
WB – World Bank

EXECUTIVE SUMMARY

Project background and objectives

The Public Company Roads of Federation of Bosnia and Herzegovina (PC Roads FBH) has initiated an overarching program for the Project "Modernization of Major roads in the Territory of the Federation of Bosnia and Herzegovina" (the Program) to ensure appropriate road infrastructure by 2020 i.e. to improve quality and rad safety on major roads, thus improving the connectivity of the entire network. For this purpose, it has been requested from the Government of the FBH to ensure credit funds from international finance institutions (IFI).

In the framework of the abovementioned umbrella Program, PC Roads FBH has initiated the FBH Road Sector Modernization Project (the Project). FBH filed an application for a credit/loan from the European Investment Bank (EIB) and from the World Bank (WB) in total amount of 103, 38 million EUR for funding the Project.

This Project consists of four components: (1) Reconstruction of roads, (2) Interventions on improving road safety, (3) Institutional reforms and (4) Project Implementation Support. The first component is expected to cover construction of 32,9 km of new road, construction of 40 km of third lanes, correction of 18 km of road axes and reconstruction of 3 tunnels and 7 bridges. The second component shall cover reconstruction of 9 black spots and dangerous places.

The Project Development Objectives are:

- Road safety, improvement of road connections, more efficient use of roads; and
- Progress in the efficient management of the road network including keeping a cadastre of roads in the FBH.

Construction of the new road Neum-Stolac is a subject to an ongoing full Environmental and Social Impact Assessment (ESIA), while all other sub-projects are subject to this ESMF (for full list on sub-projects see Appendices 1 and 2 the document).

Environmental and Social Management Framework

To address potential impacts the Project beneficiary prepared an ESMF which specifies the EA rules and procedures and environmental requirements for the subprojects to be financed in accordance with the environmental and social safeguard policies of the WB. This document covers the following: national and WB EA rules and procedures; environmental screening of the proposed sub-projects; guidance for preparing subprojects ESMP; socio economic and environmental baseline data on federal level; social and economic indicators; description of key impacts and possible mitigation measures; requirements for monitoring and reporting of implementing of ESMPs; public consultations, disclosure of information and grievance mechanism. In addition, three site-specific ESMP for particular sub-projects are prepared as separate offprints to this report.

The objective of the ESMF is to provide general policies, guidelines, rules of conduct and procedures that will be integrated into the implementation of the Project.

Legal and Institutional Framework

Environmental legislative of the FBH has dozens of acts, rulebooks and ordinances regulating the field of environment, where the most important and fundamental act is the Environmental Protection Act (Official Gazette of the FBH, No. 33/03 and 38/09).

Federal Ministry of Environment and Tourism (FMoET) is the fundamental responsible for formulation and implementation of the environmental policy matters. In the FBH, the investments that require EIA are identified in the Rulebook. The environmental permit (EP) in the FBH is also issued on canton level, as regulated by canton acts on environmental protection.

For all the sub-projects subject to the ESMF it is not needed to obtain neither federal nor cantonal EP.

Operational policies of the WB which are relevant for the Project are as follows: OP 4.01 Environmental Assessment, OP 4.04 Natural Habitats, OP 4.11 Cultural-Historical Heritage and OP 4.12 Involuntary Resettlement.

The overall Project, according to the WB OP 4.01, is categorized as category A due to construction of the new Neum-Stolac road which is a subject to an ongoing full ESIA according to the OP WB and to a EIA process of FBH (carried out in 2009). All other sub-projects subject to ESMF are categorized as category B, meaning that their impacts on the environment and society are less adverse, and that they require preparation of ESMP checklist or preparation of the complete ESMP.

Main Social Issues

According to the data from Federal Institute for Statistics (Annual Bulletin for 2014) in FBH 2,336,722 inhabitants lived in 2014 with a population density of 89.5 inhabitants per km^2. In recent years, the BH is constantly recording a negative population growth rate and negative migrations, what puts BH among the top three countries in Europe in terms of emigration volume. Medium-sized cities perform worst along most indicators, showing emigration, highest unemployment, lowest wages and lowest GDP per capita, where most of the sub-projects are situated.

In 2014, in the FBH there were 53% employed persons, out of that number there are 40% women employed according to the Federal Institute for Statistics (Annual Bulletin for 2014).

All economic activities and the possibilities for economic development are directly linked to the transportation infrastructure, hence it is expected that the Project implementation should have positive impacts on the country's economy. According to the World Economic Forum's Global Competiveness Report BH is ranked as 104 out of 148 countries in 2013-2014.

The road construction has been one of the main drivers of investment spending and employment, generating around 5,000 jobs and spending BAM 472 million in 2013 and an estimated BAM 567 million in 2014 in FBH alone.

According to the data from Action safety plan for FBH for 2011-2020, every year in FBH on average 250 people are killed and around 6500 are injured in traffic accidents, causing a financial loss of more than 400 mil EUR per year (5,8 % of the yearly GDP). Increased road safety is a Project development objective and reduction of number of road traffic accidents along Project's sections is is set as an indicator for monitoring Project success. It is desirable that this indicator shall be closest as possible to 0 (in particular number of traffic incidents and outcomes of incidents: deaths, minor and major injuries). Second indicator to be monitored is

the Project Affected People's (PAP's) satisfaction with the grievance mechanism i.e percentage (%) of solved grievances in a given period and grievances solved with the satisfaction of the addressee shall imply the success of the Project. Third indicator to be monitored is the travel time. Since the technical elements of roads and road objects shall be improved due to rehabilitation works it is expected that time travel in general shall be decreased and accessibility to targeted destinations (jobs, services, social infrastructure) shall be improved.

During preparation of sub-projects negative social impacts from the aspect of land acquisition are expected, though in total this impact is considered to be low. RPF and RAP documents shall guide mitigation measures wherever expropriation or involuntary resettlement is necessary.

Main Environmental Issues

Road rehabilitation works on proposed sub-projects will have only minor impacts on the environment. Most of these impacts are temporary, can be successfully mitigated and will disappear upon completion of work, or no significant negative environmental and social impacts are expected. Moreover, no negative impacts are expected during the use of facilities, since they are already in function.

Potential temporary impacts as a consequence of activities on rehabilitation of roads and road facilities consists of the following: disturbance to current courses of traffic; road safety; damage to access roads; increase of noise, waste and dust; emission into the air; impacts on soil and water; short-term disturbance to biotopes; current impacts on settlements in the surroundings. The impacts outside of construction site include: quarries, borrow-sites and plants for production of asphalt, which might have adve rse impacts if not managed in proper manner. The Contractor's construction plant might also have temporary adverse environmental impacts.

ESMF Implementation

Model ESMP's for three different types of sub-projects were made as model for development of future ESMP's for sub-projects. Site-specific ESMP's will be prepared by incorporating the relevant specific data, analysis and mitigation and monitoring requirements into these models.These three ESMP's are attached as separate Offprints to the ESMF. The ESMP's are made for the following type of sub-projects:

- Reconstruction of the Crossroad (Black spot);
- Rehabilitation of the Bridge;
- Construction of Third Lane for Slow Vehicles.

For all other sub-projects preparation of ESMP is mandatory and they shall be made in compliance with these three ESMP's made within this ESMF in terms of their methodology, content and scope. ESMP can be done as part of Main Project or as an independent report. The ESMP will provide incorporation of all relevant environmental and social factors in the overall project documentation. The ESMP shall also ensure that all mitigation measures of adverse environmental and social impacts as well as their monitoring shall become a legal obligation of the PC Roads FBH.

The ESMPs will be published as a part of tendering documents for performance of construction works along with ESMF report. The Contractor will therefore be obliged to comply with provisions from ESMP as early as in the bidding phase, and to incorporate these provisions into Construction site organization plan.

Monitoring

Detailed program for monitoring will provided for each sub-project in ESMP. Prior to the commencement of the works, the Contractor is obliged to perform a zero monitoring i.e. to establish baseline data. During the construction of works the Constructor is obliged to perform monitoring activities, while the Supervisory body (consultant appointed by the PC Roads according to the federal laws) will supervise the monitoring activities.

During facilities operation, PC Road FBH and Contractor for works on roads maintenance will be responsible for monitoring, in frames of which routine and random monitoring in accordance with ESMP will be performed.

Reporting

The Contractor shall prepare a report on compliance with ESMP in form of a monthly progress report and submit it to PC Roads FBH in a local language (C/S/B) and in English, in analogue and digital form.

The Supervisory body shall prepare a report on compliance with ESMP in form of a monthly progress report and submit it to PC Roads FBH in a local language (C/S/B) and in English, in analogue and digital form.

PC Roads FBH shall prepare annual reports on environment, health and safety, including monitoring indicators and reports on implementation of requirements established in ESPM, and submit them to the WB for a review.

Public consultations, Disclosure of information and Grievance Processes

Public consultation on Project shall be held after the WB and PC Roads FBH approves the ESMF draft in Sarajevo. Minimum 10 day before public consultations the documents shall be published and accessible to the public for the access.

The draft of ESMF report shall be available at the web site of PC Roads FBH (www.jpcfbih.ba) in B/H/S language and on the web sites of the WB in English language. During the process of public consultations, the interested public shall get all information about the Project, including the social and environmental issues.

After the finalization of the documentation, the document shall be disclosed again.

Grievance processes

Besides the institutionally available ordinary and extraordinary legal remedy, and existing institutional channels for submitting grievances, PC Roads FBH will ensure and form a special Project level Grievance Redress Committee [i.e., Central Feedback Desk (CFD) for all sub-projects, and Beneficiary Feedback Commission (BFC) as an additional platform for municipalities Neum and Stolac], in collaboration and direct involvement of those municipalities under whose administrative authority the Project is carried out.

The CFD/BFC will be an information center and grievance mechanism operated by the implementing agency PC Roads FBH. The CFD/BFC shall serve local communities affected

directly or indirectly by land acquisition and/or by construction works. The CFD shall consist of five members from PC Roads FBH which are not directly involved in the process of expropriation or Project implementation. The BFC shall consists of five members (two from affected municipalities, two representatives of PAP's and one representative of PC Roads FBH).

Grievances can be filed by means of filling out the Grievance Form (ESMF *Appendix 6*), which will be available as print out at all affected municipalities; and shall be available for download on the website of PC Roads FBH (www.jpcfbih.ba).

Grievances can additionally be submitted with PC Roads FBH, with the Contractor, by phone, by fax, and by e-mailing it to the designated e-mail address zalbena@jpcfbih.ba, or by mail to the address of PC Roads, Terezija 54, 71000 Sarajevo; or directly to BFC.

The Registration logs administered by the CFD/BFC shall be kept separately for grievances filed in respect to the resettlement process and for those registered by members of community impacted by any activity linked to the construction works in all its sequences. Additionally one Central Grievance Log for all grievances shall be kept by CFD.

Within three days after receipt of a grievance, the CFD/BFC shall acknowledge the receipt of the same and take another maximum 14 days to decide on the grievance/complaint response.

The outcome of the procedure shall be registered in the Grievance Logs, allowing the PC Roads FBH to monitor grievances and the efficiency of the grievance mechanism.

1. INTRODUCTION

1.1. BACKGROUND

The largest part of the major road network in the Federation of Bosnia and Herzegovina (FBH) was built between 1968 and 1975 for the needs of transportation of that time and with modest elements (insufficient width of the roadway and road bed, big steep slopes, sharp turns, insufficient thickness of pavement structures, steep and unprotected escarpments and the like). After the war in BH (1992-1995), the investments are mainly used for rehabilitation / improvement of existing major roads and road facilities consisting of coating, rehabilitation of asphalt pavements, works on drainage and increasing the road safety. The average lifetime of bridges on major roads in the FBH is around 45 and 40 years for tunnels.

Road infrastructure of FBH does not meet the criteria of road safety, technical demands, level of services, and connectivity in with the socio-economic development of FBH. Therefore, modernization of the FBH road network is a high priority.

The Public Company Roads of Federation of Bosnia and Herzegovina (further in the document PC Roads FBH) has initiated an overarching program for the project “Modernization of Main Roads in the Territory of the Federation of Bosnia and Herzegovina” (The Program) to ensure appropriate road infrastructure by 2020. For this purpose, it has been requested from the Government of the FBH to ensure credit funds from international finance institutions (IFI).

In the framework of the abovementioned umbrella Program, PC Roads FBH, a limited liability company wholly owned by the Government of FBH, has initiated the FBH Road Sector Modernization Project (the Project). FBH filed an application for a credit/loan from the European Investment Bank (EIB) and from the World Bank (WB) in total amount of 103,38 million EUR for funding the Project.

1.2. PROJECT DESCRIPTION

This Project, co-financed by the EIB and WB, is a part of the overall Program, and it consists of four components:

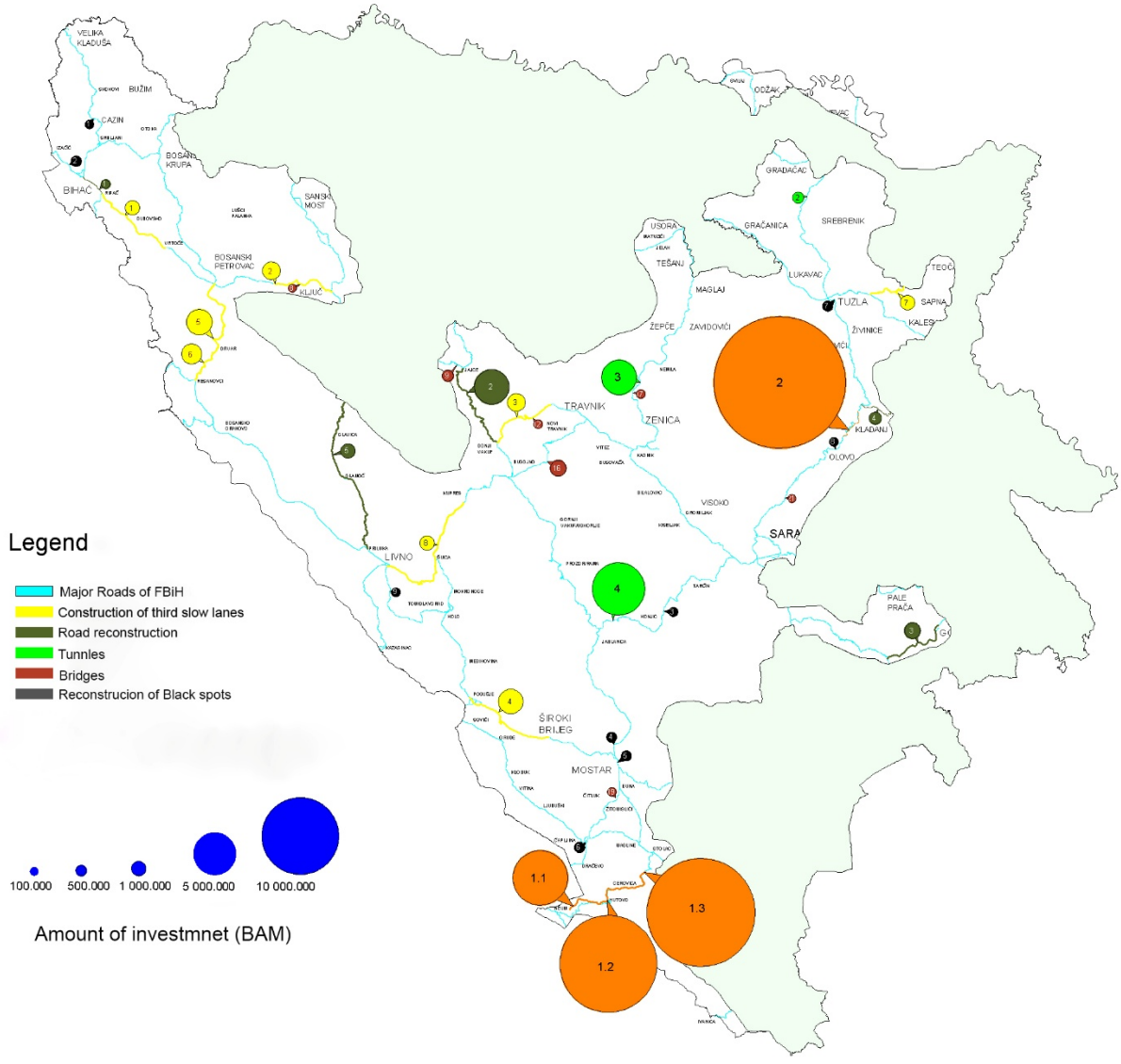
1. Reconstruction of roads, this component includes:
   - Construction works for completion of the construction of major road M17.3 Neum–Stolac (in total 32,9 km);
   - Construction of third lanes for slow vehicles (in total 40 km on 8 sections of major roads);
   - Reconstruction of roadway, correction of axes (in total 18 km on 5 sections of major roads, where a correction of axes is to be done on one section only in the length of 1 km),
   - Reconstruction of 3 tunnels (with a total length of 1,86 km);
   - Reconstruction of 7 bridges (with a total length of 0,55 km).
2. Interventions on improving road safety: The reconstruction of 9 intersections, which are classified as "black spots" on major roads.

3. Institutional reforms: Road Management in the FBH with a particular focus on sustainability of investments and road safety.
4. Project Implementation Support: Construction supervision and capacity building of the PC Roads FBH.

Construction of the new road Neum-Stolac is a subject to an ongoing full Environmental and Social Impact Assessment (ESIA), while all other sub-projects are subject to this ESMF.

Figure 1 shows an overview map the sub project locations included in this ESMF and the same map in a larger scale s provided in Appendix 1 to this report, while in *Appendix 2* a table overview with basic data of the sub-projects is provided.

Figure 1. Overview Map of the FBH Road Sector Modernization Project



Source: PC Roads FBH, 2015.

1.2.1. Project development objectives

The Project Development Objectives are:

- Road safety, improvement of road connections, more efficient use of roads; and
- Progress in the efficient management of the road network including keeping a cadastre of roads in the FBH.

As well it is expected from the Project is to facilitate trade, enable the development of tourism, improve regional and national economic growth and contribute to economic and social cohesion in the region.

The Project beneficiaries are road users on the selected sub-projects throughout the FBH who will benefit from improved connectivity and road safety.

1.3. OBJECTIVE AND PURPOSE OF THE ESMF

Environmental and social safeguard policies of the WB require that the borrower prepares *Environmental and Social Management Framework* (ESMF), in line with national legislation and the WB's Operating Policies (OP) for Environmental Impact Assessment (OP 4.01) for the Project.

ESMF is a comprehensive approach to environmental and social management adopted as a tool for identifying potential environmental and social impacts of the Project. ESMF seeks to consolidate and facilitate the understanding of all the necessary policies and regulatory capabilities of the government as well as environmental and social safeguard policies of the World Bank related to the Project.

The objective of the ESMF is to provide general policies, guidelines, rules of conduct and procedures that will be integrated into the implementation of the Project. ESMF defines steps, processes and procedures for screening, alternative analyses, monitoring and management, issues related to the environment and society.

Moreover, the ESMF analyzes environmental and social policies within the FBH and the WB safeguard policies; provides an overview and assessment of institutional capacities for implementation of environmental and social policies; and describes the principles, objectives and approach that will be applied in the design and implementation of mitigation measures.

ESMF is intended as a practical tool for use through preparation, implementation and monitoring of the Project.

1.4. APPROACH AND METHODOLOGY

The Environmental and Social Management Framework (ESMF):

- Presents the environmental and social policies, analyzes legal and administrative framework and defines differences between local legislation and policies of the WB and provides solutions for bridging these differences;
- Presents basic (environmental, physical and socio-economic) information about the observed area;

- Provides the environmental and social impact assessment and mitigation measures for negative impacts;
- Provides a description of the environmental and social management system and the institutional layout;
- Defines environmental and social monitoring indicators;
- Defines the screening procedure of the proposed sub-projects;
- Draws a particular attention to measures for works affecting the cultural and historical heritage and natural habitats or protected areas;
- Describes how to manage the potential environmental and social impacts by any sub-project during preparation, execution of works and over the period of use.
- ESMF incorporates a framework for implementation, monitoring, control, review and reporting according to ESMF requirements.

It also defines a complete procedure for the site-characteristic Environmental and Social Management Plan (ESMP) and Environmental Impact Assessment (EIA) as a basis for further development of these documents. ESMP will assist PC Roads FBH, designers and reviewers as well as other consultants in the preparation of necessary environmental requirements and / or specific ESMPs for sub-projects for the integration of impacts and measures to avoid / prevent / mitigate negative impacts.

2 . LEGAL AND ADMINISTRATIVE FRAMEWORK ANALYSIS

2.1. OVERVIEW OF RELEVANT WORLD BANK SAFEGUARDS POLICIES

World Bank Policy on environmental and social protection measures are the backbone of its support to sustainable poverty reduction. The aim of these protective measures is to prevent and mitigate undue damage to people and their environment in the process of developing the Project. These measures provide guidelines to the Bank and the loan beneficiary in the identification, preparation and implementation of programs and projects.

All projects funded by the World Bank are subject to the World Bank Operational Policies. Summary and excerpt of the World Bank applicable policies is given in the text below[1].

2.1.1. Operational Policy OP 4.01 Environmental Assessment (EA)

The Bank requires Environmental Assessment (EA) of projects proposed for Bank support to ensure that they do not have, or mitigate potential negative environmental impacts. The EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed project. The EA evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. The EA takes into account the natural environment (air, water and land); human health and safety; social aspects; and trans-boundary and global environmental aspects. The Borrower is responsible for carrying out the EA and the Bank advises the Borrower on the Bank‘s EA requirements.

The Bank classifies the proposed projects into three major categories, depending on the type, location, sensitivity, scale of the project and the nature and magnitude of its potential environmental impacts.

1. Category A: The proposed project is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works.
2. Category B: The proposed project‘s potential adverse environmental impacts on human population or environmentally important areas-including wetlands, forests, grasslands, or other natural habitats- are less adverse than those of Category A projects. These impacts are site specific; few if any of them are irreversible; and in most cases migratory measures can be designed more readily than Category A projects.

[1] *The full text can be found on the World Bank websites: http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,menuPK:4564185~pagePK:64719906~piPK:64710996~theSitePK:502184,00.html*

3. Category C: A proposed project is likely to have minimal or no adverse environmental impacts.

The overall Project is categorized as category A according to the WB OP 4.01 due to the construction of the new Neum-Stolac road, but all other sub-projects included in the Project are categorized as B category.

2.1.2. Operational Policy OP 4.04 Natural Habitats

The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats and their functions in its economic and sector work, project financing, and policy dialogue. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. The Bank promotes and supports natural habitat conservation and improved land use by financing projects designed to integrate into national and regional development the conservation of natural habitats and the maintenance of ecological functions. Furthermore, the Bank promotes the rehabilitation of degraded natural habitats. The Bank does not support projects that involve the significant conversion or degradation of critical natural habitats.

2.1.3. Operational policy OP 4.11 Physical Cultural Resources

Physical cultural resources are defined as movable or immovable facilities, locations, edifices, groups of edifices and natural characteristics and landscapes which have archaeological, palaeontological, historical, architectural, religious, aesthetic or some other cultural importance. Their cultural importance may be on local, regional, national or international level. Physical cultural resources are important as the sources of valuable scientific and historical information, as the tool for economic and social development as well as the integral part of the national culture and identity. The WB supports the countries to avoid or mitigate negative impacts onto physical cultural resources which might be brought by the projects, financed by the Bank.

The impacts onto physical cultural resources are the integral part of the EA. When it is probable that the project shall have negative impacts onto physical cultural resources, it is necessary to identify the appropriate measures for avoidance or mitigation of these impacts. These measures may have a wide range from complete protection of locations to selective mitigations, including also the rescuing and documentation, in cases when the part of the entire cultural resource might be lost.

2.1.4. Operational Policy OP 4.12 Involuntary Resettlement

This policy applies in situations involving involuntary taking of land and involuntary restrictions of access to legally designated parks and protected areas. The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts. It promotes participation of displaced people in resettlement planning and implementation, and its key economic objective is to assist displaced persons in their efforts to improve or at least restore their incomes and standards of living after displacement.

The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to Bank appraisal of proposed projects (i.e. a resettlement plan or a resettlement policy framework). This policy applies to all components of the project that result in involuntary resettlement, regardless of the source of financing. To achieve the objectives of this policy, particular attention is paid to the needs of vulnerable groups among those displaced, especially those below the poverty line, the landless, the elderly, women and children, indigenous people ethnic minorities, or other displaced persons who may not be protected through national land compensation legislation.

2.2. OVERVIEW OF ENVIRONMENTAL AND OTHER REQUIREMENTS IN THE FBH

2.2.1. National Legal and Institutional Frameworks of the Environmental Policy of Bosnia and Herzegovina

On the basis of the Constitution of Bosnia and Herzegovina (BH), which is an Appendix to the General Framework Agreement for Peace in Bosnia and Herzegovina, also known as the *Dayton Agreement, which* was approved in 1995, BH was defined as a sovereign country with decentralized politics and administrative structure, as well as with several levels of political administration: Authority, at the level of Bosnia and Herzegovina, The Federation of Bosnia and Herzegovina is further decentralized into 10 cantons, Republic Srpska and Brcko District.

According to the Constitution of the FBH[2], Chapter III, Article 2, para. c,) environmental protection is under jurisdiction of the FBH and cantons. The Federal Ministry of Environment and Tourism (FMoET) is in charge of environment management on the level of entities with all authorities and jurisdictions, whereas the Cantonal ministries are in charge of environment management in 10 cantons of the Federation responsible for the environment at Cantonal level.

Relevant institutions on the level of FBH in the field of environmental management are as follows:

Federal Ministry of Environment and Tourism of the FBH (FMoET) performs administrative, expert and other jobs from jurisdiction of the FBH referring to ecological protection of air, water and soil; Creation of strategy and policy of environmental protection; quality standards of air, water and soil, ecological monitoring and control of air, water and soil. The Ministry comprises five sectors: Environment Sector, Environmental Permit Sector, Tourism and Catering Sector, Project Implementation Sector and Sector of Legal, Financial and General Affairs. It has the role of National focal representative (NFP) of BH within the European Environment Agency (EEA).

Federal Ministry of Physical Planning performs activities regarding planning and development of the Federation, creation and implementation of the physical plan of the Federation and compliance of physical plans of cantons with the Federal plan, use of land on the federal level, long-term planning of the use of natural resources, geological research and

[2] *Constitution of the Federation of Bosnia and Herzegovina (Official Gazette of FBH, No. 1/94, 13/97, 16/02, 22/02, 52/02, 63/03, 9/04, 20/04, 33/04, 71/05, 72/05 and 88/08)*

protection of natural monuments and areas with large natural construction and cultural-historical importance.

Federal Ministry of Agriculture, Water Management and Forestry with relevant Agriculture, Water Management, Veterinary and Forestry sectors, including the Federal Forestry Administration**.**

Federal Ministry of Health with Sector for public health, monitoring and evaluation, has relevant jurisdictions of public health and sanitary inspections. The role of public health includes maintaining the population's health by means of organized far-reaching activities of the society aimed at prevention of development of risk factors which cause appearance of diseases, which also refers to conservation of the environment.

2.2.2. Legal Regulations

The Acts that regulate environmental protection are listed below with a short description of each particular Act.

The Environmental Protection Act (Official Gazette of the FBH, no. 33/03 and 38/09) is the roof act which defines provisions in the field of environment, as well as activities that affect the environment and may pose danger for the environment in the sense of its pollution. The Act introduced a new legal institute called Environmental Permit, which by means of provisions of this Act and its implementing regulations has preventive effect on excessive pollution, was established by limiting values of environmental pollution parameters, and contributes to its conservation and protection of human health. The Environmental Permit is obligatory for all new and existing plants and facilities that might impact the environment, as defined in the Regulation on Plants and Facilities for which the Environmental Impact Study is Obligatory and Plants and Facilities which may be Built and Put into Operation only if they have an Environmental Permit.

The Air Protection Act (Official Gazette of the FBH, no. 33/03 and 4/10) prescribes technical conditions and measures for prevention or releasing into the air the emissions caused by human activities that must be complied with in the process of production, in the territory of the FBH; planning air quality protection, special sources of emissions, cadaster of emissions, air quality, supervisions and penalties for breaches for legal and private entities.

The Nature Protection Act (Official Gazette of the FBH, no. 66/13) regulates competences of the bodies performing the activities of nature protection, general measures of nature conservation, assessment of acceptability of interventions in the nature, types of habitat and ecologically important areas, species and subspecies, wild birds protection, protection and conservation of biodiversity, forest eco-systems, karst eco-systems, water and wetlands habitats, protection of the sea and coastal natural values, establishing the European ecological network of special areas of conservation and protection – Natura 2000, measures of protection of species and subspecies, measures of protection of minerals and fossils, transboundary traffic of endangered species and subspecies, protected natural values, damages compensation, incentive measures, giving propositions for concessions of protected natural values and protected natural objects, planning and organization, inventory and monitoring, access to information and public participation, nature protection sign, promotion of education and training in nature protection, acknowledgments and awards for

achievements in nature protection, funding nature protection, inspections, penalty provisions, transitional and final provisions

The Waste Management Act (Official Gazette of the FBH, no. 33/03 and 72/09) aims to support and ensure the most important requirements for the prevention of waste creation, processing waste for reuse and recycling, separating formation materials and their use for the production of energy and safe waste disposal.

Waste Management Plan is to be attached to the application for obtaining an environmental permit. The contents of the Waste Management Plan are defined in the Waste Management Act (Article 19).

The Water Act (Official Gazette of the FBH, no. 70/06) prescribes the ways of water management in the territory of the FBH. Water management comprises water protection, water use, protection from adverse effects of water, developing watercourse and other waters. The Act also determines water resources and public water resources, water facilities, legal entities and other institutions competent for individual issues in water management and other problems regarding waters in the Federation, such as the procedure of obtaining a Water Permit.

The Act regulates that the Environmental Permit is issued based on a previously obtained water approval i.e. water guidelines which decide on exercising the applicants' rights of water, as well as the way of exercising those rights. It is ensured that the competent ministry integrates into the environmental permit the recommendations and measures of protection of water from prior water approval. The Application for issuing prior water approval, according to legal regulations, is filed by the body in charge of issuing the environmental permit. It is necessary to point out that the practice is different than prescribed. Namely, it is required form the investor that he initiates the procedure for obtaining the prior water approval.

In FBH, water-related documents are issued in accordance with the Regulation on contents, form, requirements, manner of issuing and keeping water-related documents (Official Gazette of the FBH, no. 06/08, 57/09 and 72/09).

For plants and facilities which prior to obtaining an environmental permit must undergo the procedure of Environmental Impact Assessment (EIA), the body in charge of issuing the water-related documents participates in the procedure of EIA, upon the request of the body which leads the procedure of EIA.

Agencies for water regions are in charge of issuing water-related documents (The Adriatic Sea Watershed Agency or the Sava River Watershed Agency.

The Noise Protection Act (Official Gazette of the FBH, no. 110/12) prescribes the permitted level of noise, measures of noise protection, manner of noise measuring and recording, limiting values of noise categorized by ambient, intended purpose of the area and time of day (day or night), for the purpose of protection of people, protection of work and living area and environment in general.

The Act on Physical Planning and Use of Land (Official Gazette of the FBH, no. 2/06, 72/07, 32/08, 4/10, 13/10 and 45/10)regulates following: planning the use of land on the level of the FBH by means of creation and approval of plan documents and their implementation, type and contents of plan documents, use of land on the level of the Federation, supervision of implementing plan documents which are important for the Federation, supervision of

implementing this Act, as well as penalties for legal and physical entities. The planning in the sense of this Act is considered planned management and use of land, as well as protection of the area of the Federation as a particularly valuable and limited resource. This Act also regulates the procedure for obtaining an Urban Planning Permit, Building Permit and Exploitation Permit.

The Roads Act (Official Gazette of the FBH, no. 12/10 and 16/10) regulates: categorization of public roads, road management and legal position of the management, planning, construction, reconstruction, maintenance, contracting and works assignment, protection of roads and conditions of traffic on the roads, concession of public roads, funding public roads, supervision of implementation of the Act, penalties and other issues which are important for the FBH in the field of roads.

The Road Traffic Safety Act (Official Gazette of the BH, no. 6/06, 75/06, 44/07, 84/09, 48/10 and 18/13) establishes following: basic principles of mutual relations and behavior of participants in traffic, basic requirements that roads must comply with in relation to traffic safety on the roads, maintenance of the Central Registry of drivers and vehicles, traffic rules on the roads, system of traffic signs and signs given by authorized persons, obligations in case of traffic accident, training in driving schools, requirements for acquiring the rights of driving motor vehicles, taking the drivers' test, requirements for devices and equipment in the vehicles, basic requirements which all vehicles in traffic must comply with, work of professional organizations in BH, and other issues of traffic safety on the roads which are unified for the whole territory of BH.

The Act on Safety at Work (Official Gazette of the FBH, no. 22/09) prescribes rights, obligations and responsibilities of employer and workers in relation to implementation and improvement of health and safety of employees at work, as well as the system of rules of safety and health at work, by implementing of which it is possible to prevent injuries at work, occupational diseases and other diseases in connection with work, as well as protection of work environment.

The Fire Protection Act (Official Gazette of the FBH, no. 64/09) regulates organization and functioning of fire protection and fire service, planning and implementation of fire protection measures, organization and functioning of fire service and fire extinguishing (fire-fighting interventions), training and education of employed persons and fire-fighters, funding and other issues important for organization and functioning of fire protection and fire service in the FBH.

The Agricultural Land Act (Official Gazette of the FBH, no. 42/10) regulates definitions, basic principles and management, protection, use, development, disposal, record-keeping, supervision of implementation of the Act, criminal provisions and other important issues relating to agricultural land in the territory of the FBH. The aim of this Act is conservation, use in accordance with intended purpose, and increase of production capability and improvement of managing agricultural land as a limited and non-renewable natural resource.

The Hunting Act (Official Gazette of the FBH, no. 4/06, 8/10 and 81/14) regulates organization of hunting and hunting grounds, breeding, protection, hunting and use of wild game and parts thereof, cadaster of hunting grounds, hunting management plan, gamekeeper service, administrative and inspection supervision of implementation of this Act, criminal provisions and other issues important for the field of hunting in the territory of the Federation

of Bosnia and Herzegovina. In the sense of this Act, hunting is a public activity and encompasses measures of protection and breeding wild game, development of hunting grounds, hunting wild game and rational use of wild game and hunting grounds that contribute to conservation of biodiversity of ecological systems and balance of natural habitats.

The Forests Act

Currently in FBH there is no Forest Act.

Conservation and protection of forests and forest management are regulated by Cantonal laws. General provisions in all Cantonal laws are that forests are considered natural resource and protected by public interest no matter if they are private forests or owned by cantons. In case of deforestation where the land is thereafter converted to a non-forest use, user must obtain a permit.

2.2.3. Multilateral Agreements in the Area of Environment

Bosnia and Herzegovina became a Contracting Party of a numerous international contracts, conventions and protocols and is obligated to use them. All of those who refer to environmental protection will apply to current assignment, and here are listed some of the most significant:

- Convention on Wetlands of International Importance especially as Waterfowl Habitat, Ramsar, 1971, 2001;
- Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris, 1972;
- European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), Geneva, 1957;
- Protocol amending Article (14) of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), New York, 1975;
- Protocol amending Article (14) of the European Agreement concerning the International Carriage of Dangerous Goods by Road ADR, Vienna, 1979;
- Convention concerning the Protection of Workers against Occupational Hazards in the Working Environment Due to Air Pollution, Noise and Vibration, Geneva, 1977;
- International Convention for the Prevention of Pollution of the Mediterranean Sea by Oil, London, 1954;
- International Plant Protection Convention, Rome, 1951;
- UN Convention on Biological Diversity, Rio de Janeiro, 1992;
- UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, Aarhus, 1998;
- Protocol on Pollutant Release and Transfer (PRTR), Kiev, 2003;
- Convention on Environmental Impact Assessment in a Transboundary Context, Espoo, 1991,
- Protocol on Strategic Environmental Assessment, Kiev, 2003;
- Convention on the Conservation of European Wildlife and Natural Habitats, Bern, 1979;
- Protocol on Water and Health, London, 1999;

- Framework Convention of the Council of Europe on the Value of Cultural Heritage for Society, Faro, 2005;
- European Landscape Convention, Florence, 2000; and
- European Outline Convention on Transfrontier Co-operation between Territorial Communities or Authorities, Madrid, 1980.

2.2.4. Environmental Impact Study and the Procedure for Obtaining Environmental Permit in the FBH

2.2.4.1. Federal EP

In FBH investments requiring EIA are identified by the *Rulebook on Plants and Facilities Subject to Obligatory Environmental Impact Assessment, and Facilities Which May be Constructed and Commissioned Only if Granted Environmental Permit* (Official Gazette of FBH No. 19/04). The Rulebook provides a list of activities and industrial facilities subject to mandatory EIA and permitting procedures at FBH level, as well as activities and facilities subject to an individual evaluation of the EIA requirement. If such an individual evaluation shows that EIA is not required, FMoET issues an EP on the basis of already submitted documents, unless the given activity or facility is completely exempted from the issuance of environmental permit. When assessing the request of EIA, FMoET takes into consideration individual characteristics of the project (the size the industrial plant / facilities, waste generation, pollution, etc.), project location and sensitivity of the environment and characteristics of potential impacts (extent of impact, probability, etc.).

The Federal Rulebook regulates threshold values on facilities under the jurisdiction of FMoET. On a case-by-case basis for certain plants and facilities FMoET determines whether an EIA is needed or not. If EIA is not required, FMoET issues an EP on the basis of the Application for issuing EP. For plants and facilities which do not require EIA, as well as for plants and facilities below the thresholds stipulated in the regulations of FBH, EP will be issued by the competent Cantonal Ministry. In terms of infrastructure projects, the mandatory environmental impact assessment under Article 4 is for:

- Construction of motorways,
- Construction of a new road or routes and / or extension of an existing road with two or less lanes in order to obtain four or more lanes, where such new road, or remarked and / or extended section of road would be 10 km long or longer of continuous length.

And the environmental impact assessment performed on the basis of the FMoET assessment, in terms of infrastructure facilities, is valid for the construction of new cantonal roads and regional roads with more than 2 km of continuous length.

In addition, in accordance with Article 60 of the Law on Nature Protection any project that may have an impact on protected natural areas will be subject to environmental assessment at the federal level, in relation to the protection objectives of the subject area.

According to the federal legal procedure an EIA and EP is obligatory for the Neum-Stolac road, while for other sub-projects are not subject to federal EIA. An EIA for Neum-Stolac road was carried out in 2009, for which an EP was issued in 2010.

2.2.4.2. Cantonal EP

Cantons also have their own environmental laws and by-laws, i.e., regulations for the implementation of activities and facilities that can operate only with the valid environmental permits. For activities or facilities with parameters below the thresholds defined by the FBH, unless deemed exempt, the environmental permit is issued by the competent Cantonal Ministry of Environment. However, the procedure of environmental impact assessment is not conducted, i.e., facilities and activities are subject to direct issuance of permits on the basis of evaluation of basic information submitted with the application for the permit. In all other respects, the cantonal environmental legislation is similar to the legislation of FBH.

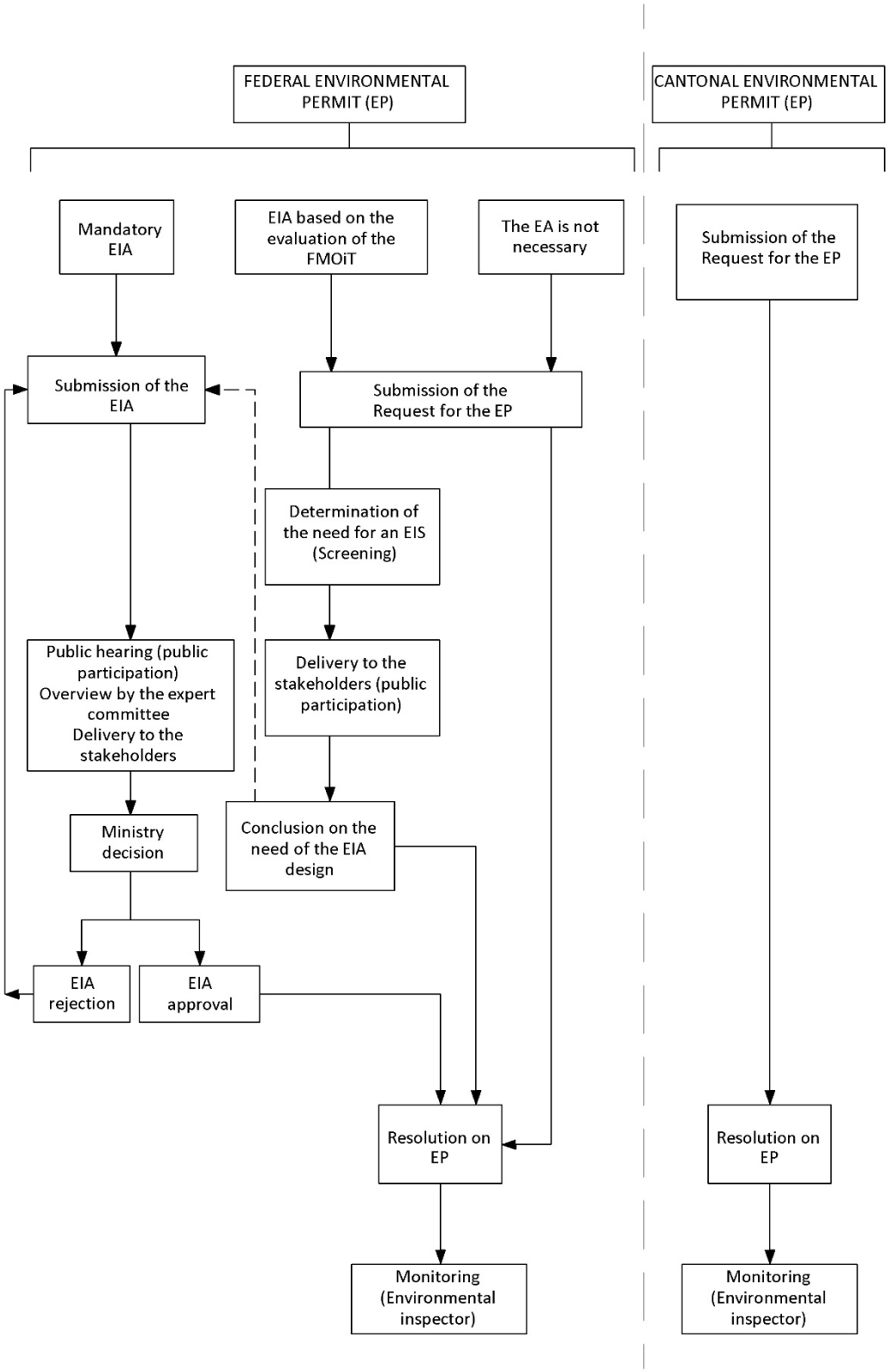
Taking into consideration that the potential project locations in the FBH envisage 9 out of 10 cantons in the Federation, the process of environmental permitting is additionally regulated by cantonal by-laws.

According to cantonal regulations, in a list of activities, plants and facilities that can be commissioned only if they have environmental permit from the aspect of infrastructural facilities are included as follows:

1. Construction of new:
   - cantonal roads from 1 to 2 km of continuous length;
   - local roads with more than 2 km of continuous length.
2. Expansion of an existing road with two or less lanes in order to obtain four or more lanes, where a new road, or remarked and / or extended section of road would be long less than 10 km of continuous length.
3. And additionally, only the HNC Regulation requires environmental permit, in addition to the previously mentioned projects and reconstruction of main and regional roads from 2 to10 km of continuous length.

According to the above stated and the nature of sub-projects not any of them requires cantonal EP.

Flow Chart 1. Procedure of Obtaining the Environmental Permit



2.2.4.3. Minimum EIA Study Content

The Federal Rulebook prescribed the minimum content of the Environmental Impact Assessment study, which is given in the text below:

1. Description of the proposed project,
    a. Description of the physical characteristics of the whole project and the land-use requirements during the construction and operation of plant and facility envisaged by the project,
    b. Description of the basic characteristics the manufacturing process, the nature and quantity of materials used,
    c. The assessment, by type and quantity, of expected waste and emissions (pollution of water, air and soil, noise, vibration, light, heat, radiation, etc.) resulting from the envisaged production process.
2. Description of the environment that could be affected by the project,
    a. Data on population,
    b. Data on flora, fauna, water, air, soil,
    c. Climate characteristics of the area,
    d. Existing material goods, including cultural, historical and archaeological heritage,
    e. Description of the landscape, and
    f. Specific elements identified by the previous environmental impact assessment.
3. Description of potentially significant impacts of the project on the environment,
    a. Impact on the population,
    b. Impact on flora, fauna, water, air, land,
    c. Impact on climate factors,
    d. Impact on material goods, including cultural, historical and archaeological heritage,
    e. Impact on the landscape,
    f. Interrelation of the above factors,
    g. Specific impacts of the project on the environment identified in the previous environmental impact assessment,
    h. Description of methods the proponent foresaw for environmental impact assessment.
4. Description of measures to mitigate negative effects (Description of measures to mitigate negative effects contains measures to prevent, reduce or mitigate any adverse environmental impact).
5. Draft of basic alternatives, (contains a description of alternatives and a description of reasons why they had been selected, taking into account the impacts on the environment).
6. Non-technical summary,
7. Indications of difficulties.

2.3. DIFFERENCES BETWEEN THE WB OPERATIONAL POLICIES AND FBH LEGISLATION

The environmental laws of the FBH provide an adequate framework to carry out environmental activities and it will generally be possible to comply with WB requirements. A brief summary report is presented in the following sections through:

a) Investment Preparation: Screening Procedures, Content of EIA Documentation, Public Consultation Procedures, Institutional EA Review, Approval and Environmental Permits.

b) Investment Implementation: Mitigation Plan, Monitoring Plan, Institutional Responsibilities for Environmental Management Plan (data collection, data analysis, report preparation and dissemination, environmental management decision making), Permits and Licensing.

The process of environmental impact assessment in the FBH is based on the environmental permit, which is in turn a requirement for other necessary permits (such as the urban consent). The steps required for obtaining an environmental permit are laid during both categorization and screening

It is anticipated that the requirements of the WB with regards to specific components of the EA process will be more stringent; however, they can be easily incorporated into the overall FBH EIA process. The borrower and other agencies implementing the project are responsible for satisfying these specific requirements of the WB.

Although requirements for environmental impact assessment are to a large extent similar to the requirements of WB, there is also certain amount of differences which are presented in the Table below.

Table 1. Comparison of the WB Requirements and FBH Legislation Regarding the EA

Subject	**FBH requirements**	**WB requirements**
Screening	Categorization and screening is based on lists of Installations and facilities requiring EP obtained through either an EIA or without it	Screening is based on type, location, sensitivity, and scale of the proposed project identifying key issues including any resettlement and cultural property concerns
Significant impacts	Cat. 1. Installations and facilities to be assessed for their impact on environment requiring full Environmental Impact Assessment. EIA Study must include the Preliminary Impact Assessment. The study also must incorporate the comments and suggestions of governmental and non-governmental sector as well as the results of public consultations.	Category A: Projects likely to have significant adverse environmental impacts that are sensitive (irreversible).
Moderate impacts	Cat. 2. FMoET/FMoPP screens the project and decides whether an EIA is required. The law defines facilities/installations which undergo screening and criteria for	Category B: Projects with environmental impacts less adverse than those of Cat A.

Subject	FBH requirements	WB requirements
	screening such as size, cumulative impact, use of natural resources, sensitivity, etc. Cat. 3. Installations and facilities not requiring a full EIA and EP is issued by the Ministry.	
Low or no impacts	Cat. 4. All facilities and installations below the threshold levels regulated in the applicable by-laws. The EP for this category is issued by the Cantonal Ministry responsible for environmental issues	Category C: Projects with minimum or no adverse impact.
EA documentation content	Projects which require an EIA (Cat.1.): Phase I: A request (written application) for PEIA needs to be submitted by the project holder to the competent ministry in order to determine the scope of the EIA study. Phase II: The Ministry defines the content and scope of the EIS based on the results of the PEIA. Projects for which the competent ministry decides whether an EIA is necessary (Cat. 2): Activities in this category also undergo a PEIA procedure, where the content of the request and document submitted is identical to that of projects which require an EIA. Projects which do not require EIA (Cat. 3): The request for EP is submitted to the competent cantonal ministry. Cat. 4 projects: Content of the request and other relevant documents is reviewed by the competent Cantonal Ministry.	Category A: Full Environmental Assessment is required, usually an ESIA. The Environmental and Social Management Plan (ESMP) is an integral part of the ESIA. Category B: Scope of EA is usually narrower than in Category A projects. Just an ESMP is usually required. Environmental and Social Impacts are either incorporated in project documents or are included in a separate report. An early review of the project decides on the scope of the ESMP and whether any additional environmental and social controls are necessary. Category C: No EA is required. No action is required after screening.
Consultations	Public consultations are the responsibility of the competent institutions. Cat. 1 projects: The first round of public consultations in the PEIA development stage, after preparation of the study. The competent ministry will decide whether the second round of consultations, to be held after submission of the EIA draft is required.	The borrower is required to consult project affected groups and local NGOs about the project's environmental and social impacts and take their views into account. For Category A projects: It is necessary to hold public consultations at least twice: (1)

Subject	FBH requirements	WB requirements
	Cat. 2 projects: Depending on the screening results, Category 2 projects are re-categorized either as Category 1 or Category 3 and will thus inherit the requirements of these categories. Cat. 3 projects: For category 3 projects public consultations are held once during the Environmental Permit issuing procedure. Cat. 4 projects: No public discussion.	shortly after screening and before the terms of reference are finalized; and (2) once a draft EA study is prepared. For Category B projects: It is necessary to hold public consultations at least once during the EA procedure.
Disclosure	Category 1 and 2 projects: For Projects for which the EIA is required, PEIA is disclosed 15 days prior to the public consultation. After completing the EIA the competent ministry sends the EIA copy to relevant institutions and other stakeholders with a deadline of 30 days to receive comments on the report. Category 3 projects: For projects not requiring preparation of EIA, Request for issuing an EP with supporting documentation must be made available to the public, whereby 30 days are allowed for commenting. Cat. 4 projects: No public disclosure.	For Category A projects: Information on the proposed objectives, project description and potential impacts are provided for the initial public consultations. After the draft Environmental Assessment report, it is necessary to disclose in local language. For Category B projects: Reports are to be made available to NGOs and project-affected people. The disclosure process is complete only after the EA report is officially received by the WB.
Environmental Assessment Review and Approval	Depending on the type of project, competent (federal or cantonal) ministry reviews and approves EIA and EA request or just EP request in case EIA is not required.	Before formal clearance of environmental and social aspects of the project, the WB reviews the results of the EA (especially consultations, ESMP and institutional capacities), ensuring that the EA is consistent with the ToR.
Permitting	For construction of new facilities and reconstruction of existing facilities it is necessary to obtain the following licenses/permits: -Environmental Permit -Urban/Location Permit -Construction Permit and	None

Subject	FBH requirements	WB requirements
	- Use Permit/ Inspection Acceptance Certificate	
Mitigation Plan	For projects requiring EIA, mitigation measures are described in the EIA study, which are also included in the EP. For other categories for which an EP is issued, measures for protection of air, water, soil, flora and fauna and Solid Waste Management Plan are included in the permit itself. These measures can be considered as mitigation measures.	Mitigation measures are included in the ESMP. Obligation to carry out the ESMP and additional measures contained in the ESMP need to be included in the loan conditions.
Monitoring Plan	The competent ministry may require the preparation of a monitoring plan during preparation of EIA. A Self-monitoring plan is included in the EP. Besides self-monitoring, the Law on Environmental Protection of FBH states that monitoring of installations and facilities will be carried out every 3 years in order to ensure that the requirements of the EP are met. Other environmental laws (e.g. Law on Air Protection, Law on Water Protection etc.) also specify monitoring to be carried out by competent institutions.	Monitoring plan is included in the ESMP.
Permits during implementation	EP's are reissued every 5 years or earlier if necessary.	None

In the following *Table 2* a comparison of the WB requirements and FBH requirements regarding the Environmental Assessment document content is presented.

Table 2. Comparison of WB and FBH Documentation Content Requirements related to EA

WB	FBH
Category B projects For many projects only ESMP containing: - Mitigation Plan, - Monitoring Plan, - Institutional strengthening measures -Implementation Plan - Indication of associated costs, + optional, if applicable: - Project description, - Baseline data, - Description of environmental and social impacts	**PEIA – Preliminary Environmental Impact Assessment** Request for PEIA with the following documentation is to be submitted to FMoET: - Project description including information about the location, intended use and size of facility - Description of measures to prevent or mitigate possible negative impacts on the environment - Information required for identification and assessment of basic environmental impacts - Description of alternatives - Excerpt from the spatial plan - Non-technical summary **EIA – Environmental Impact Assessment Study** Based on PEIA findings, if deemed necessary, FMoET determines the scope of EIA study and specific content. Minimum content: - Project description, - Description of environment that might be endangered by the project, - Description of potential significant environmental impacts, - Description of impact mitigation measures, - Description of alternatives, - Non-technical summary, - Description of difficulties during preparation of the study - if applicable, potential impacts on other entities or countries **Request for the Environmental Permit issuance** - Name and address of operator - Description of location with copy from the Spatial plan - Description of installation/facility - Description of primary and secondary raw materials, substances and energy that will be used by installation/facility - Sources of emissions - State of the project location - Types and levels of emissions, key environmental impacts - Proposed measures and technologies for prevention or reduction of emissions from the installation, waste minimization measures - Proposed measures during decommissioning of facility(installation - Proposed measures for monitoring of emissions and/or their impact - Description of alternatives - Copies of requests for other permits - Non-technical summary - Waste Management Plan

3 . HARMONIZED PROCESS OF ENVIRONMENTAL AND SOCIAL ASSESSMENT

3.1. CATEGORY OF PROPOSED SUB-PROJECTS

According to the WB categorization, the overall Project is categorized as Category A, due to the construction of the new Stolac-Neum road, while all other sub-projects are categorized as B category.

Upon having analyzed the existing data related to the sub-projects and FBH legislation all proposed sub-projects related to the reconstruction of the existing road infrastructure are not subject to environmental assessment in accordance with federal and cantonal environmental regulations. However, PC Roads FBH needs to prepare a Request for an opinion on the need for EIA for the sub-projects that are fully or partially within the protected natural area, or they may have an impact on protected areas, or if it otherwise becomes aware that a sub-project is the subject of the EIA.

In accordance with the requirements of the Water Act in FBH, it is necessary to obtain both water approval and water permit for all proposed reconstruction projects. These documents are issued in a two-stage process carried out in parallel with obtaining permits in the construction process (issuance of construction and use permit). Water acts regulate aspects of protection of facilities from waters, conditions for the protection of waters against pollution generated during construction of the facility and conditions of water use at the project site.

The environmental requirements of the Project are summarized in Table 3. Sub-projects in the FBH will have to meet the environmental assessment requirements of the World Bank as well as a two-phase process of obtaining water permit, which is regulated by federal legislation on water management, unless it has been established that the environmental assessment for a sub-project in the next phases is required.

Table 3. Environmental Requirements of the Project

Type of project	Category according to the WB	Instrument of the WB Environmental Assessment	Instruments according to FBH Legislative Regulations
Construction of the new Stolac-Neum road	A	ESIA + ESMP	Environmental permit Water approval Water permit
Construction of lane for slow vehicles	B	ESMP checklist or preparation of the complete ESMP depending on the scope of the project	Water approval Water permit
Reconstruction of road, roadway, correction of axis	B	ESMP checklist or preparation of the complete ESMP depending on the scope of the project	Water approval Water permit
Reconstruction of tunnels	B	ESMP checklist or preparation of the complete ESMP depending on the scope of the project	Water approval Water permit

Type of project	Category according to the WB	Instrument of the WB Environmental Assessment	Instruments according to FBH Legislative Regulations
Reconstruction of bridges	B	ESMP checklist or preparation of the complete ESMP depending on the scope of the project	Water approval Water permit
Rehabilitation of the bridge over the Bregava river on the road M17.0-5 (section Mostar-Čapljina-Border with Republic of Croatia)	B	Complete ESMP	Request for an opinion on the need for EIA -> EP Water approval Water permit
Reconstruction of black spots and dangerous places	B	ESMP checklist or preparation of the complete ESMP depending on the scope of the project	Water approval Water permit

3.2. ROLES AND RESPONSIBILITIES OF THE PARTIES INVOLVED

3.2.1. General Responsibilities of PC Roads FBH

- PC Roads FBH will be responsible for monitoring and supervision of the environment in order to ensure environmental protection measures. PC may hire consultants for assistance in the execution of these responsibilities.
- PC Roads FBH will comply with national legislation as well as the WB OP whereby this ESMF will serve as the basis for ensuring compliance. In case of different demands of federal legislative and WB procedures, the ones that have more detailed/higher requirements or both shall apply.
- PC Roads FBH will ensure the participation of local communities in the planning and implementation of sub-projects.
- PC Roads FBH will be responsible for obtaining environmental permits and other permits related to sub-projects.
- The requirements of the ESMP and ESMF as well as all other requirements arising from local legislation will be included in all contracts for execution of construction works through a set of special environmental provisions that will be included in the Technical specifications of the Tender documentation.
- ESMF and ESMP will be incorporated in the tender documentation along with requirements for execution of works, along with penalty provisions for failure to comply with the provisions of the ESMF and ESMP reports.

3.2.2. Process of Obtaining Permits

It is necessary to follow the following steps in the process of obtaining the necessary permits:

Step 1. For each sub-project located within the protected areas a Request for the need of an EIA to the competent ministry shall be submitted and an EP shall be obtained.

Step 2. Obtain water approval. Hire an expert institution registered for project design and licensed by the federal ministry responsible for water management in the preparation of investment and technical documentation. The documentation must be prepared in accordance with the requirements set out in the *Act on Physical Planning and Use of Land*. The documentation must be enclosed with the request for a water approval and submitted to the Agency for the Sava River Basin or the Adriatic, depending on which basin the project belongs to or to the Cantonal Ministry responsible for waters, according to the division of responsibilities.

Step 3. Obtain a construction approval. Apply for the construction approval to the competent municipal authority. The investment-technical documentation and water approval should be enclosed along with the request.

Step 4. Obtain a water permit. Prepare a final draft of the Project and submit it together with a request for the water permit.

Step 5. Obtain a use permit. Submit a request for use permit to the competent municipal authority. The final draft of the Project and the water permit should be enclosed along with the request.

3.2.3. Process of Environmental Instruments' Application

The complete process of environmental instruments' application with the responsibilities among the parties involved is shown in *Table 5*.

Table 4. Process of Environmental Instruments' Application

Item	Activity	Responsibility	Description
1.	Preparation of TD for the MP Design	PC Roads FBH	PC Roads FBH will prepare the Tender documentation for the Main Project design of individual sub-projects. TD will include provisions relating to the environmental and social protection during the preparation phase of the project documentation, including the obligation of the Consultant to prepare ESMP for this specific area for each sub-project. PC Roads FBH is also obliged to obtain federal or environmental permit, if it relates to a specific sub-project, and to conduct public consultations on this issue.

Item	Activity	Responsibility	Description
2.	Environmental Screening and Scoping	Design Consultant (Design Engineer)	Design Consultant is obliged to conduct a full environmental screening as the procedure on the basis of which the appropriate level of environmental impact assessment will be determined for a given sub-project based on its likely environmental impacts. This methodology for screening involves defining environmental categories, desk study, field research and analysis from the available literature. **Screening criteria:** The Consultant will indicate all the environmental and social risks and impacts specific to the sub-project area and prepare documentation for the environmental permit according to Chapter 3. **Screening of categories:** The construction of the new Neum-Stolac road is category A for which a full EA is carried out (ESIA+ESMP). All other sub-projects are categorized as Category B (unless proven otherwise), for which only preparation of the ESMP reports, according to the WB requirements is required.
3.	Preparation of ESMP	Design Consultant (Design Engineer)	Preparation of ESMP is mandatory for each sub-project. ESMP can be done as part of Main Project or as an independent report. The ESMP will provide incorporation of all relevant environmental and social factors in the overall project documentation. The ESMP also ensures that all mitigation measures of adverse environmental and social impacts as well as their monitoring will become a legal obligation of the PC Roads FBH. Three ESMP plans were prepared within this ESMF report. All other ESMP plans need to be prepared following the example of these three.
4.	ESMP Approval	PC Roads FBH / WB	Social and environmental expert of the PC Roads FBH and WB Safeguard Specialist will review and approve the ESMP reports.
5.	Preparation of Tender Documentation for Execution of Works	PC Roads FBH	PC Roads FBH will TD for execution of works. ESMF and ESMP shall be an integral part of Tender documentation for each sub-project. Within the tender documentation the penal provisions for failure to comply with the provisions of the ESMP and negative points will be defined in the tender documentation that will be reflected in future procurement activities in the company that will be reflected in future procurement activities in the PC Roads FBH
6.	ESMP Implementation	Contractor	The Contractor is responsible for the implementation of all activities related to environmental protection during

Item	Activity	Responsibility	Description
			execution of works and preparation of *Environmental Protection Study* during the construction in which it is necessary to include provisions from the ESMP and which must be submitted to and approved by the PC Roads FBH before the commencement of works.
7.	Supervision	Supervising Engineer / Design Supervising	PC Roads FBH is responsible for the supervision of the ESMP implementation, which will be done through consultancy services (Supervising Engineer). In addition, Design Supervision will review the works considered that may have significant adverse impacts and whether they are executed in accordance with the project and ESMP.
8.	Monitoring	Supervising Engineer / PC Roads FBH	PC Roads FBH and Supervising Body will monitor all activities related to the monitoring of environmental and social situation during project implementation. Each ESMP plan will have the monitoring plan as an integral part too, which will define each environmental parameter. Monitoring and reporting obligations are elaborated in Chapter 7 of this ESMF.

4 . GENERAL BASIC CONDITIONS OF THE FBH AREA

4.1. PHYSICAL CHARACTERISTICS

4.1.1. Geographic Location and Size

Bosnia and Herzegovina (BH) is located in the central part of the Balkan Peninsula. It borders the Republic of Croatia to the north, south and northwest, the Republic of Serbia to the east and Montenegro to the southeast.

Figure 2. Geographic Location of the FBH

Source: Physical Survey of the Physical plan of FBH

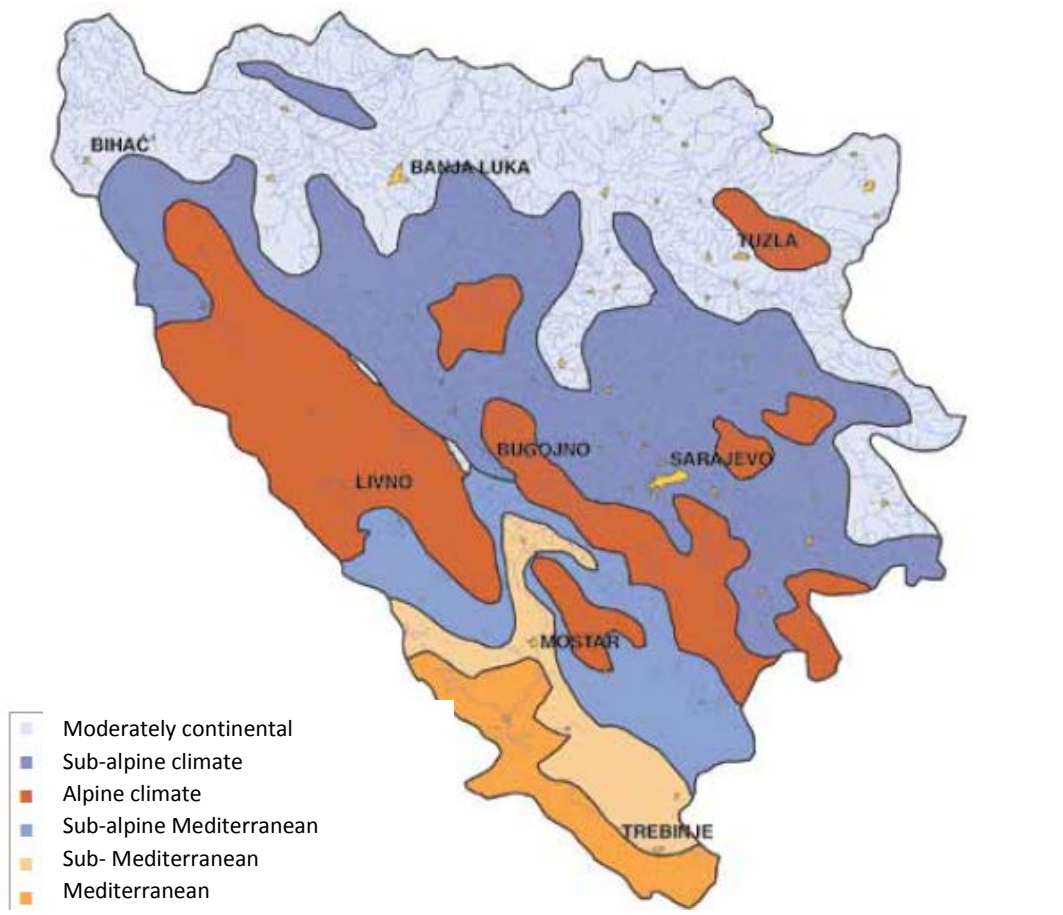
The surface area of the Federation of Bosnia and Herzegovina is 26.085.8733 km² or 50.94% of the total land area of Bosnia and Herzegovina that is 51.226.1225 km². The FBH is composed of ten organizational units - cantons in which local self-government units – municipalities are grouped (79).

4.1.2. Climate Characteristics

Due to the specific geographical position and relief, the climate of BH is rather complex, and there are three separate parts with more or less clear boundaries that can be distinguished as follows:

1. in the north – moderately continental or Central European climate,
2. in the central part - continental mountain or alpine climate,
3. in the southwest - the Mediterranean, or maritime climate.

Figure 3. Climate Characteristics of Bosnia and Herzegovina



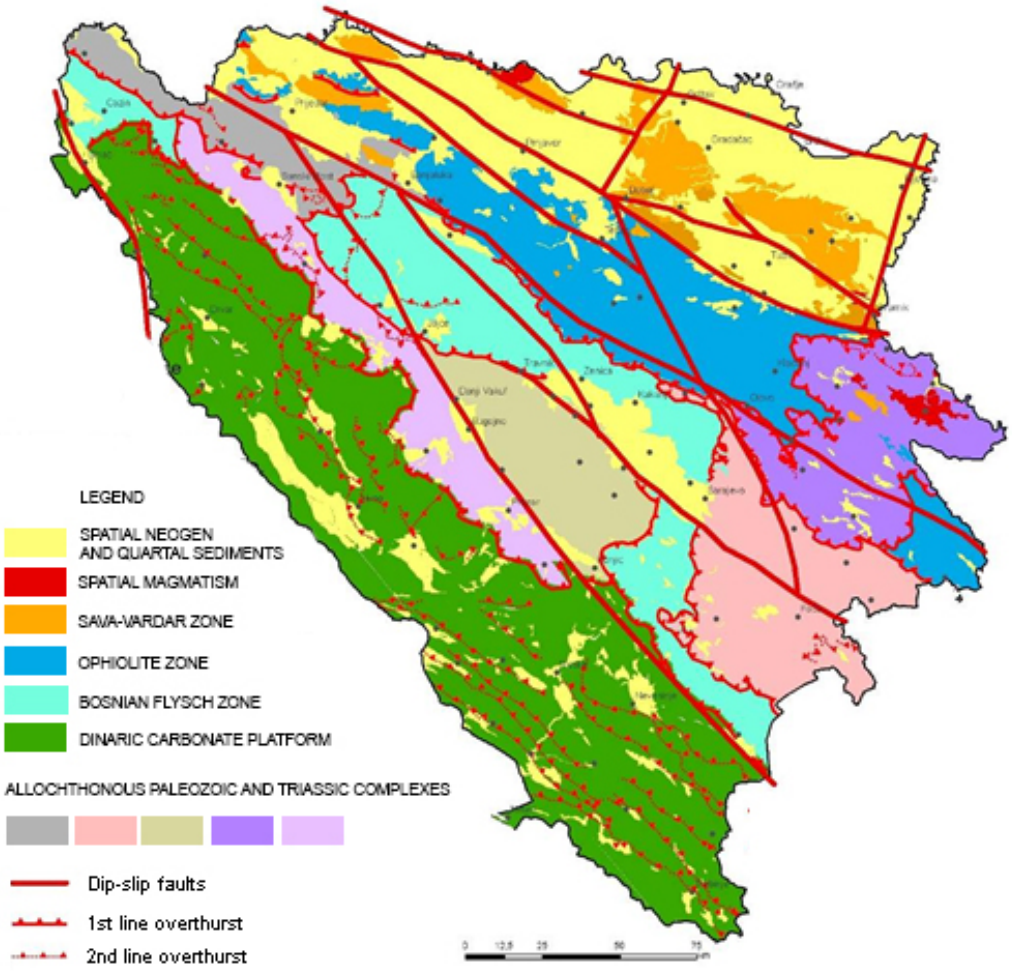
Source: Physical Survey of the Physical plan of FBH 2008-2028

4.1.3. Geology

The area of the FBH is included in the central parts of the Dinaric mountain range located between the Adriatic Microplate in the southwest and the Pannonian Basin in the northeast. It comprises several paleogeographic and tectonostratigraphic units differing in their composition, structure and genesis. In the profile from southwest to northeast the following geotectonic zones can be singled out:

1. **Dinaric Carbonate Platform** comprises the area northeast of the Adriatic Sea coast known as the High Karst or the Outer Dinarides;
2. **Bosnian Flysch Zone** also known as the Sarajevo-Banja Luka Flysch zone;
3. **Ophiolite Zone** covers the area from Tešanj to Olovo
4. **Sava-Vardar Zone** (active continental margin) as one of the most important internal units of the Dinarides and
5. Allochthonous **Palaeozoic and Triassic Complexes** are also included in the geological structure of the Dinarides of Bosnia and Herzegovina

Figure 4. Geotectonic Map of BH



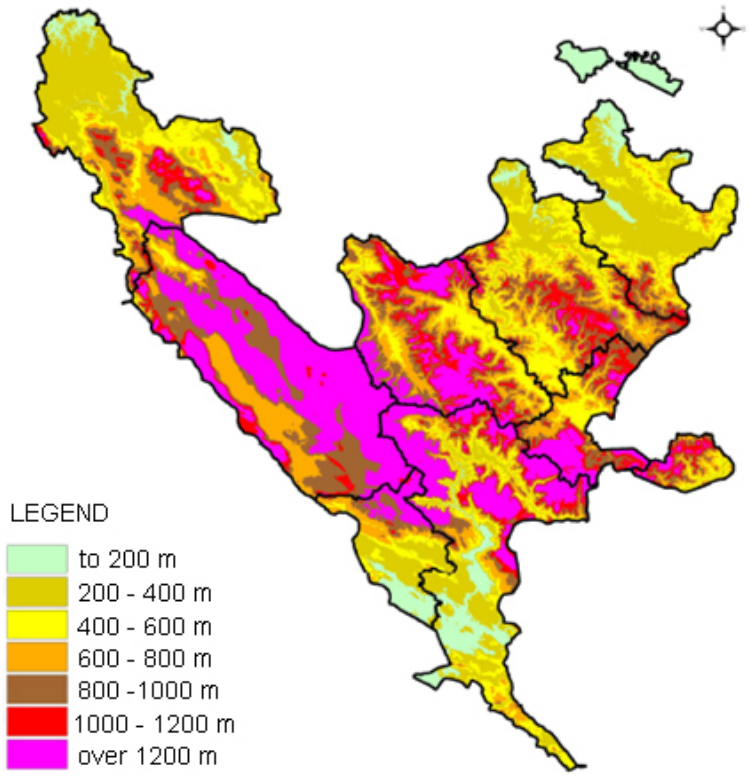
Source: Physical Survey of the Physical plan of FBH 2008-2028

4.1.4. Relief

The richness of landscape diversity in BH can be best explained by the geographical zones providing conditions for a variety of ecosystems and landscapes. Landscapes prevailing from south to north are as follows: the Mediterranean landscapes; the Supramediterranean landscapes; the Mediterranean Highland landscapes; the Mountain landscapes; the Highland landscapes; the Peripannonian landscapes; and the Pannonian landscapes.

In FBH area predominantly mountainous terrain is represented > 1,000 m above sea level and totaling 755,622 ha or 29%, and lowland and hilly reliefs are least represented up to 200 meters (159,878.3 ha or 6.1%).

Figure 5. Relief Specificities of the FBH



Source: Physical Survey of the Physical plan of FBH 2008-2028

4.1.5. Soil and Land

The largest land area in the FBH is categorized and used as the forest land (55.7%). The second agro-zone (52.11%) is dominant within the agricultural land, followed by the first agro-zone (25.04%), and the third agro-zone is least represented (22.85%).

Table 5. Land Purpose in the FBH

Purpose	km²	%
Agricultural land	9.994,89	38,3
Forest areas	14.526,30	55,7
Other	1.564,67	6,0
Σ FBH	26.085,87	100,0

Source: Physical Survey of the Physical plan of FBH 2008-2028

84,2% of the land in BH has a slope larger than 13%, 40% of land is shallower than 30 cm, and 17% of the land is very shallow, thus the land in FBH can be classified in a category of sensitive soils that need special care.

Analysis of the soil classes shows that the soil in the FBH is very heterogeneous. Automorphic soils occupy 86% of the total area while the remaining 14% are hydromorphic soils. The content of humus in agricultural soils is approximately 50% lower than in soils

covered with forest vegetation. Due to agricultural production and the methods used for this purpose, the content of humus in agricultural soils tends to further decline.

4.1.6. Water

BH is one of the countries that have a lot of water resources largely recharged from the sources, with a dense river network in the Sava River Basin and less developed network in the Adriatic Sea Basin, and significant underground karst flows. BH is a medium-rich country in water, however, the total amount of water is not evenly distributed neither in space nor time terms.

In BH, or the FBH there are two water areas as follows:

- Water area of the Sava River (catchment area of the Black Sea) -67%.
- Water area of the Adriatic Sea (river basins of the Bregava)
- River with Trebišnjica, Cetina, Krka - catchment area of the Adriatic Sea) - 33%.

Figure 6. Presentation of Water and Catchment Areas in BH

Source: Physical Survey of the Physical plan of FBH 2008-2028

In the FBH there are about 43 groundwater bodies of which (area> 10 km²) 32 are large. A significant part of the area of FBH is over the large bodies of groundwater and most of these areas are located in the karst zone with a very pronounced vertical (precipitation) and horizontal (underground canals) water circulation. These water bodies are usually interconnected, they cross the entity (e.g. the water body in the basin of the Trebišnjica River, etc.) and international borders (the water body in the basin of the Cetina River, ...) and as such they recharge sources located in these different areas.

Figure 7. Groundwater Bodies in the FBH

Source: Physical Survey of the Physical plan of FBH 2008-2028

4.1.7. Water Quality

Quality monitoring of surface waters in Bosnia and Herzegovina was established in the 1960s but it was discontinued and completely stopped in the 1990s.

Reestablishing of regular quality monitoring began in 2000, but not in all rivers in BH and not at the same pace.

Systematic monitoring of groundwater quality is not carried out in an appropriate and satisfactory manner, except in the case of the sources for public water supply, so the raw water is controlled in accordance with the regulations on the control of hygienic quality of drinking water in the framework of the annual monitoring scheduled according to the number

of population equivalent. However, groundwater quality is still assessed as good and water for water supply does not have to be purified except regular disinfection.

According to their nature and the degree of influence the largest sources of pollution are identified concentrated ones from the following sources: (i) the urban waste water, (ii) industrial waste water and (iii) leachate from waste landfills. In addition to these sources of pollution, there are sources of pollution that can be separated as important and are scattered due to its nature such as: (i) rural settlements, (ii) agriculture, (iii) forestry and (iv) traffic.

Information on the type, condition and endangerment of water resources in the FBH as well as water protection measures are described in more detail in the *Water Management Strategy of the Federation of Bosnia and Herzegovina*, in the *Report on the State of the Environment in BH 2012*, *Federal Environmental Strategy* and the *Federal Waste Management Plan* and regulated by the *Federal Water Act* (Official Gazette, No. 70 / 06).

4.1.8. Air Quality

Monitoring of air quality in the FBH is carried out only in certain cities (Sarajevo, Tuzla, Zenica, Mostar, Jajce, Kakanj, Ivan Sedlo) and according to different methods. However, there is a fact evident from data on air quality: poor quality of energy sources such as coal, fuel oil or diesel contributes to bad air quality.

Measurements of air quality in FBH are carried out by the Federal Hydrometeorological Institute and the competent authorities of cantons in the FBH and in some cases by local government units. Every year the Federal Hydrometeorological Institute publishes annual reports on the air quality, water and weather information from all mentioned meteorological stations throughout the FBH which are available on the websites of the Federal Hydrometeorological Institute.

The sources of air emissions are: Greenhouse gases; Agricultural activities; Traffic; Power Industry; Industry (high SO_2 emissions from thermal power plants and metallurgy); and unsanitary disposal of waste (40% of total waste collected is disposed in unsanitary landfills, and 40% of waste is not collected at all and is disposed in illegal landfills in the settlements, along roads and watercourses). The largest air pollutants are industry and transportation

4.2. BIOLOGICAL CHARACTERISTICS

4.2.1. Flora and Fauna

Flora

The largest part of the territory of BH belongs to the Eurosiberian-North American region of the continental parts, while smaller part belongs to the Mediterranean region. The Alps-High Nordic region is represented only in the most mountainous areas, to which the vegetation above the upper limit of the forest belongs to, but partially also the grass vegetation of mountain meadows and vegetation of rocks and gullies in the juniper tree zone and subalpine forests.

It is considered that BH is rich in species and habitats. The richness of flora and fauna in BH is the result of ecological heterogeneity of space, geomorphological and hydrological diversity, specific geological history and climate diversity. Flora and fauna in BH are characterized by a large number of endemic and relict forms of living organisms. In BH there are more than 5,000 species and subspecies of vascular plants, more than 100 species of fish and over 320 species of birds and other elements of biodiversity identified (The Fourth National Report of BH for the Convention on Biological Diversity, the United Nations, 2010).

Fauna

Based on the number of individual animal groups and their diversity, the FBH belongs to the areas of high biodiversity in Europe, which is also manifested through a high proportion of endemic and relict species.

Detailed information on the flora and fauna for the territory of the whole FBH as well as on specific subject areas was analyzed by the *Spatial Plan of the FBH*, *Spatial Plans* of some cantons and municipalities as well as by the *Environmental Status Report 2012 of the FMoET.*

4.2.2. Rare or Endangered Species

In February 2013, the *Red List of Endangered Flora in the FBH* and the *Red List of Endangered Fauna in the FBH* were prepared under the project *Forest and Mountain Protected Areas* of the Federal Ministry of Environment and Tourism meaning that the list from 1996 is still in force and is not harmonized with the IUCN categories.

4.2.3. Sensitive Habitats

Monitoring of biological diversity at the FBH level is at a quite low level and there is no data available for the majority of generally accepted indicators of biodiversity and there are no professional institutions at the state level whose task is to collect data on the available diversity.The site specific ESMPs will allow for more detailed information on diversity and sensitive habitats, but only after field surveys have been carried out. This will be mandated for all activities in areas deemed as “sensitive” regardless if the areas are under formal protection regimes or not. The detailed assessment, as part of the site-specific ESMP will be developed by experts in the relevant field and will provide adequate measures to be discussed and agreed with local community.

4.2.4. Cultural and Historical and Natural Heritage

Cultural and Historical Heritage

The Commission to Preserve National Monuments of BH was established in accordance with the Dayton Peace Agreement and the Constitution of BH. The normative frameworks within which decisions on declaring a property to be a national monument are made do not only include the local legislation but also international declarations and documents ratified by Bosnia and Herzegovina.

According to the list of the Commission to Preserve National Monuments of BH, 566 Decisions on Placing the National Monuments on the List of BH were recorded in the FBH to the present. On this day, according to the Report of the Commission, there are currently 444 monuments on the Provisional List of National Monuments in the whole of BH.

A detailed review of national monuments and those on the Provisional List are available on the website of the Commission to Preserve National Monuments (http://kons.gov.ba/).

Natural Heritage

The total area under protected areas in the territory of FBH is not in accordance with the natural potentials and identified natural values and generally it is very low. Most of the existing protected areas in the Federation BH are still regulated by the Law on the Protection of Natural and Cultural Heritage of the Socialist Republic of Bosnia and Herzegovina from 1985.

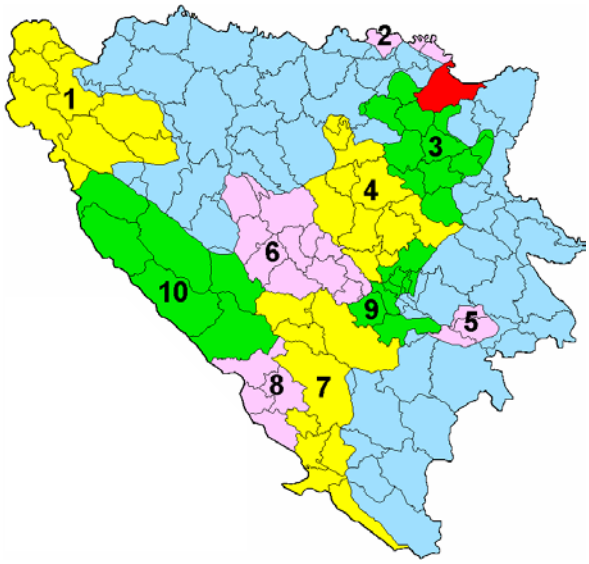
From 1954 to the present, on the territory of BH there are 16 strict nature reserves, 9 nature reserves for managing, 2 national parks, 5 special reserves, 10 reserves of natural areas and 110 monuments of nature that are protected. In accordance with the Law on Nature Protection and the Cantonal Laws on Nature Protection there are 1 national park (Una), 1 protected landscape (Bijambare) and 4 natural monuments (Skakavac, Vrelo Bosne, Prokoško Lake and Tajan) established. A proclamation of the part of the mountain Konjuh to be a protected landscape is pending.

4.3. SOCIO-ECONOMIC CHARACTERISTICS

4.3.1. Historical and Political Context

BH is a state regulated by the General Framework Agreement for Peace in BH signed in December 1995 and consists of two entities - the FBH on 51% of the territory and the Republic of Srpska (RS) on 49% of the territory. The Brčko District (BD) was established by the Arbitration Agreement on Brčko on 8 March 2000 as a territorial-administrative unit that is outside the entities. In both entities the lowest administrative units are municipalities. There are 142 municipalities in total in BH. The FBH is an entity consisting of ten cantons (*Figure 8*) and each canton has its own constitution, laws, parliament and government. Organizationally, cantons are divided into municipalities and there are in total 79 municipalities in the FBH.

Figure 8. Cantons in FBH



1. *Una-Sana*
2. *Posavina*
3. *Tuzla*
4. *Zenica-Doboj*
5. *Bosnian Podrinje*
6. *Central Bosnia*
7. *Herzegovina-Neretva*
8. *West Herzegovina*
9. *Sarajevo*
10. *Herzeg-Bosnia (Canton 10)*

4.3.2. Demographic Characteristics

All data presented are secondary and taken from the Federal Institute for Statistics, from the Annual Bulletin for 2014.

In 2014, there were 2,336,722 inhabitants in the FBH.

In recent years, FBH is constantly recording a negative population growth rate. In 2014 it was -403.

Table 6. Number of Births, Deaths and Natural Growth by Sex in the FBH in 2014

FBH		
Born	Men	10.185
	Women	9.695
Died	Men	10.328
	Women	9.955
Natural Growth		-403

Source: Federal Institute for Statistics, Annual Bulletin for 2014

Positive migrations contribute to economic growth and development by increasing trade of any country, increasing investment and establishing development links. Migration serves as a channel for financial development, skills and ideas transfer and establishment of businesses and cultural networks. However, in the FBH a negative migration is recorded. In 2014, the balance of migration was -3664.

According to BH statistics (FBH included), BH is constantly recording a negative population growth rate and negative migration. In fact, BH is among top three countries in in Europe in terms of emigration volume. Emigrants are often people with higher education. The reasons for migration are manifold. Young people are leaving to get education. They have a temporary absence from the country up to the moment of acquiring an academic degree. At this point

they have no desire to return to BH and they stay abroad. The reasons are better jobs, greater opportunities for employment, higher incomes and generally better socio-economic conditions.

Table 7 shows data on Immigration (I), Emigration (E) and Net migration (I-E) in BH, FBH, RS and Brčko District in period 2010-2014.

Some other sources suggest that figures in the *Table 7* are underestimated; Labor Force Survey 2007 to 2014 shows that between 50 and 70 thousands of individuals emigrated abroad each year.[3]

Table 7. Migrations in FBH for the period 2010-2014

Emigrated from (E)	Year 2010. g; Immigrated to (I)					Year 2012. g; Immigrated to (I)					Year 2014. g; Immigrated to (I)				
	BiH	FBiH	RS	BD	Abroad	BiH	FBiH	RS	BD	Vani	BiH	FBiH	RS	BD	Abroad
BH	39.888	22.870	12.044	690	4.284	42.990	25.082	14.615	608	2.685	38.174	22.501	10.709	641	4.323
FBH	26.718	18.929	4.538	357	2.957	29.978	20.632	7.332	310	1.704	26.165	19.414	3.574	328	2.849
RS	12.033	3.596	6.887	332	1.218	12.120	4.154	6.723	298	945	11.238	2.814	6.747	313	1.364
BD	1.074	345	619	1	109	892	296	560	0	36	771	273	388	0	110
Net migrations (I-E)	**-4.824**	**-3.911**	**11**	**-384**		**-2.685**	**-4.896**	**2.495**	**-284**		**-4.323**	**-3.664**	**-529**	**-130**	
Sources	Federal Office of Statistics, Statistical Bulletin No. 151, FBH, Sarajevo 2011					Federal Office of Statistics, Statistical Bulletin No. 179, FBH, Sarajevo 2013					Federal Office of Statistics, Statistical Bulletin No. 215, FBH, Sarajevo 2015				

Source: Federal Institute for Statistics

According to the data from Federal Institute for Statistics, Annual Bulletin for 2014 population density of FBH is 89.5 inhabitants per km², whilst the average population density in EU28 amounts to 116.4 inhabitants per km² according to Eurostat[4].

Medium-sized cities perform worst along most indicators, showing highest emigration, highest unemployment, lowest wages and lowest GDP per capita. Economic development is most pressing in these medium-sized municipalities. Rural areas in BH are a mix of small towns (of several thousand people) and villages (typically a few hundred to a few thousand people). Most rural municipalities in BH are getting smaller and less populated. Rural towns and settlements are characterized by aged populations and less economically active population than urban areas. Improvement of road infrastructure is essential for the purpose of

[3] *Statistical institutions in BH (the Agency for Statistics of BH - BHAS, the Federal Institute of Statistics - FIS, and the Republic Institute of Statistics of the Republic of Srpska - RISRS) carry out a research project - The Labour Force Survey. This document is a part of the long-term program entitled "Establishing Foundations for the Statistical System in BH", co-financed by the WB, the Department for International Development of the British Government - DFID, the Government of Japan, and the United Nations Development Programme - UNDP who provided substantial organizational and technical assistance.*

Methodological principles behind the Survey are based on the recommendations and definitions of the International Labour Organization - ILO and the requirements of the European Statistical Office - EUROSTAT, which set the standards for the international comparability of data in the area of labour statistics.

[4] *http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=tps00003*

connecting and maintaining the rural settlements. Most of the sub-projects are situated between or in these medium-sized cities and their implementation should have positive socio-impact on them, as well as on surrounding rural areas.

4.3.3. Economic Characteristics

In 2014, in the FBH, there were 443,587 (53%) employed and 391,427 (47%) unemployed persons. Out of that number 177,622 (40%) were employed women and 202,447 (52%) unemployed women, according to the Federal Institute for Statistics, Annual Bulletin for 2014.

Transportation and Infrastructure

All economic activities and possibilities for economic development are directly linked to the transportation infrastructure, hence it is expected that the Project implementation will have positive impacts on the country's economy. Though, the impact will be in a smaller scale in line with the size of the investments. The only large investment is the construction of the new Neum-Stolac road which is expected to have direct positive impacts on economic development of the area.

Transportation of goods and passengers in BH is increasing constantly due to increased mobility and economic growth[5]. The most important forms of transport in BH are road and rail transportation. Transportation of passengers mainly occurs by means of road traffic, while much of the transport of goods occurs by means of railway transport. Water and air transport are poorly developed.

BH is almost landlocked, except for 20 km of coastline on the Adriatic Sea. The country is dependent on ports located in Croatia, creating constraints in access to markets. Neum is the only coastal city in BH and is accessible through the existing road M 17.3 on the route from Stolac. This road is of a poor standard and traffic bound for the Neum area from across BH normally chooses to follow the main road, M 17 (E73), crossing into Croatia and then taking the coastal road eastwards out of Croatia to Neum. This requires two border crossings for a one-way trip and can entail extremely lengthy delays for passenger transport in the summer months and all year around for commercial transport. The poor accessibility to the coast significantly impedes the growth potential of the region, especially the development of tourism which could potentially be the leading contributor to local economy development and job creation.

There are approximately 1,800 km of major roads, 2500 km of regional roads and 16,100 of local roads in FBH. About 47% of the total BH road network is asphalt paved, where 98% of the major roads are paved. According to the World Economic Forum's Global Competiveness Report, BH is ranked as 104 out of 148 countries in 2013 - 2014. Transport infrastructure was significantly impacted by May 2014 floods, with the majority of damages and losses observed in the north of the country. Improvements in road quality are essential, particularly for bridges and tunnels, due to historically insufficient routine and periodic maintenance funds, a continued poor enforcement of axle-load limits contributing to the premature decline of pavements, and a significant increase in traffic volumes.

[5] *World Bank Report No. 54406-BA Bosnia and Herzegovina: the road to Europe transport Sector Review – Main Report, May 2010*

Road construction has been one of the main drivers of investment spending and employment, generating around 5,000 jobs and spending EUR 241,2 million in 2013 and an estimated EUR 290 million in 2014 in FBH alone. Much of the road-building is financed through donor grants and loans.

Road safety

Road safety is a major social and public health issue in BH. In relative terms BH is performing well compared to Southeast Europe averages, but fatalities are substantially higher than in the EU. Traffic accidents decreased from 40,859 in 2008 to 37,928 in 2011 (due to the enforcement of the new Road safety Law), however, the fatality rate (i.e. number of persons killed per capita) is still about 1.3 times higher than the average in EU28.

According to the Action safety plan for FBH for 2011-2020, every year in FBH on average 250 people are killed and around 6500 are injured in traffic accidents. The victims require medical treatment and many are temporarily or permanently unfit for work. It is estimated that the FBH loses more than 400 million EUR to medical expenses, lost productivity, administrative expenses and property damages due to traffic accidents. These losses amount to 5,8 % of the FBH yearly GDP.

Data on traffic accidents for sub-projects in the period 2009-2013 are presented in *Appendix 3*. In this period, there was total of 2669 traffic accidents leading to 33 deaths and 717 injuries.

The selection of photos below show the existing condition along some of the sub-project road sections.

Figure 9. Photos of existing condition of some sub-project's objects

M5 Gornje Bravsko -Ključ

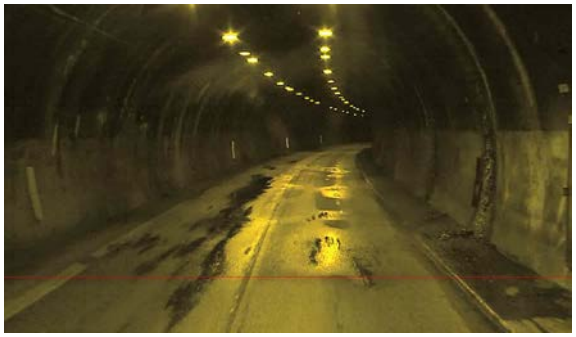
M5 Donji Vakuf 1 – Turbe

M6.1 ZHK Posušje - Široki Brijeg

M5 Ripač – Vrtoče 2

M15 Livno – Šuica

M18 Priboj 2 – Simin Han 1



M17 Tunnel Crnaja km 15+082

M17 Bridge over Bregava river, Tasovčići

Source: PC Roads FBH

5 . IMPACTS AND MITIGATION MEASURES

5.1. GENERAL IMPACTS

The environmental and social impacts identified in this phase are preliminary in their nature and require further elaboration at the level of sub-project and its specific area. The probability of their occurrence must be assessed during the sub-project design phase and at the stage of environmental assessment (preparation of PEIA and / or EIA and / or only ESMP) in accordance with the below proposed methodology.

5.1.1. Methodology for Determining Impacts

Once the environmental and social aspects have been identified, the level of each individual impact, or undertaking certain activities in the area that can have positive or negative environmental and social impacts is assessed. When analyzing the impacts, it is necessary to consider three key elements:

1. Magnitude of impact: assessment of the resultant impact (positive or negative) with the environment and; the categorization for magnitude of impact is presented in Table below.

Table 8. Categorization of Impact Magnitude

Magnitude of Impact	**Descriptor**
Significant	Most severe - alternative will be proposed
Major	Severe - alternative or avoidance will be proposed.
Moderate	Less severe- measures will be proposed to minimize the magnitude of impact
Minor	Less severe - impact mitigation measures will be proposed.
Negligible	Less severe - mitigation and enhancement measures will be prepared if possible.
None	No impact, enhancement measures will be proposed if possible.
Positive	Positive impact.

5. **Likelihood of impact occurrence,** as presented in Table below.

Table 9. Categorization of Impact Likelihood

Magnitude of Impact	**Definition**
Certain	The impact will occur under normal conditions.
Very likely	The impact is very likely to occur under normal conditions.
Likely	The impact is likely to occur at some time under normal conditions.
Unlikely	The impact is unlikely to but may occur at some time under normal conditions.

Very unlikely	This impact is very unlikely to occur under normal conditions but may occur in some exceptional circumstances.

3. Nature of impact, as presented in Table below.

Table 10. Nature of Impacts

Nature of Impact	Definition
Direct impacts	They are most often felt in the emergence of various disorders of the existing condition, flow of current activities and habits (for example - increased noise, crowds, increased environmental pollution, increased load of existing resources, etc.).
Indirect impacts	They are most often manifested in a longer period of time, being accumulated and associated in assemblies of impacts that gradually lead to change of the situation (for better or worse).
Short-term impacts	Short-term impacts are more immediate, clearer, obvious and direct, they can be influenced due to the perceived consequences by protective measures, and take certain measures on time.
Long-term impacts	Long-term impacts are similar indirect impacts, they can be less influenced, since in the very beginning of occurrence they are still insufficiently recognizable by their intensity and all dimensions, and thus their potential impact is far more difficult to assess with certainty.
General impacts	General impacts are almost equally felt in the whole area of impact, they are not specified in individual sub-locations (e.g. general increase in circulation of people and goods that can be felt in the whole route area, general distortion or, however, improvement of the situation by road construction, etc.),
Selective impacts	Selective impacts affect more some and less the other segments of the area, population, activities, etc. They are easier to detect, predict and assume, therefore, the possibility of intervention is usually greater and most often successful.

5.1.2. Strategy of Proposed Mitigation Measures

Measures to mitigate the negative impacts can be mainly classified through the following strategies:

1. **Avoidance of impacts**: change of the project site, project revision in a way to avoid the negative impact.
2. **Mitigation of impacts**: where impacts cannot be avoided, mitigation measures to reduce the impact to an acceptable level will be implemented.
3. **Compensation**: where impacts cannot be avoided or cannot be sufficiently mitigated, compensation will be agreed
4. **Improvement:** Measures, which with minimum costs in the overall project costs, generate significant social and environmental benefits.

5.2. POTENTIAL NEGATIVE IMPACTS

All components of the Project that are subject to this ESMF are rehabilitation works, improvement of the existing conditions of roads, their technical characteristics either due to the requirements for the level of serviceability of main roads or due to deterioration of already functioning facilities.

Since there is no new occupation of the environment, or it occurs very rarely on a small-scale and abutting upon the already constructed facilities (i.e. there is no abrupt interruption of natural and socio-economic processes) negative impacts will occur mostly only during the construction phase. Most of these impacts are short-term and will disappear upon completion of works, meaning no significant negative environmental and social impacts are expected. Moreover, no significant negative impacts are expected during the operational phase, since all objects are already in function, and as they are subject to rehabilitation works.

Potential short-term impacts as a consequence of activities on execution of road rehabilitation and road facilities consist, among other things of: disruption of the ongoing traffic; road safety; damages to access roads; increase in noise, waste and dust; air emissions; impacts on soil and water; short-term disturbances of the biotopes; and current impacts on settlements in the surrounding. Influences outside the construction site include: quarries, borrow pits and asphalt plants, which can have negative impacts on the environment if not managed properly. The Contractor's construction plant can also have temporary negative impacts on the environment.

During construction phase, there will be a disruption of traffic flows, of which the population should be informed before the commencement of works as well as develop a Traffic Management Plan.

During the operation phase, it is assumed that the road maintenance activities will not be much different from those currently ongoing at the existing road sections and that there will not be a major difference in traffic volume or speeds that would cause additional risks and impacts. This is mostly since the overall aim is road rehabilitation, in order to improve road safety and improve road conditions at select sites.

During Project implementation, negative social impacts are expected in terms of land expropriation.

Table 12 provides an overview of potential negative environmental and social impacts during project phases: preparation, construction phase and use.

Table 11: Combination of Potential Environmental and Social Impacts per Project phase

Impact on:	Phase I: During project preparation	Phase II: Construction phase						Phase III: During facility use
		Earth works including quarrying	Asphalt laying	Machine operation	Concrete and crushing plants	Hygienic conditions and waste	Improper disposal of liquid and solid waste	
Air	-	Dust generation	Dust generation	Suspended particles, NOx, SOx	Dust pollution	Odor / smoke	-	Suspended particles, NOx, SOx
Noise	-	Noise pollution and vibration		Noise pollution and vibration	Noise pollution	-	-	Noise pollution
Water	-	Possible contamination of waters due leakage of fuels and lubricants	Possible water contamination from asphalt batch plants	Possible water contamination	Possible water contamination in equipment maintenance areas	Possible water contamination	Possible water contamination	Possible water contamination as a consequence of accidents and emissions' accumulation
Soil	-	-	-	Possible soil contamination	-	-	Possible soil contamination	Possible water contamination as a consequence of accidents and emissions' accumulation
Vegetation and Local Flora	-	Lowered Productivity, loss of soil for vegetation	-	Vegetation removal	Reduced productivity	-	Possible negative impact on habitat	Vegetation pollution, reduced productivity
Local Community	Land expropriation and involuntary resettlement	Disturbance Landscape alteration/Visual contamination Possible damage of objects due to blasting works	-	Disturbance	Disturbance	Accident situations	Possible negative impact on population health	-

Workers' Health and Safety	-	Impact due to inhalation of dust Dangers of H&S due to blasting works Noise issues Rockfall and erosion dangers	Asphalt odor and dust	Collisions with vehicles, pedestrians and livestock. Accidental injury/death of workers.	Impact due to inhalation of dust	Increase in sources of contagious diseases	Increase in sources of contagious diseases	-

5.2.1. Evaluation of Negative Impacts

Table 13 gives an overview of key environmental and social impacts during the construction phase with rating of impact significance and nature of impact.

Table 12. Summary of Key Impacts during the Construction Phase and Their Evaluation

Area of impact	**Significance**	**Comment**
Land Use and Settlements	Moderate	Prior to commencement of works it is necessary to expropriate land for certain sub-projects. A RFP has been prepared to ensure PAPs are informed, consulted and compensated fairly for the land acquired. Following the resettlement principles described in the RPF, several RAPs are prepared for site-specific sub-projects. Total impact of land acquisition and involuntary resettlement is considered to be low after mitigation measures taken in the preconstruction phase (minimization of land acquisition).
Issues Related to Culture and Religion	Low	The works, if not properly managed, could cause disturbance to cultural and religious sites. This impact can be eliminated or reduced through application of measures proposed in the ESMP.
Surface and Groundwater	Low	Due to small amount of water that can potentially be drained in open watercourses or underground, the resultant impact on water pollution is low or negligible. In any case, this impact can be eliminated or reduced through the application of the measures proposed in the ESMP.
Air Quality	Low	Short-term impact. Air quality at the local level may deteriorate moderately and over a short term due to rising of dust caused by circulation of construction machines and the level of NOx and SOx through exhaust gases of construction machines. This impact can be reduced through the application of the measures proposed in the ESMP.
Flora and Fauna (Protected Areas and Species)	Low	Minimum losses or damages of vegetation and loss or damage of fauna can occur during execution of works. Impacts can be neutralized or reduced through application of measures proposed in the ESMP. During the execution of works on bridges there may be adverse impacts on fish habitat and water quality. There will be no negative impacts on protected areas due to the nature and location of works.
Noise and Vibrations	Low	It is expected only a limited, short-lived impact during execution of works. One of the mitigation measures is the setting up of noise barrier where the organization for the execution of works cannot achieve the desired effect. This impact can be reduced through application of measures proposed in the ESMP.

Area of impact	Significance	Comment
Soil Quality	Low	Soil contamination can occur through: drainage of excavated material, spillage of hazardous and toxic chemicals. This impact can be reduced through application of measures proposed in the ESMP.
Waste	Low	Risks related to health and environmental impacts may occur due to improper waste management. This impact can be eliminated or reduced through application of measures proposed in the ESMP.
Cumulative Impacts	Moderate	Short-term rehabilitation works can cause a moderate increase in noise and air pollutant concentrations, particularly in urban areas, but only during the execution of works, so cumulative impacts are not expected.

5.3. MITIGATION MEASURES FOR NEGATIVE IMPACTS

5.3.1. Impacts and Mitigation Measures during the Pre-construction Phase

Impact on the local population / Living conditions

Impact – Negative social impacts due to land acquisition and physical and economical displacement are likely to occur, although on a small scale.

Mitigation measures – Involuntary resettlement shall be avoided during Project preparation wherever possible. Adequate compensation for all losses to the PAP's shall be provided, according to the provisions from the RPF and RAPs.

Prior to the commencement of civil works, a communication channel with the local population shall be established. The public shall be timely informed about the scope, commencement and duration of works.

Impact on the road users / Disruption of traffic flows

Impact – During the execution of works there will be a temporary disruption of traffic flows.

Mitigation measures - The road users shall be informed about the disruption of traffic flows before the commencement of works. Traffic Management Plan shall be prepared and implemented to ensure ongoing traffic circulation and minimizes negative impacts of civil works on the regular traffic flow.

Impact on the local population / Noise

Impact – Increased level of noise

Mitigation measures – During the construction and operational phase for the sub-projects situated in urban areas close to the sensitive noise receptors (hospitals, schools etc.) a noise modelling should be done in the Main design. If the Main design is already made for the site specific sub-project and the noise modelling was not included in the Main design, then the Main design should be revised. If the noise levels exceed the permitted values appropriate

technical measures for noise protection should be implemented. See chapter *6.3.3. Noise* for the local regulation and permitted values on noise levels.

5.3.2. Impacts and Mitigation Measures during Construction Phase

Erosion

Impact – Earthworks can cause negative impacts in the form of erosion of embankments, dust, noise and vibrations and thus disturb the local population. Erosion can occur in the quarries during because of removal of the top soil cover.

Mitigation measures – Excavation and filling works will be executed within the road belt and in a way that they do not cause problems with erosion. The Contractor is required to implement the technical protection measures such as re-vegetation and using tarps. The Contractor will stabilize excavations and embankments and cover them either by greenery or suitable material.

Potential air pollution – dust

Impact – Potential air pollutants are maintenance of machines, movement of machines, execution of earthworks and similar. Dust emission is certain occurrence in the quarries during the whole technological process. Rehabilitation works include breaking up, digging, crushing, transport and disposal of the material. Locally, air quality can be disturbed due to the traffic of machines and increase in exhaust NOx and SOx gases from construction machines.

Mitigation measures – Water spraying is the main way to control dust. Water spraying of road surfaces, including roads in quarries and borrow pits, should be carried out regularly during the execution of works, especially in the vicinity of settlements and during dry seasons. During the blasting works in the quarries vacuums to collect dust shall be used; the blasting works shall be performed during silent winds; transported material shall be covered to prevent dust emission. Queries shall be licensed with a valid environmental permit.

Potential water pollution

Impact – Water pollution can occur during the execution of works because of draining the water, spilling from the area for maintaining mechanization and sanitary facilities at the construction site. Negative impacts may occur as well due to accidental or careless deposition of toxic substances from the asphalt or toxic paints into watercourses. During the operational phase, potential water pollution is limited to accident situations, where the procedures for action are laid down by the Water Act.

Mitigation measures – If there is a spillage of fuel and lubricants, in order to mitigate this impact, the Contractor should use absorbing materials to collect dispersed fuel and lubricants such as fabrics or sand and scrape off the contaminated soil and dispose it in the place designated for that purpose.

Other mitigation measures are as follows:

- Ensure that the asphalt is not deposited on purpose or accidentally into watercourses,
- Ensure that the sandblasting of the bridge construction is carried out with protective covers and the dripping of paint is caught in tarps.

Potential contamination of soil and water

Impact – Potential contamination of soil and water caused by improper disposal of solid and liquid waste. Equipment maintenance and refueling can contaminate soil and water, including groundwater, if fuels, lubricants and solvents are handled improperly.

Mitigation measures – A mitigation measure to avoid the contamination of soil and water is to ensure that the waste materials are properly disposed. The Contractor is responsible for ensuring that all waste is disposed of by licensed providers of waste management services at appropriate waste management facilities. The Contractor shall develop a Waste Management Plan prior to commencement of works. Waste generation, where practicable, will be minimized through the adoption of efficient designs, reduction of materials required, construction method selections and reuse and recycling where practicable. Partially, inert material (e.g. concrete during rehabilitation of bridges) can be used as fill material in the base road layers. In order to avoid damage to the environment it is necessary to ensure that the equipment is handled in the correct manner and fueling done only at places specifically designated for it (either petrol stations or on impervious areas with neutralizing agents at hand).

Impact on fish habitat and water quality

Impact – The negative impact on fish habitat and water quality can occur during the execution of the following activities: works in the immediate vicinity of watercourses or in them, dumping toxic concrete or concrete leaching into watercourses, disposal of fine particles in watercourses as a result of the use of earth dams to isolate bridge foundations from watercourses.

Mitigation measures – in order to avoid negative impacts the following mitigation measures can be used:

- Limit the execution of works outside the spawning fish season,
- Ensure that concrete works are isolated from watercourses,
- Ensure that concrete mixers and other equipment are not washed out in the vicinity of watercourses,
- Execute concrete foundations in the dry season so as to avoid the need for earth dams; or use the steel dikes to minimize the risk of entering sediments into the watercourse.

Health and safety

Impact – Negative impacts during execution of works can happen to workers due to a hazardous business environment, that is, exposure to dust, noise, blasting works, rockfall, erosion and unsafe movement of machines. Moreover, the safety of road users during execution of works may be endangered. Work camps ie influx of foreign workers is very unlikely to occur due to small scale investments and small scope of works per sub-project. Duration of works will be relatively short with relatively small number of workers in relation to the population of the local community. It is very likely that the local companies will be hired to execute the works. Hence the health and safety risks to the local community are small.

Mitigation measures – The Contractor is obliged to provide the workers with a safe and healthy work environment. The Contractor is obliged to implement safety measures, and to provide and instruct the workers how to use properly the protective equipment. All operators

of construction machines must be qualified and certified for that working place. Administering first aid in case of accidents and fast transport to the nearest hospital must be also available. All construction machines must be in good order, abide by the directional movements within the construction site as well as the regulations on public roads. Safety of road users will be provided through temporary traffic regulations and the application of the Traffic Management Plan during execution of works. All queries must be licensed with a valid environmental permit. Contractor is responsible for safety of the workers and their behavior.

Noise

Impact – Works at the construction site may cause noise, which is of a temporary nature. However, although of a temporary nature and moderate importance, noise can cause long-term adverse consequences in the vicinity of settlements if not mitigated.

Mitigation measures – Some of the proposed bridges for rehabilitation and reconstruction of the black spots are located in populated areas and in the vicinity of which sensitive facilities (schools, hospitals, etc.) can be found. In the case of disturbance by noise, when noise levels exceed the permissible limits, temporary noise barriers should be implemented as a mitigation measure. The ESMPs shall assess in more detail the site-specific noise impacts on the local population and the Contractor shall follow the instructions from the ESMP plans.

5.3.1. Impacts and Mitigation Measures during Operational phase

Based on the fact that the works will be carried out on the existing road network, and that the overall aim is to improve functionality and increase road safety, it is presumed that there will be no additional environmental impacts associated with the operational phase of the project, or those that are a direct impact of the activities proposed under the Program. All sections of the roads where interventions are envisaged are already existing, are subject to regular road maintenance and since the interventions are done at limited sections of the road network, there will be no major increases in traffic flow and speeds. For certain, sensitive receptors, increased noise may be an issue.

Noise

Impact – Vehicles will generate noise during operation. Noise levels can be slightly increased too as increase in the speed of vehicles is expected. In open areas the noise will disperse and will not have any impact. In urban areas the significance of this impact can be considered as minimal. In case that sensitive noise receptors (schools, hospitals etc) are situated in the vicinity of the sub-project more attention should be paid to the noise levels including noise monitoring and modelling. The ESMP's should propose regular monitoring of noise levels in these areas. If the measured noise level exceed the permitted values (see chapter 6.3.3. Noise) technical measures shall be undertaken (for example implementation of noise barriers).

5.4. EXPECTED POSITIVE IMPACTS

Implementation of the Project will contribute to better environmental and socio-economic conditions, and will have a positive impact on the quality of life of the local community. There are a number of environmental and social opportunities recognized in the Project:

- Reconstruction / rehabilitation of roads, bridges and tunnels will improve connectivity between municipalities at national and regional level stimulating socio-economic development ,
- More efficient and safer transport network will be achieved by reducing travel time, reducing the number of traffic accidents, reducing maintenance and management costs and reducing costs of transportation,
- Improvement of the transport system, accessibility and communication – improvement of the road in terms of covering and sloping of surfaces (protection and stabilization); improvement of the tunnel in terms of lighting, establishment of the drainage system; improvement of bridges in terms of structural stability,
- Reduction of erosion (improvement of road drainage and reconstruction of bridges),
- Developed road infrastructure with improved access to and within settlements in the Project area,
- Regional economic incentives through improved connectivity and road quality,
- Quality of life enhancement through better access to services, such as health, education, work, etc.),
- Benefits for drivers and users of public transport through improved traffic connection and traffic capacity,
- Benefits for the industrial sector and development of industrial activities due to improved connections with the international network of expressways and reduction of costs and reliability due to reduction of congestions and traffic jams;
- Direct employment and service opportunities: according to the Law on Public Procurement of BH the tender will be international in character and for this reason it is difficult to predict from the Contractor will be; still, the practice in the construction of BH shows that to a large degree it is expected local contractors will be hired,
- It is expected that the construction works will cause the so-called double effect in the service industry - employment of cooks, waiters, waitresses, etc. in the service activities in the vicinity of the project (lodging, restaurants, and supply industry).

6. MONITORING

Within this Project three (3) Environmental and Social Management Plans (ESMP) were made, within which the monitoring plans were prepared. For all other components of the Project i.e. for all sub-projects during Project implementation a site specific ESMPs shall be done, in accordance with this ESMF and modelled on three prepared ESMPs, respecting the all-important impacts, mitigating measures and specificity of the Project areas. The site reports on monitoring shall be produced by supervising engineer (appointed by PC Roads FBH), and he shall deliver the signed reports to the PC Roads FBH that is responsible for control and reporting on compliance. Before the beginning of the works PC Roads FBH shall deliver ESMP to WB for approval. The contractor shall ensure baseline data before the commencement of works.

Monitoring during the implementation of the Project provides information on the environmental and social impacts of the Project and the efficiency of the mitigating measures. ESMP identifies the goals of increase and determines the type of monitoring that connects to the identification of mitigating impacts and measures. The monitoring covers the specific description of technical details of measurements of monitoring (parameters that are measured, methods, location, frequency, etc.)

In the table below the format of the monitoring plan is shown.

Table 13. Format of Monitoring Plan

Stage	**Which** *parameter shall be monitored?*	**Where** *is a parameter that shall be monitored?*	**How** *shall parameter be monitored – frequency of measurements or permanent measurements?*	**When** *shall parameter be monitored?*	**Why** *shall parameter be monitored (optional)?*	**Cost estimation (US$)**		**Responsibility**	
						Implementation	Operational	Implementation	Operational
Initial state									
Construction									
Use									

Upon the completion of the Project, PC Roads FBH shall be responsible for management and maintenance of Project roads and facilities on the roads. The monitoring shall be continued in accordance with regulated monitoring plan in ESMP.

PC Roads FBH is also responsible for supervision under execution of the works through consulting services and implementation of the Project and supervision of the environmental and social monitoring

The Contractor shall make *Elaborate on Environment Protection During the Construction* and *Study on Safety* (includes *Elaborate on Safety at Work and Elaborate on Protection From Fire and Explosions*), and all that within the *Construction Site Organization Plan* (CSOP), in

accordance with federal acts[6], before starting the execution of works, apropos already at the stage of submission of an offer that must have provisions from ESMP plan included. The Contractor these studies must submit to the PC Roads FBH over supervisory engineer, before beginning of works, and the company has to accept and approve them.

FMoET, apropos environmental inspector, has and authority to directly stop the works if the works are not executed in accordance with environmental requirements and standards.

6.1.1. Monitoring during Construction phase

Supervisory body appointed by PC Roads FBH according to federal legislation shall supervise all monitoring activities within the Main project and ESMP. The Contractor is obliged to provide the measurements of sampling required potential pollutants and engage certified laboratory to perform these activities. Supervisory body shall control fulfilling of monitoring requirements.

The Contractor shall create an Environmental Monitoring Programs (EMP) in accordance with requirements of the particular ESMP, which will include a minimum of monitoring requirements. PC Roads FBH will be responsible for reviewing the EMP prepared by the Contractor and for ensuring that monitoring program are in accordance with ESMP.

The list for monitoring in the field will be prepared on the basis of ESMP. The list for monitoring in the field will be used by Supervision Engineers of PC Roads FBH. These signed lists will be forwarded to PC Roads FBH, who will be responsible for monitoring and reporting about the compliance.

6.1.2. Monitoring during Operational phase

For all facilities for which it is necessary to make the EIA, it is necessary to perform monitoring of environmental and social indicators also after the works are finished and that shall be organized by PC Roads FBH, in order to identify environmental and social changes which are result of Project implementation.

[6] *Provision on arrangements of construction site, mandatory documentation at the construction site and participants in construction, Official Gazette of FBH 48/09, 75/09 and 63/12*

6.2. MONITORING OF IMPACTS ON LOCAL POPULATION AND ROAD USERS

The aim of the monitoring indicators, in particular monitoring of impacts on local population and road users, is to measure the socio-economic success of the Project. Based on their measurements, it shall be known if negative impacts were avoided, and positive ones were increased. However, it is not easy to directly attribute major socio-economic changes to road rehabilitation and construction, therefore only a small number of indicators will be used to measure the Project's socio-economic impacts and quality of implementation procedures.

Since increased road safety /reduced number of traffic accidents on selected Project sections is one of the Project development objectives, it is used as an monitoring indicator for measuring the success of the Project. It is desirable that this indicator shall be closest as possible to 0 (in particular number of traffic incidents and outcomes of incidents: deaths, minor and major injuries).

Second indicator to be monitored is the Project Affected People's (PAP's) satisfaction with the grievance mechanism i.e percentage (%) of solved grievances in a given period and grievances solved with the satisfaction of the addressee shall imply the success of the Project.

Third indicator to be monitored is the travel time. Since the technical elements of roads and road objects shall be improved due to rehabilitation works it is expected that time travel in general shall be decreased and accessibility to targeted destinations (jobs, services, social infrastructure) shall be improved. This is especially expected on construction of the new road Neum-Stolac, at the projects of construction of additional third lanes and projects of correction of road axis. There is no current baseline data for this indicator, what means that this data need to be collected at the beginning of the Project implementation for selected sub-projects/sections. These data need to be collected with a questionnaire and by interviewing sufficient number of citizens, once before the implementation of Project and once after it.

Table 14. Social Monitoring Indicators

No.	Indicator	Explanation/ Suggested measures/ Actions	Baseline data for monitoring the indictor	Sources	Outcome of the indicator	Monitoring /Tools / Duration	Responsibility
1	Increased road safety /reduced number of traffic accidents on selected Project sections	▪ Roads and facilities on the roads shall have much better technical characteristics, and therefore the road safety shall increase. ▪ It is desirable that this indicator shall be closest as possible to 0. ▪ The Contractor shall be responsible for implementation of the Plan on traffic safety management during the construction works. ▪ Maintenance is obligation of PC Roads FBH	▪ Baseline data for monitoring safety indicators on the roads are provided in *Appendix 3* to this ESMF.	▪ Annual bulletin of MIA on traffic accidents on the roads of BH	▪ Number and tendency of traffic accidents ▪ Number of deaths ▪ Number of seriously injured ▪ Number with minor injuries ▪ Number of traffic accidents that involved the construction workers	▪ Monthly in the stage of construction ▪ Quarterly in the stage of use	▪ PC Roads FBH ▪ Contractor
2	PAP's satisfaction with the grievance mechanism i.e percentage (%) of solved grievances in a given period and grievances solved with the satisfaction of the addressee	▪ Large % of grievances solved within the given time frame shall imply a successful implementation of the Project. ▪ The Information brochure written in simple language that shall inform the public on way of the grievance submission.	▪ Zero.	▪ BFC's Log ▪ CFD's Log ▪ Central Grievance Log administered by CFD.	▪ Number of grievances related to expropriation ▪ Number of grievances related to construction works ▪ Total number of grievances	▪ Grievance 's indicators will be measured every month during the construction phase ▪ Monitoring shall continue three years after the completion of the works and grievance's indicators will be measured every 6 months	▪ PC Roads FBH, CFD, BFC, Municipalities Stolac and Neum

No.	Indicator	Explanation/ Suggested measures/ Actions	Baseline data for monitoring the indictor	Sources	Outcome of the indicator	Monitoring /Tools / Duration	Responsibility
					▪ % of solved grievances in a given period ▪	▪ Monitoring tool: Analysis of logs's inputs	
3	▪ Decreased travel time	▪ Roads and facilities at the project sections will have much better technical characteristics, and therefore the time travel shall decrease.	▪ Baseline data shall be collected at the beginning of the Project for the selected sections.	▪ PC Roads FBH / Questionnaire	▪ Decreased travel time (minutes)	▪ Travel time indicator once in the beginning of the Project to collect baseline data and once after completion of the construction works ▪ Monitoring tool: Questionnaire	▪ PC Roads FBH
4	▪ Improved accessibility (social infrastructure, services, jobs etc.)	▪ Roads and facilities at the project sections will have much better technical characteristics, and therefore the accessibility will improve.	▪ Baseline data shall be collected at the beginning of the Project for targeted destinations (schools, hospitals, administrative centers etc).	▪ PC Roads FBH / Questionnaire	▪ Decreased travel time (minutes)	▪ Travel time indicator once in the beginning of the Project to collect baseline data and once after completion of the construction works ▪ Monitoring tool: Questionnaire	▪ PC Roads FBH

6.3. MONITORING OF CONSTRUCTION POLLUTION ACCORDING TO THE ACTS OF FBH

6.3.1. Introduction

By acts of FBH monitoring environmental state is entrusted to the biggest extend to environmental assessment i.e. for those facilities for which the EP was issued the obligation for monitoring environmental state during and after construction are defined through EP (federal or cantonal).

For those facilities for which the EP is issued the act predicted:

- Restricting noise during the execution of work,
- Control of construction waste,
- Monitoring of waters and Water Permits.

For all other facilities and environmental components the monitoring of environment state is not to be made.

In the text below the obligations of monitoring are given in accordance with legislation by each component.

6.3.2. Air

Act on air protection of FBH (Official Gazette, no. 33/03 and 4/10) prescribes measures for prevention or reduction of emissions into air caused by human activities which have to respect in the process of production at the territory of FBH.

The Operator of the source of the pollution must once a year deliver the report with data on emissions from the provided source and general data on potential impact on health which can have substances that emitting to authorized ministry. In case if regular report shows that threshold is not in accordance with regulated conditions in the EP the authorized body shall again consider the EP. About any exceedances of threshold emission into air the operator is obliged to inform authorized ministry immediately which shall then order the suspension of work of the emission sources according to the article 15 of Act on air protection.

Table 15. Limit Values of Air Quality According To Rulebook [7]

Polluting substance	Period Of causing	Average annual value (ng/m^3)	High value (ng/m^3)
SO_2	1 hour	90	500 (remark 1)
SO_2	24 hours	90	240 (remark 2)
NO_2	1 hour	60	300 (remark 3)
NO_2	24 hours	60	140 (remark 2)
PM 10	24 hours	50	100 (remark 2)

[7] *Rulebook on limit values of air quality (Official Gazette of FBH, No. 12/05)*

smoke	24 hours	30	60 (remark 2)

Remark 1: it should not be transgressed more than 24 times in one calendar year
Remark 2: it should not be transgressed more than 7 times in one calendar year (98-and percentile)
Remark 3: it should not be transgressed more than 18 times in one calendar year

The Rulebook on monitoring of air quality (Official Gazette of FBH, No. 12/05) defines the manner of conduct of the air monitoring. The institution which is authorized for monitoring of air quality is Federal Meteorological Institute.

The Rulebook on monitoring of emissions of polluted air substances (Official Gazette of FBH, No. 12/05) obliges that the operator performs the checkup or monitoring of emission on polluted machinery in the air and defines the methods of manner of measurements, causes and expression of the results with the aim to prove that the machinery satisfies limit values of emissions prescribed by Rulebook on limit values of emission, apropos Environmental Permits.

For the new machinery, check up on emissions is conducted during the test work and the condition for obtaining the operating permit, and after acquiring undisturbed operating of the machinery, but latest six months from the day it was released into operation.

6.3.3. Noise

Act on Noise Protection of FBH (Official Gazette of FBH, No. 110/12) prescribes permitted noise level, protection measures and manner on recording the noise in order to protect the health of people and environment.

For plant and facilities for which the regulated mandatory environment impact assessment as well as for the plants and facilities which can be built and released into operation only if they have EP, the protection measures of noise need to be covered by the environmental impact assessment, activity plans and in EP in accordance with the Act.

Legal and physical entities that open the construction site are obliged, in the plan on arranging construction site, to foresee and apply measures for prevention of noise spreading from the construction site out of permitted level.

The noise generated on roads and similar infrastructure must be harmonized with permitted level of noise determined by the Act. The limit values of emissions of noise generated by use of devices, machines, transportation means and other technical devices, are determined with special regulations. The measurement of noise level is conducted by person that is authorized for performing this activity.

For measurement it is necessary to choose characteristic facility and to perform the measurement at the side of the facility that is at most exposed to the noise in day time and night time period. In case if measurements show the values above permitted i.e. per day 50 dB(A) and per night 60 dB(A) it is necessary to undertake additional measures of noise protection in order to reduce the noise in acceptable and permissible limits.

Table 16. Limited Levels of External Noise

Zone	PURPOSE OF AREAS	Highest permissible levels (dBA)		
		Equiv. levels of Leq	Peak level	
		day	night	L1
I	Hospital - health resort	45	40	60
II	Tourist, recreational, rehabilitation	50	40	65
III	Purely residential, educational and health institutions, public green and recreational areas	55	45	70
IV	Trade, business, residential and residential along the traffic corridors, storage without heavy	60	50	75
V	Business, administrative, commercial craft, service (communal service)	65	60	80
VI	Industrial, storage, service and transportation area without residential	70	70	85

6.3.4. Waters

Manner of water management in FBH is defined by *Act on waters* (Official Gazette of FBH, No. 70/06). The aim of the Act is to reduce water pollution, sustainable use of water, ensuring equitable access to waters and the protection of ecosystem. Article 107 of the Act prescribes the issuance of water documents for the activities that are mentioned in the Article 109 of the Act. Pursuant to the *Act on waters* the EP for plant and facilities for which it is necessary to obtain the EP pursuant to the *Act on environmental protection* is issued based on the previous water approval for the facilities for which the Act regulated the obligation to obtain previous water approvals. The previous water approval, water approval and Water Permit must be issued regardless the impacts for the facilities from the Article 109 of the Act on waters.

The wastewaters can drainages into the environment only if the limit values of the hazardous substances are in accordance with the *Rulebook on limit values of dangerous and hazardous substances for technological wastewaters* (Official Gazette of FBH, No. 50/07). The Agency for waters is the Federal public institution that acts in accordance with regulations and among the other things conducts monitoring on water quality in the area they operate (Article 156 of the Act on waters). The Agency can the performance professional-technical affairs from its scope, entrust to the authorized persons that must please the criteria and conditions regulated by Federal ministry.

Monitoring of wastewaters

Testing of wastewater according to the Rulebook is performed in the following manner:

1. Minimal number of annual sampling depends on wastewater discharge (amount) and it is:

Table 17. Minimal No. of Annual Sampling of Wastewaters

Flow of wastewater (m^3/day)	Number of testing during the year
0 - 50	4
50 - 100	6
- 500	8
>500	12

2. Sampling is, if possible automatic proportional to the flow, and the samples are composite 8, 16 or 24 – hours (which depends on time of technological process), if it is not possible it is necessary to take immediate 15-minutes samples and make composite samples, with recording the flow.
3. In all samples the following is mandatory tested: temperature, pH, alkalinity, electrical conductivity, evaporation residue, loss by annealing, total suspended substances, COD-Cr, BOD5, NH4-N, NO3-N, total N, total P, toxicity test, and all the specific parameters for a given subject, which industrial waste water is tested.

The Directive on conditions of discharge of wastewaters into the natural recipients and systems of public sewage that determines the conditions and the manner of collecting and discharging the surface waters and limit values of emission of wastewaters determine the manner of monitoring and testing of wastewaters, and the manner and frequency of taking the samples through the environmental standard quality and limit values of emission for discharge of wastewater and other guidelines that are provided by this Directive.

Inspection supervision on implementation of the *Act on waters* and regulations brought based on the Act implements *Federal Ministry of Agriculture, water management and forestry* through federal water inspection. The inspection supervision covers the supervision over implementation of the provisions of this Act at the legal and physical entities that are obliged during the performance of their activities act in accordance with the *Act on* waters and Rulebooks that are brought based on this Act and determine necessary measures of prevention and removal of possible illegalities. Federal water inspection is obliged to participate and cooperate with cantonal and municipal water inspections.

6.3.5. Waste

Construction waste generates in the process of construction and in the process of demolition of the constructed facilities. The waste that is generated during the construction and reconstruction is planned. The management with construction waste is regulated by Act on environment protection of FBH and Act on Waste Management (Official Gazette of FBH, No. 33/03), and the Rulebook on categories of the waste with the lists (Official Gazette of FBH, No. 9/05) defines what the construction waste is.

During the production of the Main Project the consultant is obliged to make also the Construction Waste Management Plan that contains the data on:

- Manner of separation of hazardous construction waste before removing the facility, if the removal of the facility is foreseen,

- Manner of separate collection of construction waste before removing the facility, if the removal of the facility is planned,
- Manner of treatment of construction waste at the construction site,
- Estimated volume of soil excavation, generated due to execution of construction works at the construction site and its management, and
- Estimated volume of use of soil excavation at the construction site which did not occur due to construction works at the construction site.

The Investor apropos Contractor that is authorized by the Investor, deliver the construction waste to the construction waste collector or directly to the facilities for treatment of construction waste.

7 . REPORTING PROCESS

7.1. THE CONTRACTOR TO PC ROADS FBH

The Contractor shall prepare the Report on compliance with ESMP as a monthly report on progress and deliver it to the PC Roads FBH in both languages in local C/S/B and in English language, in analogue and digital form.

If there shall be any accidental situations or jeopardizing the environment and society the reporting process must be immediate. The Contractor is obliged to inform the PC Roads FBH and local community immediately after any accidental situations that happened over the phone +387 33 250 370 or via email form at the PC Roads FBH website: http://www.jpcfbih.ba/ba/kontakti/kontakti.shtml.

The Reports of the Contractor to PC Roads need to contain the list and description of the performed activities, as well as the recommendations and planned future activities and protection measures.

7.2. SUPERVISION ENGINEER TO PC ROADS FBH

The Supervision engineer shall prepare the Report on compliance with ESMP as a monthly report on progress and deliver it to the PC Roads FBH in both languages in local C/S/B and in English language, in analogue and digital form.

7.3. PC ROADS FBH TO FMoET AND WB

PC Roads FBH shall submit the monthly reports from the Supervision engineer to the World Bank, and along with it, PC Roads FBH shall prepare an annual report on environment, health and safety (AEHS)[8], including monitoring indicators and reports on implementation of requirements given in ESPM, and deliver it to the WB for review.

PC Roads FBH shall prepare and deliver the annual reports to FMoET that shall contain:

- State of implementation of mitigation measures,
- Needs for eventual additional mitigation measures,
- Description of the cases of unrespecting environmental requirements,
- Received grievances from the local population and other participants and the way the grievances were solved.

In case of major accidents or death cases at the construction site the PC Roads shall immediately inform the WB.

[8] *Annual Environmental Health and Safety*

8 . PUBLIC CONSULTATIONS, DISCLOSURE OF INFORMATION, GRIEVANCE PROCESSES

8.1. PUBLIC CONSULTATIONS

During the implementation of ESMF, the public has the right to participate in the Project. Since the Project locations are dispersed all around Federation one central Public hearing for the ESMF was held in Sarajevo after the WB and PC Roads FBH approved the draft of the ESMF document. After the finalization of the documentation, it shall be disclosed again.

The documents were published and available to the public in a local language on the website of PC Roads FBH on February 29th 2016, and public had 7 days to submit their comments in order to identify issues of concern and possible solutions. Public consultations were announced on the website PC Roads FBH on February 26nd 2016 and on on February 29th 2016 in local newspapers (Večernji list and Dnevni avaz).The public consultations were held on March 7nd 2016 in Sarajevo, and the Minutes of the Public Discussion on ESMF is an Appendex 10 of this document.

For category B sub-projects in accordance with OP WB it is required to have one public discussion in the area of the project. During the preparation of the site-specific ESMP's for sub-projects a public consultation shall be held for each of the three ESMP's prepared within this ESMF in the area of sub-projects after the WB and PC Roads FBH review and approve the draft of the documents.

The record on public discussion, that is, grievances presented at the public discussion shall be recorded in the Grievance Register, and opinions and suggestions of the public are integrated into the final ESMF.

8.2. DISCLOSURE OF DOCUMENTS

The ESMF draft report was available at the web site of PC Roads FBH (www.jpcfbih.ba) in B/H/S language and on the web sites of the WB in English language. During the process of public consultations, the interested public got all information about the Project, including the social and environmental impacts.

After the finalization of the documentation, the document shall be disclosed again.

8.3. GRIEVANCE MECHANISMS

Besides the institutionally available ordinary and extraordinary legal remedy, and existing institutional channels, PC Roads FBH will ensure and form a special Grievance Redress Mechanisms in accordance with the WB OP 4.12 in collaboration and direct involvement of those municipalities under whose administrative authority the Project is carried out. These mechanisms will inform affected communities about Project related activities, prevent and address community concerns, reduce risks, and assist the larger processes of enhancing positive social change.

Given the type and magnitude of Project impacts, the Project will have two complementary grievance redress mechanisms: 1) the **Central Feedback Desk (CFD)** at the

level of the implementing agency PC Roads FBH and 2) **Beneficiary Feedback Commissions (BFC)** at the level of local governments. The CFD shall serve as both Project level information center and grievance mechanism, available to those affected by implementation of all Project sub-components. The BFC is proposed as an additional information and grievance platform for **Neum** and **Stolac** beneficiaries, the two municipalities most affected by the Project's expropriation activities. Whilst the CFD will be applicable for all Project activities, the BFCs focus on local communities affected by all project activities implemented on the section M 17.3 from Neum to Stolac.

PC Roads FBH will ensure that PAPs are fully informed of the grievance mechanism by communicating the role and existence of the BFCs, the availability of the Central Grievance Log, its function, the contact persons and the procedures to submit a complaint in the affected areas. Information on the BFC and CFD will be available on:

- the website of PC Roads FBiH (www.jpcfbih.ba),
- brochures distributed to affected communities,
- the notice board and website of the Municipality of Neum (www.neum.ba),
- the notice board and website of the Municipality of Stolac (www.stolac.gov.ba).

The Grievance Registration Sheet as print out shall be available at all affected municipalities as entry points in the form as presented in *Appendix 6* of this document and for download on the website of PC Roads FBH (www.jpcfbih.ba).

If the grievance/complaint is vague and not clear enough, the BFC/CFD is obliged to help and provide guidance and even help in redrafting the submission, in order for the grievance/complaint to become clear, for purposes of an informed decision by the BFC, in the best interests of persons affected by the project.

Table 18. CFD's and BFC's Features

	Central feedback desk (CFD)	**Beneficiary Feedback Commission (BFC)**
Level	At the level of implementing agency PC Roads FBH.	At level of local governments: municipalities Neum and Stolac.
Role	Project information centre and grievance mechanism.	
Focus	All sub-projects.	Sub-project of construction of Neum-Stolac road.
Responsi-bility	Receiving and responding to grievances and comments of two groups: a) a person directly affected by the Project including the impacts due to land acquisition; and b) residents interested in and/or affected by the project living in the affected municipalities.	
Methods for raising grievances	Grievances can be logged in writing with PC Roads FBH, with the Contractor, by phone, by fax, and by e-mailing it to the designated e-mail address zalbena@jpcfbih.ba, or by mailing the	Logged in writing and in-person with the BFCs.

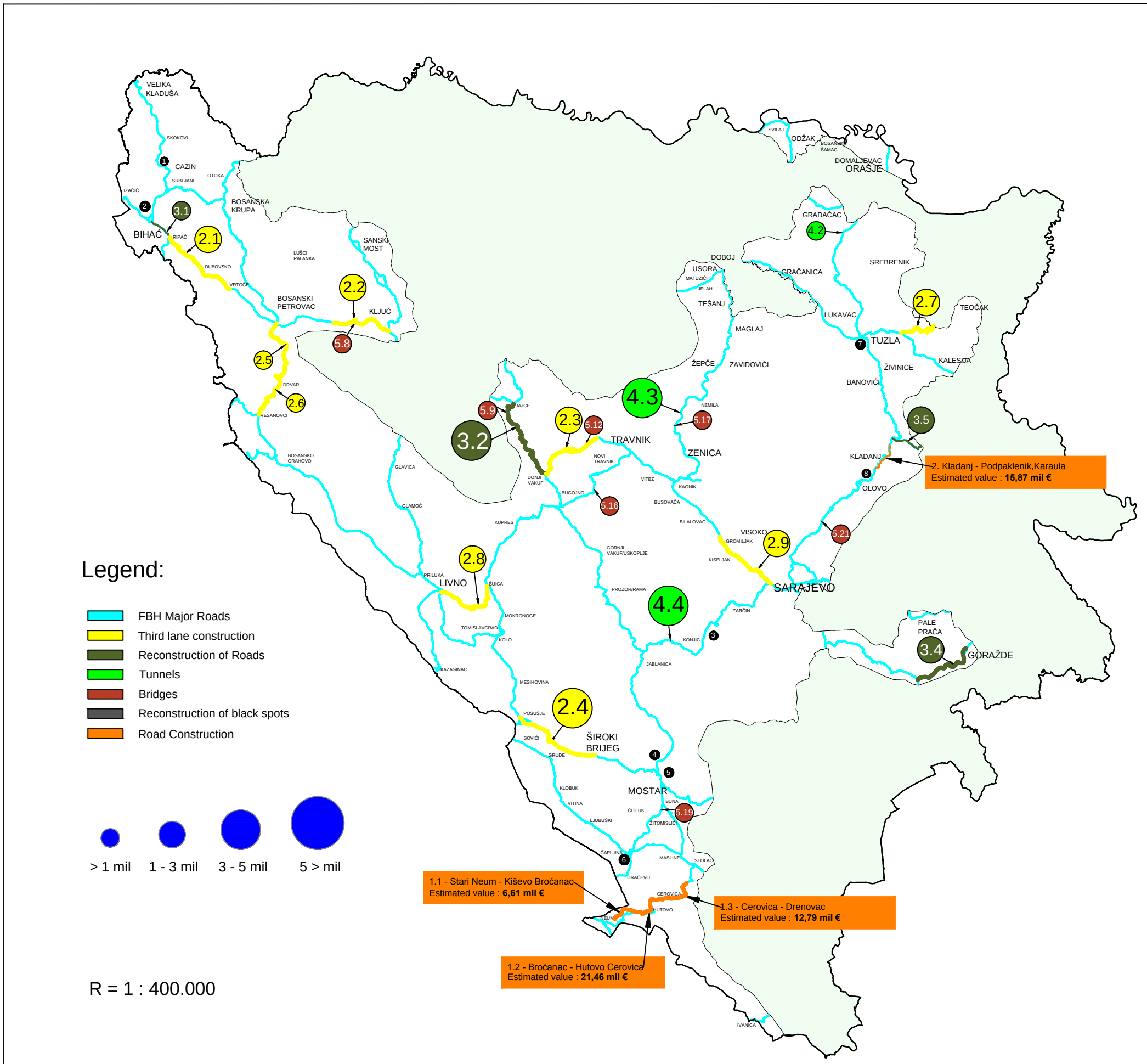
	Central feedback desk (CFD)	**Beneficiary Feedback Commission (BFC)**
	grievance to the address Terezija 54, 71000 Sarajevo.	
	Additionally to the extent desired by PAP's grievances related to land acquisition will continue to be channelled through the municipalities in all Project sub-components requiring expropriation.	
Registry of Grievances	CFD Registration Log (one log for grievances linked to the resettlement process and + one log for grievances linked to construction works)	BFC Registration Log (one log for grievances linked to the resettlement process and + one log for grievances linked to construction works)
	Central Grievance Log administered by PC Roads FBH for all received grievances through CFD and BFC.	
Administration of Grievances	The BFC/CFD shall, within three days after the day of receipt, acknowledge such receipt and take another 14 days to decide on the grievance or to inform the complainant why the grievance cannot be resolved within the given time. Additional time frame shall then be set by the BFC/CFD depending on the type of grievance and activities to be undertaken in order to allow decision making process to be in line with the key principles	
Reporting	CFD shall keep and store all grievances in a Central Grievance Log, and publish quarterly reports to PC Roads FBH's website (www.jpcfbih.ba).	BFC shall compile and deliver quarterly reports to PC Roads FBH on number and type of grievances.
Meetings	Only if needed.	Quarterly public meetings shall be held in Neum and Stolac to discuss the outcomes of grievances, in general, discuss the grievance/complaints report and inform the community about current Project activities.
Composition	Five members: all from PC Roads FBH not directly involved in the process of expropriation or Project	Five members: two of whom will be representatives of PAPs (minimum one woman), two officials from the respective municipality (minimum one woman) and one representative of PC Roads FBH not directly involved in the process of expropriation or Project to ensure full impartiality.

To ensure that the feedback/grievance mechanism are addressing the needs of those affected, the Project will monitor the percentage of people satisfied with the outcome/response provided to their grievances/comments (gender-disaggregated).

9. APPENDICES

Appendix 1. Lookup Map of the Components Included in the FBH Road Sector Modernization Project

FBH ROAD SECTOR MODERNIZATION PROJECT (2015. - 2019.)



1 ROAD CONSTRUCTION

No.	Road	Canton		Section	Works	Estimated value [mil. €]	Total [mil. €]
1.1	M 17.3	HNK	N	Stolac - Neum	Stari Neum - Kiševo - Broćanac	6,61	40,86
		HNK			Broćanac - Hutovo - Cerovica, L = 11,2 km	21,46	
		HNK			Cerovica - Drenovac, L = 15,3 km	12,79	
2	M 18	TK, ZDK	N	Kladanj - Podpaklenik, Karaula	Construction - alignment and structures	15,87	15,87
						Total :	**56,73**

2 THIRD LANE CONSTRUCTION

No.	Road	Canton	Section	Works	Estimated value [mil. €]	Total [mil. €]
2.1	M 5	USK	003	Ripač - Vrtoče 2	Ripač - Dubovsko	2,50	2,50
2.2	M 5	USK	006	Gornje Bravsko - Ključ	Bos. Petrovac - Ključ - Prevoj Lanište	2,17	2,17
2.3	M 5	SBK	010	Donji Vakuf 1 - Turbe	Donji Vakuf - Turbe (Komar)	2,50	2,50
2.4	M 6.1	ZHK	***	Posušje - Široki Brijeg	Posušje - Grude - Široki Brijeg	3,20	3,20
2.5	M 14.2	USK	003	Bos.Petrovac - Pasjak	Bosanski Petrovac - Drvar	1,00	1,00
2.6	M 14.2	K10	004	Pasjak - Resanovci	Drvar - Resanovci	0,80	0,80
2.7	M 18	TK	005	Priboj 2 - Simin Han 1	Banj Brdo - Simin Han	1,30	1,30
2.8	M15	K10	008; 010	Livno - Šuica - Kupres	Borova Glava traka + Trivunove krivine	2,80	2,80
2.9	M5	KS	014	Gromiljak - Blažuj	Kobiljača	2,50	2,50
						.	**18,77**

3 RECONSTRUCTION OF ROADS AND PAVEMENT STRUCTURE, AXIS CORRECTION

No.	Road	Canton	Section	Works	Estimated value [mil. €]	Total [mil. €]
3.1	M5	USK	002	Bihać 4 - Ripač	Axis correction	0,26	0,26
3.2	M5	SBK	009	Jajce jug – Donji Vakuf 1	Road reconstruction	3,53	3,53
3.4	M20	BPK	009	Ustikolina – Goražde 8	Reconstruction of road and crossroad Vitkovići	1,48	1,48
3.5	M19.2	TK	001	Vitalj – Vlasenica (Gran.entiteta)	Road reconstruction	1,00	1,00
							6,27

4 TUNNELS

No.	Road	Canton	Section		Works	Estimated value [mil. €]	Total [mil. €]
4.2	M1.8	TK	003	Pelagićevo - Srebrenik	Tunnel Ormanica Reconstruction 16+210	0,90	0,90
4.3	M17	ZDK	007	Topčić polje - Lašva	Tunnel Vranduk II Reconstruction, 7+416	4,60	4,60
4.4	M17	HNK	012	Konjic - Jablanica 1	Crnaja, 15+082	4,70	4,70
							10,20

5 BRIDGES

No.	Road	Canton	Section	Works	Estimated value [mil. €]	Total [mil. €]
5.8		SBK	006	Gornje Bravsko - Ključ	Bride over Sana river, Ključ	0,25	0,25
5.9		SBK	007	Rogolji - Jajce Jug	Bride over Pliva river u Jajcu	0,24	0,24
5.12		SBK	010	Donji Vakuf 1- Turbe	Bridge Komar	0,20	0,20
5.16	M16.4	SBK	001	Bugojno - Nević polje	Bride over Vrbas river, Bugojno	0,54	0,54
5.17		ZDK	007	Nemila 0 - Lašva 0	Bride over Bosna river, Bosna IV	0,55	0,55
5.19		HNK	018	Tasovčići - granica RH	Bride over Bregava river, Tasovčići	0,18	0,18
5.21		KS	009	Olovo - Semozovac	Bride over Ljubina river	0,15	0,15
						.	**2,11**

6 RECONSTRUCTION OF BLACK SPOTS

No.	Road	Canton	Section	Works	Estimated value [mil. €]	Total [mil. €]
6.1	M4.2	USK	002	Skokovi - Srbljani	Reconstruction of black spot "Mala Lisa", km 11+230	0,20	0,62
6.2	M5	USK	001	Granica BiH/RH (Izačić) - Bihać	Reconstruction of dangerous spot Kamenica (M5 i R403a)	0,42	
6.3	M17	HNK	011	Tarčin - Konjic	Reconstruction of black spot, km 16+800 - km 17+800	0,46	1,53
6.4		HNK	014	Potoci - Mostar centar	Reconstruction of black spot northern entrance in Mostar, km 7+800	0,26	
6.5		HNK	015	Mostar centar - Gnojnice	Reconstruction of black spot southern entrance in Mostar, km 1+640	0,26	
6.6		HNK	018	Tasovčići - Čapljina	Reconstruction of black spot raskrsnice M6 i M17, km 0+000	0,55	
6.7	M18	TK	006	Šićki Brod 3 - Živinice1	Reconstruction of black spot "Husino", km 2+500	0,51	0,61
6.8		ZDK	008	Vitalj - Olovo	Reconstruction of black spot Olovske Luke - "Nula" km 20+600	0,10	
							2,76

Appendix 2. Components of the Project included in the ESMF

Components of the Project included in the ESMF

Item	Road	Canton	Section	Type of works	Length	Length of works
					[km]	[km]
1	**CONSTRUCTION OF LANES FOR SLOW VEHICLES**				**LENGTH OF INTERVENTION**	
1.1	M 5	USC	Ripač - Vrtoče 2	Ripač - Dubovsko	5,20	5,20
1.2	M 5	USC	Gornje Bravsko – Ključ	Bos. Petrovac - Ključ - Prevoj Lanište	4,80	4,80
1.3	M 5	CBC	Donji Vakuf 1 – Turbe	Donji Vakuf - Turbe (Komar)	5,00	1,72
1.4	M 6.1	WHC	Posušje - Široki Brijeg	Posušje - Grude - Široki Brijeg	17,00	6,63
1.5	M 14.2	USC	Bos.Petrovac – Pasjak	Bosanski Petrovac - Drvar	19,30	5,96
1.6	M 14.2	C10	Pasjak – Resanovci	Drvar - Resanovci	38,20	4,50
1.7	M 18	TC	Priboj 2 - Simin Han 1	Banj Brdo - Simin Han	2,00	2,00
1.8	M15	C10	Livno - Šuica – Kupres	Borova Glava traka + Trivunove krivine	9,30	9,30
1.9	M5.1		Gromiljak - Blažuj	Kobiljača	3,0	3,0
2	**RECONSTRUCTION OF ROAD AND ROADWAY CONSTRUCTION, CORRECTION OF AXIS**				**LENGTH OF INTERVENTION**	
2.1	M5	USC	Bihać 4 – Ripač	Correction of road axis	1,00	1,00
2.2	M5	SBC	Jajce jug – Donji Vakuf 1	Road reconstruction	32,00	5,00
2.3	M20	BPC	Ustikolina – Goražde 8	Road and intersection reconstruction Vitkovići	22,12	5,95
2.4	M19. 2	TC	Vitalj – Vlasenica (entity border)	Road reconstruction	12,00	6,00
2.5	M15	C10	Priluka - Glamoč – Baraći	Reconstruction		
3	**TUNNELS**				**LENGTH OF INTERVENTION**	
3.1	M1.8	TC	Pelagićevo – Srebrenik	Rehabilitation of Ormanica tunnel, 16+210	0,25	0,25
3.2	M17	ZDC	Topčić polje – Lašva	Rehabilitation of Vranduk II tunnel, 7+416	1,06	1,06
3.3	M17	HNC	Konjic - Jablanica 1	Crnaja, 15+082	0,55	0,55
4	**BRIDGES**				**LENGTH OF INTERVENTION**	
4.1	M5	CBC	Gornje Bravsko – Ključ	Bridge over Sana River, Ključ	0,09	0,09
4.2	M5	CBC	Rogolji - Jajce Jug	Bridge over Pliva River in Jajce	0,08	0,08

Item	Road	Canton	Section	Type of works	Length	Length of works
					[km]	[km]
4.3	M5	CBC	Donji Vakuf 1- Turbe	Bridge over deep obstacle, Komar	0,07	0,07
4.4	M 16.4	CBC	Bugojno - Nević polje	Bridge over Vrbas River, Bugojno	0,07	0,07
4.5	M17	ZDK	Nemila 0 - Lašva 0	Bridge over Bosna River, Bosna IV	0,15	0,15
4.6	M17	HNK	Tasovčići – border of RC	Bridge over Bregava River, Tasovčići	0,06	0,06
4.7	M18	KS	Olovo – Semizovac	Bridge over Ljubina River	0,03	0,03

5	RECONSTRUCTION OF BLACK SPOTS AND DANGEROUS PLACES				LENGTH OF INTERVENTION	
5.1	M4.2	USC	Skokovi – Srbljani	Reconstruction of black spot "Mala Lisa", km 11+230	0,30	0,30
5.2	M5	USC	BH/RC Border (Izačić) – Bihać	Reconstruction of dangerous place Kamenica (M5 i R403a)	0,30	0,30
5.3	M17	HNC	Tarčin – Konjic	Reconstruction of black spot, km 16+800 - km 17+600	0,80	0,80
5.4		HNC	Potoci - Mostar Center	Reconstruction of black spot northern entrance to Mostar, km 7+800	0,30	0,30
5.5		HNC	Mostar Center – Gnojnice	Reconstruction of black spot southern entrance to Mostar, km 1+640	0,30	0,30
5.6		HNC	Tasovčići – Čapljina	Reconstruction of black spot intersections M6 and M17, km 0+000	0,30	0,30
5.7	M18	TC	Šićki Brod 3 - Živinice1	Rekonstrukcija crne tačke "Husino", km 2+500	0,30	0,30
5.8		ZDC	Vitalj – Olovo	Reconstruction of black spot Olovske Luke - "Nula" km 20+600	0,30	0,30
5.9	M6.1	C10	Livno - Karlov Han	Reconstruction of dangerous place Lopatinac	0,30	0,30

Appendix 3. Baseline Data for Monitoring Road Safety Indicators

Baseline Data for Monitoring Road Safety Indicators

Data on Accidents

No.	Road designation	County	Road section name	Road accidents 2009-2013			
				Death as outcome	With injuries	With material damage	Section length[km]
1.	**CONSTRUCTION OF THIRD LANES FOR SLOW VEHICLES**			**On road section**			
1.1	M 5	USK	Ripač - Dubovsko	3	35	86	11,00
1.2	M 5		Bos. Petrovac - Ključ - Prevoj Lanište	0	24	34	40,26
1.3	M 5	SBK	Donji Vakuf - Turbe (Komar)	7	56	286	26,40
1.4	M 6.1	ZHK	Kolo - Posušje - Široki Brijeg	6	191	245	30,55
1.5	M 14.2	USK	Bosanski Petrovac - Drvar	1	6	24	26,82
1.6	M 14.2	LK	Drvar - Resanovci	0	0	6	15,25
1.7	M18	TK	Banj Brdo - Simin Han	0	34	107	16,08
1.8	M15	K10	Borova Glava traka + Trvunove krivine	1	2	14	9,00
1.9	M5.1		Gromiljak - Blažuj				
2.	**RECONSTRUCTION OF ROAD AND ROADWAY CONSTRUCTION, CORRECTION OF AXIS**			**On road section**			
2.1	M5	USK	Bihać 4 - Ripač	1	48	93	7,62
2.2	M5	SBK	Jajce jug – Donji Vakuf 1	5	87	92	32,91
2.3	M20	BPK	Ustikolina – Goražde 8	1	41	130	22,12
2.4	M19.2	TK	Vitalj – Vlasenica (Gran.entiteta)	0	39	33	11,67
2.5	M15	K10	Priluka - Glamoč - Baraći	2	19	21	52,40
3.	**TUNNELS**			**On road section**			
3.1	M1.8	TK	Pelagićevo - Srebrenik (Ormanica)				
3.2	M17	ZDK	Topčić polje - Lašva (Vranduk II)	0	3	37	1,06
3.3		HNK	Konjic - Jablanica 1 (Crnaja)	0	3	37	0,55
4.	**BRIDGES**						
4.1	M5	SBK	Bridge over Sana River, Ključ				
4.2	M5		Bridge over Pliva River in Jajce				
4.3	M5		Bridge over deep obstacle, Komar				
4.4	M16.4	SBK	Bridge over Vrbas River, Bugojno				
4.5	M17	ZD	Bridge over Bosna River, Bosna IV				

No.	Road designation	County	Road section name	Road accidents 2009-2013			
				Death as outcome	With injuries	With material damage	Section length[km]
4.6	M17	HNK	Bridge over Bregava River, Tasovčići				
4.7	M18	KS	Bridge over Ljubina River				
5.	**RECONSTRUCTION OF BLACK SPOTS AND DANGEROUS PLACES**			**On location (except 5.9 – data for road section)**			
5.1	M4.2	USK	Skokovi - Srbljani	0	12	11	0,30
5.2	M5		Granica BiH/RH (Izačić) - Bihać	0	5	11	0,30
5.3	M17	HNK	Tarčin - Konjic	0	10	17	0,80
5.4			Potoci - Mostar center	1	11	29	0,30
5.5			Mostar center - Gnojnice	0	6	10	0,30
5.6			Tasovčići - Čapljina	0	16	14	0,30
5.7	M18	TK	Šićki Brod 3 - Živinice1	0	6	33	0,30
5.8		ZDK	Vitalj - Olovo	0	18	20	0,30
5.9	M6.1	K10	Livno - Karlov Han	5	45	99	21,00

Appendix 4. Cultural Heritage Protection Plan for Civil Works

CULTURAL HERITAGE PROTECTION PLAN FOR CIVIL WORKS

1. INTRODUCTION

This Plan incorporates measures which are to be undertaken in order to avoid or reduce the impact on the cultural-historical heritage, provisions for managing accidental findings, monitoring system to monitor the progress of these activities, and takes into consideration the local framework policy, national legislature and institutional capacities relating to cultural-historical heritage.

For all projects for which it is known in advance that they will have impacts on objects of cultural-historical heritage, it is necessary to provide recommendations for avoiding or reducing the impacts by means of Environmental Impact Assessment. These recommendations can be provided as separate documents in form of Cultural Heritage Management Plan or as a part of Environmental Impact Assessment, and they must contain individually as follows:

- Schedule of implementation of the proposed measures for mitigation and monitoring, and identify implementers and responsible institutions;
- Implementation description;
- Identify the procedures on the occasion of new findings, and implementers of measures and responsible institutions;
- Determine the procedures in cases of impacts on objects and sites of cultural-historical heritage, which were not prescribed in the Environmental Impact Assessment.

2. LEGAL REGULATION

According to the Operational Policy of the World Bank (OP WB 4.11), tangible cultural heritage is defined as movable or immovable objects, sites, buildings, groups of buildings and natural features and landscapes which have archeological, paleontological, historical, architectural, religious, esthetic or some other cultural importance. Their cultural significance may be local, regional, national or international.

On the level of Bosnia and Herzegovina and the FBH the following legislature is applicable:

- General Framework Peace Agreement for Bosnia and Herzegovina, Annex 8 – Agreement on Commission to Preserve National Monuments, 1995
- Decision on Commission to Preserve National Monuments („Official Gazette of BH“, no. 1/02 and 10/02) – Decision by the Presidency of Bosnia and Herzegovina at their 199th session held on 21.12.2001;
- Criteria for the designation of property as a national monument. («Official Gazette of BH“, no. 33/02, as amended in 15/03, „Official Gazette of Republic Srpska“, no. 79/02 and „Official Gazette of the FBH“, no. 59/02;

- Rulebook on the activities of Commission to Preserve National Monuments regarding international cooperation („Official Gazette of BH“, no. 29/02);
- Instruction on issuing licenses for import and export of artwork and antiquities („Official Gazette of BH“, no. 41/02), as approved by the Minister of External Trade and Economic Relations;
- Act on the implementation of decisions by Commission to Preserve National Monuments according to Annex 8 of General Framework Peace Agreement for Bosnia and Herzegovina (“Official Gazette of the FBH”, no. 2/02, 27/02 and 6/04);
- Act on the protection and use of cultural-historical and natural heritage („Official Gazette of SRBH“, no. 20/85, 12/87, 3/93 and 13/94);
- Regulation on performing prior works of research character on national monuments („Official Gazette of the FBH “, br. 36/08).

The existing norm framework for the protection of cultural monuments does not encompass solely the local legislature, but also international declarations and documents which were acknowledged by BH.

All recorded cultural-historical property can be classified into one of the following categories:

- Areas or sites (archeological, historical),
- Historical buildings or monuments (residential, religious, administrative, public, cemeteries),
- Construction unit (residential, fortification, religious, industrial),
- Memorial or ethnological area of property.

The first category of the protection of cultural-historical properties refers to those proclaimed by the Commission to Preserve National Monuments of Bosnia and Herzegovina. In the territory of the Federation of Bosnia and Herzegovina the Commission proclaimed 566 objects as national monuments. On the monuments that were pronounced by the Commission, special measures are applied, as established by the Act on the implementation of decisions by Commission to Preserve National Monuments according to Annex 8 of General Framework Peace Agreement for Bosnia and Herzegovina (Official Gazette of the FBH no. 2/02, 27/02, 6/04)

The second category of the protection of cultural-historical properties refers to those of regional importance, while the third is constituted by all other recorded sites and monuments of cultural-historical heritage in the area of counties and municipalities. Protection measures as defined in acts on the protection of cultural-historical heritage pronounced on county level apply to these sites. The acts clearly define measures of protection not just of the site itself but also of its intermediate surroundings.

3. IMPACT ON OBJECTS OF CULTURAL-HISTORICAL HERITAGE

The basic recommendation and Operation Policies of the World Bank and homeland legislature is to avoid the impact on cultural-historical heritage, if possible. County acts on the protection of cultural-historical heritage strictly prohibit destruction of these properties.

If it is not possible to avoid project impacts on cultural-historical heritage, it is necessary to act in proper way in order to reduce the impact to the lowest possible level and prevent its consequences. On the occasion of project design and implementation one must take care that during project operation there are no adverse impacts on objects and sites of cultural-historical heritage.

Possible project impacts on objects and sites of cultural-historical heritage were described and measures for mitigation of impacts were provided.

The main impact of the project on objects of cultural-historical heritage will occur during performance of construction works:

- Possible physical damages to the existing structures below and above ground level in known locations and on potential new sites;
- Possible physical damages to structure due to performance of works (vibrations, disposal of material, formation of access roads etc.)
- Possible disturbance to the natural ambient and surroundings of objects and sites due to performance of works.

In the course of using traffic roads and objects which were included in the project adverse impacts on objects of cultural-historical heritage are also possible:

- Motor traffic might have negative impacts on underground and above-ground structures of objects or archeological sites due to vibrations, depending on the distance of the site from traffic road and geological composition of soil;
- If objects or archeological remains are in close vicinity of traffic road, there is danger from direct contact and physical damages;
- Traffic load might have adverse impacts on natural materials from which the objects were built (stone or wood) or archeological remains (stone) by chemical mechanisms of functioning;
- The newly constructed road might deteriorate visual and esthetic components of the sites and one unit made up of objects of cultural-historical heritage in their natural and historical setting.

4. MITIGATION MEASURES

Measures of mitigation of the above mentioned impacts are as follows:

- During pre-construction, construction and operation of traffic roads, make sure that all national laws in the field of cultural-historical heritage protection, Operation policy OP WB 4.11 and internationally acknowledged documents and conventions are complied with;

- Record all existing sites and objects of cultural-historical heritage which are in contact zone with the project, and by using analogy include assumptions about possible new findings. A record of status of the objects prior to the beginning of works must be included;

- If the previous item shows that during construction works objects of cultural-historical heritage will be endangered in any way, the competent Monuments Protection Institute must be notified. Expert representatives of protection, Investor's representatives and Contractor's representatives shall make the correct solution together.

- Prior to the beginning of works staff must be trained, so that they would be aware of importance of cultural-historical heritage and recognize it if new findings occur.

Mitigation Measures during Construction Works

On the basis of analysis of impacts on cultural-historical heritage during performance of works, the following mitigation measures are proposed:

- Archeologists and conservators' supervision in wider zone:

o When needed – in case of new findings or suspicion of a new finding,

o Obligatory continuous supervision of works near recorded sites;

- Prohibited crossing of access roads, waste disposal and storage of heavy mechanization on sites – on all points of conflict;

- Adapting technology of works to the state in the field and taking measures of protection of all factors which might have harmful impact on the matter or change its properties - on all points of conflict which are in reach of works performance;

- Monitoring any changes caused by construction works - on all points of conflict.

Mitigation Measures during Road Operation

A general mitigation measure which will be implemented for all objects in conflict zone with the project is constant (periodic monitoring) during operation, particularly:

- Dynamic effect of changes;

- Changes to structures of the objects – record damages, changes to structure and stone texture (walls, tombstones).

On all cultural-historical heritage sites whose ambient will be permanently deteriorated due to construction of the road, cultivation by autochthonous vegetation is proposed in order to create a green barrier.

5. MONITORING THE STATE

Monitoring the State during Construction

Monitoring the state during construction works in the sense of cultural-historical heritage should be performed in the positions where due to technical-technological needs of construction works (vibrations, disposal of material, forming access roads etc.) there is possibility of physical damage, moving and deformation of structure of objects and sites of cultural-historical heritage. In such cases monitoring assumed monitoring the state of physical structure by various methods (primarily visual, and when needed by various equipment, by

measuring etc.), with an aim to register any changes caused by construction works performance.

Another type of monitoring which is recommended is supervision by qualified experts: conservators and /or archeologists who would perform continuous or occasion monitoring – depending on 'difficulty' of the problem in the field. Continuous supervision is planned for the cases when there is the possibility of technical devastation of structure below ground level and superficial archeological findings in known locations, increased possibility of destruction or damage to potential (unknown so far) archeological findings, as well as the possibility of physical damage, moving and deformation of above ground structure by technical-technological interventions in construction works performance. Occasional supervision will be included in case of unforeseen situations, if certain thereat of destruction of protected objects of heritage appears or if a potential object of heritage is discovered.

Monitoring the State of the Environment during Operation

Monitoring the state of the environment during operation of traffic road on cultural-historical objects should be performed in locations where there is possibility of adverse damaging impact of traffic. Damages of physical nature due to vibrations and damages of material due to chemical effects must be particularly monitored.

The proposed monitoring of the state of the environment should cover all expected impacts and implementation of mitigation measures which were proposed in the Environmental Impacts Assessment, and also the impacts which were not foreseen in the assessment, because it was considered that such impact on cultural-historical heritage will not occur.

6. DISCOVERING NEW FINDINGS

On the occasion of interventions in the field, new sites of cultural-historical heritage are often discovered. This is particularly the case if there are certain discovered sites in close vicinity. Legal regulation prescribes by means of a special provision that all potential cultural-historical objects which are found during construction works must be reported to competent institutions, and if during construction works potential heritage objects are found, the Contractor is obliged to suspend all works and to notify the competent protection body.

In case of discovery of new findings during works, it is necessary to comply with the following procedure:

- All works must be suspended immediately,
- Location of finding site must be marked in appropriate manner;
- Location must be recorded and all findings left in condition in which they were found;
- Security of location must be organized, so that the findings would not be damaged and that movable findings would not be stolen;
- Construction site manager shall notify the competent municipality service about the finding, which will come on site immediately in order to record, assess and document the present state (it is mandatory to create detailed photo-documents);

- If the competent municipality does not have such appropriate service for protection of cultural-historical heritage, the county Institute for the protection of cultural-historical heritage i.e. Institute for the protection of monuments at the federal Ministry of Culture and Sport shall be notified;
- The competent institute will provide guidelines for further actions. Depending on the type of site, detailed archeological researches will be implemented and possible movable findings will be relocated;
- After completion of architectural research, documenting the present state and state after research, the competent Institute will provide further instructions i.e. approve continuance of works.

Appendix 5. Road Safety Management

ROAD SAFETY MANAGEMENT

1. INTRODUCTION

Considering all components of the Project of road modernization – reconstruction of roads and facilities on roads, all construction sites will be set up on functional roads, which means that all participants in traffic and on construction site will be exposed to additional risks and traffic dangers. Therefore managing road safety is very important and for each component of subproject. Traffic Management Plan (TMP) must be developed, which will be created by the Contractor prior to the beginning of construction works.

2. LEGAL REGULATIONS

- The Road Traffic Safety Act (Official Gazette of BH no. 06/06, 75/06, 44/07, 84,09,48/10, 18/13)
- The Roads Act of the FBH (Official Gazette of the FBH no. 12/10 and 16/10)
- Occupational Safety Act (Official Gazette of the FBH no. 22/90)
- Regulation on Construction Site Organization, Mandatory Documents on Site and Participants in Construction (Official Gazette of the FBH no.48/09)
- Rulebook on Type and Contents of Projects for Construction and Reconstruction of Public Roads (Official Gazette of the FBH no. 69/10)
- Rulebook on Occupation Safety in Construction (Official Gazette of SFRY no. 42/68 and 45/68)
- Rulebook on Means of Personal Occupation Safety and Personal Protective Equipment (Official Gazette of SFRY no. 35/69)
- Rulebook on Traffic Signs and Signalization on Roads, Ways of Designating Works and Road Obstacles and Signs Given by Authorized Persons to Participants in Traffic (Official Gazette of BH no. 16/07, 61/07)

3. OBJECTIVES AND SCOPE

The fundamental objective of road safety management is to establish responsibilities and requirements for regular traffic rules during Project development and earlier phases of the Project.

Objectives of road safety management are as follows:

- To prevent and control injuries in relation with traffic and cases of death in connection with project development;
- Reduce traffic jams and maintain a safe, quick and simple entry/exit of emergency vehicles;

- Reduce fuel consumption in all phases of project, including construction and operation.

General Principles

The Contractor shall pay special attention on reducing the following:

- Traffic operation through social communities;
- Distances travelled by employees during construction and
- Distances of transport of equipment and goods.

That requires that the Contractor notifies and collaborates with local Ministries of the Interior, prepares TMP, including appropriate signalization, selection of alternative route, and announcement of time intervals when heavy vehicles will appear in the city for the purpose of transporting material and/or machinery from/to construction site.

4. GENERAL PRINCIPLES

The Contractor shall pay special attention on reducing the following:

- Traffic operation through communities;
- Distances travelled by employees during construction and
- Distances of transport of equipment and goods.

5. RESPONSIBILITIES

Construction site manager has the key responsibility for all aspects of the project, including transport system. The Construction site manager is responsible for coordinating overall transport and traffic activities in all phases of project implementation.

The Construction site manager is responsible for planning, development, implementation, audits and approval with appropriate authorities (where necessary) for Road Safety Monitoring. The Construction site manager plays the key role in traffic safety and has the following responsibilities:

- Planning and coordination of activities in traffic management activities in timely and effective manner,
- Managing everyday traffic control operations,
- Ensuring that the need for occupational safety of all workers is fulfilled,
- Managing everyday delivery of material and entry of vehicles into construction site.
- This includes providing control of traffic when needed. Everyday tasks are as follows:
    - Ensuring access only by using the determined access road;
    - Developing the necessary plans for time of delivery, in order to avoid load of heavy vehicles on main traffic roads and
    - Ensuring compliance with valid traffic regulations.

- Preparing the necessary reports and maintaining the record of incidents and inspection logs.

On behalf of PC Roads FBH a person for public relations should be appointed, with the following duties:

- Presents the project to the community and participants, for all questions,
- Implements consultations with participants and provides a constant public relation regarding traffic planning,
- Prepares and distributes information regarding changed traffic conditions, and forms for users of road, transporters and local communities.

All environmental and operative staff in the field is trained for receiving and submitting grievances by means of grievances mechanisms as defined in ESMF.

6. TRAFFIC MANAGEMENT PLAN

The Contractor shall:

- Prepare and submit TMP to PC Roads FBH for an approval, no later than 30 days prior to the beginning of works on any project component included in traffic redirection and management.
- Include the following parts in the TMP for the purpose of ensuring uninterrupted movement during road rehabilitation: detailed drawings of traffic solutions representing all bypasses, temporary roads, temporary bridges, temporary turns, necessary barricades, warning signs/ lighting, traffic signs etc.
- Ensure signs on strategic places on the roads.
- Install and maintain a sign at every important crossroads, on roads which will be used during works on rehabilitation of road, clearly indicating the following data in a local language:
  - Location: chainage and settlement name,
  - Duration of construction,
  - Period of the proposed bypass/alternative road,
  - Map of the proposed bypass,
  - Name and contact address/telephone number of responsible personnel,
  - Name and contact address/telephone number of contractor,
  - Sincere apology for the caused inconvenience,

TMP should include details about the following:

- Construction plan by phases,
- Beginning and duration of works,

- Overview of the existing conditions near the construction site,
- Identification of affected areas,
- Mitigation measures
  - Plan of public transport, for example, timetable, change of timetable, disturbance and the like;
  - Circulation plans, including zones of entry and exit, routes for towing of material, turnaround points, parking areas, zones of interlocking with other traffic roads etc.,
  - Routes for pedestrians and vehicles,
  - Traffic controls for each expected intervention, including illustrations of barriers, paths, signalization plan, warning signs etc.,
  - Requirements for special vehicles, for example, those of large dimensions,
  - Construction works paths (access, ramps, loading, unloading),
  - Connection roads for supply vehicles and storage of material,
  - Expected interaction of pedestrians and vehicles,
  - Roles and responsibilities of persons on construction site regarding traffic management,
  - Instructions on the procedures regarding traffic control, including urgent situations.

TMP should also include appropriate communication with affected population about traffic and timely information of traffic changes/road blockage.

TMP should be monitored on a regular basis (responsibility of the supervision engineer) and audited to ensure effective implementation and to take into consideration any changes on construction site. All workers on construction site should get acquainted with the Traffic Management Plan.

7. MEASURES FOR TRAFFIC MANAGEMENT

Keeping vehicles and pedestrian separate

- Ensuring separate routes for vehicles and pedestrians,
- Ensuring area of work for construction machines,
- Ensuring, where possible, a clearly marked passage for pedestrians,
- Ensuring marked lighting signalization at crossing points between pedestrians and vehicles,
- Ensuring appropriate exits and entrances to construction site, with sufficient visibility,
- The area of construction site must be zoned (for example, pedestrians only zone),
- Ensuring parking areas (for mechanization, workers, visitors outside of construction site etc.)

Managing Traffic on Construction site

The following measures of occupational safety, for workers-pedestrians, drivers and operators will be used during construction phase:

- Some construction machines, such as loaders, bulldozers, graders and cylinders have a blind spot that puts workers at risk, especially when workers are bent over or kneel down. In order to avoid such risks, operators must use signs or guards when using this type of equipment;
- Workers-pedestrians must keep away from the work area of heavy machinery and other zones of danger by using barricades and marked paths;
- Signs are used for directing movement of workers-pedestrians;
- Signs will be set on equipment to warn operators and workers in the field;
- Public's entry into construction site must be strictly prohibited;
- Drivers and equipment operators will use standard signs and designations and will be trained for communication with workers-pedestrians to quickly recognize dangerous situations and reactions and to understand maneuver limitations and blind spots of vehicles and equipment.

Managing Traffic outside of Construction Site

Managing Traffic outside of Construction Site includes the following measures:

- Drivers shall be trained to avoid making unnecessary noise;
- Vehicles shall be covered on top to prevent dust generation;
- Trucks and wheels shall be washed regularly to prevent mud and by that, dust on public roads;
- Trucks overload shall be prohibited;
- Drivers must drive in accordance with valid laws and regulations on roads;
- Warning signs will be placed on roads and crossroads to warn drivers who are not participants in the project and pedestrians about the ongoing project;
- All vehicles shall use winter tires during winter months.

8. VEHICLES AND TRAFFIC ROADS MAINTENANCE

Construction site manager will be responsible for monitoring conditions on the roads used for the project. Construction site manager i.e. Contractor is responsible for condition of public roads which must be on the level equally good as before the construction or better.

Construction site manager shall ensure that all vehicles are maintained in accordance with manufacturer's instructions and in accordance with all regulations regarding safety.

9. RELATIONS WITH COMMUNITY AND SAFETY OF COMMUNITY

Construction site manager shall ensure that all measures of traffic management are implemented in accordance with the needs of everyday users of the road. The BiHAMK (BH Auto Moto Club), based on timely information from PC Roads FBH and the Contractor, is responsible for keeping the local communities and road users informed about probable adverse traffic impacts which will occur during project implementation.

Appendix 6. Grievance Form

	REFERENCE NUMBER (Filled by the office)	
CATEGORY OF COMPLAINTS	A) Affected by expropriation	
	b) All others	

PARTICIPANT INFORMATION OF GRIEVANCE			
FULL NAME			
YEAR OF BIRTH			
GENDER	M	F	
ADRESS			
TELEPHONE/MOBILE NUMBER			
E-MAIL			

Description of Incident for Grievance
(What happened? Where did it happen? Whom did it happen to? What is the result of the problem?)

Date of the Incident?

- One-time incident/grievance – Date: _____
- Happened more than once (How many times?) _____
- On-going (currently experiencing problem)

What would you like to see happen?

DATE:	SIGNATURE:

RETURN THIS FORM TO:

CENTRAL FEEDBACK DESK
PC ROADS OF THE FBH
Terezija 54,
71000 Sarajevo

Note: All copies are returned to PIU

Appendix 7. Environmental and Social Management Plan for the Project of Reconstructon of Cross road

TABLE OF CONTENTS

1. INTRODUCTION

This Environmental and Social Management Plan (ESMP) was developed within the Environmental and Social Management Framework (ESMF) for FBH Road Sector Modernization Project, as one of the three site-specific examples.

The Public Company Roads of Federation of Bosnia and Herzegovina (further in the document PC Roads FBH) has initiated an overarching program for the project "Modernization of Major roads in the Territory of the Federation of Bosnia and Herzegovina" (The Program) to ensure appropriate road infrastructure by 2020. For this purpose, it has been requested from the Government of the FBH to ensure credit funds from international finance institutions (IFI).

In the framework of the abovementioned umbrella Program, the Public Company "Roads of FBH" (PC Roads FBH), a limited liability company wholly owned by the Government of FBH, has initiated the FBH Road Sector Modernization Project. FBH filed an application for a credit/loan from the European Investment Bank (EIB) and from the World Bank (WB) in total amount of 103,38 million EUR for funding abovementioned Project.

FBH Road Sector Modernization Project comprises several small and mid-sized investment schemes including:

6. Reconstruction of roads, this component includes:
    - Construction works for completion of the construction of major road M17.3 Neum–Stolac (in total 32,9 km);
    - Construction of third lanes for slow vehicles (in total 40 km on 8 sections of major roads);
    - Reconstruction of roadway, correction of axes (in total 18 km on 5 sections of major roads, where a correction of axes is to be done on one section only in the length of 1 km),
    - Reconstruction of 3 tunnels (with a total length of 1,86 km);
    - Reconstruction of 7 bridges (with a total length of 0,55 km).
7. Interventions on improving road safety: The reconstruction of intersections, which are classified as "black spots" on major roads, in total 9;
8. Institutional reforms: Road Management in the FBH with a particular focus on sustainability of investments and road safety;
9. Project Implementation Support: Construction supervision and capacity building of the PC Roads FBH.

Reconstruction of Crossroad for which this ESMP is developed as an example for this kind of project activities within the ESMF, is a one of the sub-projects included in the group of sub-projects co-financed by the WB and EIB.

2. METHODOLOGY AND OBJECTIVES OF ESMP

Reconstruction of Crossroad is characterized as a category B project according to the Operational Policies (OP) of the WB as well as the screening procedure outlined in the project-specific ESMF. As such, this activity needs to have an ESMP developed, whereas pursuant to the local legislation this project does not require an environmental assessment nor an environmental permit - whether federal or cantonal[9]. PC Roads FBH will ensure all required local permits for this Project are obtained

This ESMP aims at identifying all of the potential environmental and social impacts associated with this project activity. As such, the ESMP includes mitigation measures for all identified potential impacts that are to be undertaken throughout the different phases of the project including preparation, implementation and operation of the facilities. The measures set forth in this ESMP are meant to avoid, neutralize or diminish adverse environmental and social impacts if not completely then to an acceptable level.

ESMP identifies feasible and cost-effective measures which can reduce potentially negative impacts on the environment and society to an acceptable level. If mitigation measures are not possible, profitable or sufficient, compensation should be included as the last measure.

In order to ensure the mitigation measures have been implemented, fully or partially, the ESMP sets forth a monitoring plan to be implemented during the specific stages of project implementation. Monitoring during project implementation provides information on the key environmental and social aspects of the project, particularly on the environmental and social aspects of the project and efficiency of mitigation measures.

3. LOCATION DESCRIPTION

3.1. ROAD SAFETY AND TRAFFIC DATA

4. PROJECT DESCRIPTION

5. PROJECT DESCRIPTION

5.1. PHYSICAL BASELINE

5.2. BIOLOGICAL BASELINE

5.3. SOCIO-ECONOMIC BASELINE

[9] *In FBH investments requiring EIA are identified by the Regulation on Plants and Facilities Subject to Obligatory Environmental Impact Assessment, and Facilities Which May be Constructed and Commissioned Only if Granted Environmental Permit (Official Gazette of FBH No. 19/04). In Herzegovina-Neretvian Canton investments requiring an EP are regulated by Regulation on Activities, Plants and Facilities Which May be Constructed only if Granted Environmental Permit (Official Gazette of HNC, No. 10/12). Reconstruction of a crossroad is not a subject to neither a Federal nor a Cantonal EP.*

6. DESCRIPTION OF POSSIBLE IMPACTS DURING PRE-CONSTRUCTION, CONSTRUCTION, OPERATION AND MAINTENANCE

6.1. PRE-CONSTRUCTION IMPACTS

Socio-economic Impacts

Pre-Construction land acquisition: The Project is expected to involve land acquisition of a smaller part of state-owned land for reconstruction of the roundabout. The precise extent of land acquisition will be known after the expropriation studies for the whole project are made.

6.2. IMPACTS DURING CONSTRUCTION

Impact on Air Quality

Exhaust gases - The machinery which is used during the construction and delays, i.e. traffic standstills on the road due to works on reconstruction of crossroad will lead to an increased emission of such gasses as SO_2, CO_2, CO, NO_X.

Dust generation- where the most important polluters are solid particles (PM10 and PM2,5). Possible sources of dust generation include: site preparation activities, especially excavation and levelling, handling of building materials such as excavated earth/ substrate, gravel, sand, asphalt, cement and the construction itself.

Impact on Noise Level and Vibrations

Noise emission is likely to appear during site preparation. Possible sources of noise are: ground preparation activities such as excavation and levelling, use of tools and equipment, assembly of building materials on site; offloading of building materials such as gravel, sand, asphalt etc. and the work of construction machines in general.

Impact on Surface Water Quality

Creation of additional water demand - The workers and the construction works will create an increased demand for water in addition to the existing population demand in surrounding area. Water will be mostly used in the creation of aggregates for construction works and for wetting the surfaces, as well for daily water demand of workers.

Possible contamination of water – may occur due to general construction activities and malpractice including inappropriate extraction of resource material, handling of hazardous substances (i.e. asphalt, chemicals and paint), inadequate waste handling, liquid and solid, equipment damage which may lead to leakage of lubricants and fuel (increased blurring, input of fats and oils) etc.

Impact on Soil Quality

- Soil compaction due to heavy machinery (vehicles and equipment for construction) moving around the location;
- Uncontrolled (storing, handling and depositing) and untreated waste is one of the major sources of pollution that can disrupt soil quality.

Impact on Biological and Natural Resources

- Work of heavy machinery during construction phase may lead to plants being covered with dust (e.g. blockage and damage to stomata, shading, abrasion of leaf surface or cuticle), which will affect feeding base for animals;
- Pollution of the nearby watercourse (if there is one) and soil with hazardous substances (fuel and oils in case of spills) can harm biodiversity of the river and its surrounding area.

Impact on Protected areas

Depends if the Project is within any of the planned protected areas.

Impact on Landscape Values

Partial alternation of landscape and visual aspects can be expected with organization of construction sites, presence of personnel and machinery on site. These impacts are temporary and negligible.

Impact on Traffic Safety and Traffic Flow

Traffic congestion and obstructions on road sections - increased traffic flow, leading to congestion and obstruction is likely to be experienced on major road during the construction. This is especially expected during delivery of construction material to site and collection of waste from site.

Trenches are likely to be made during implementation of construction activities, including earthworks and temporary storage of construction material.

Socio-Economic Impacts

Prohibition of land use and damage to private property: It is expected that it will be necessary to temporarily occupy several privately owned land plots for the purpose of lodging machines and disposal of materials. Construction activities may cause damage to land plots, fences and railings due to disposal of construction waste and heavy machinery parks.

Reconstruction also may lead to interruption of land use by inadequate waste management in terms of uncontrolled and untreated waste (e.g. accidental spills from construction machinery, solid waste generated by workers on the construction site) that might be harmful to local communities.

Access restrictions: Impacts related to road access restrictions are expected to be temporary and are associated with limited access due to heavy machinery parks and disposal of construction waste.

New workplaces and impacts on local businesses (positive): New business opportunities are expected to be created for local businesses such as transporters, suppliers and other service providers.

Impact on living conditions of local communities

Following adverse impacts during construction are expected:

- Noise increase,
- Construction waste disposal,
- Disruptions to water and electricity supply, telephone and Internet connections, waste collection, regular public transport, delivery of mail.

6.3. IMPACTS DURING OPERATION AND MAINTENANCE

Impact on Air Quality

Exhaust gases - Daily traffic in the operation phase will lead to an increased emission of exhaust gasses such as SO_2, Co_2, CO, NO_X. During road operation, machinery that is engaged in maintenance activities will produce exhaust gasses, i.e. winter maintenance of roads or regular periodic roads maintenance together with exhaust gases arising from daily traffic.

Dust generation - where the most important polluters are solid particles (PM10 and PM2,5). Possible sources of dust generation include: materials used in winter road maintenance and handling of building materials used in regular periodic roads maintenance.

Impact on Noise Level and Vibrations

Noise emission and noise disturbance - noise emission will occur due to regular daily traffic on major roads during operation phase.

Vibrations may appear due to machinery, i.e. vehicles for winter road maintenance and specialized measuring vehicles - vans that are used in maintenance phase and can affect the surrounding objects through the foundation or have the impact on animals.

Impact on Surface Water Quality

Possible Contamination of Water – Possible contamination of water i.e. leakage of lubricants and fuel from vehicles traffic on major roads (operation phase) or machinery that will be used for road maintenance or leakage of polluting material during accidents.

Impact on Soil Quality

Soil pollution as a result of the emissions from traffic pollutants (e.g. particulate matter $PM_{2,5}$ and PM_{10}, SO2, NO_X, CO)

Impact on Biological and Environmental Resources

Potential impacts on flora and fauna may be caused by vibration and noise from the traffic and by water contamination (river) and soil contamination (e.g. accidental spills) on the crossroad.

Socio-economic impacts:

Access restrictions: occasional repairs that would lead to similar impacts as during construction may be expected, but in a shorter time scale and to lesser extent.

Connectivity and developed road infrastructure (positive): improved technical conditions of traffic roads, higher speeds of travelling, safer travelling and fewer traffic congestions. Improving road pavement will increase traffic speed and driving comfort.

The design includes a separate lane for pedestrians, with a protective green belt, so that, despite of increasing travel speed, pedestrian safety will be improved. There is no additional lane for pedestrians at the current crossroad and along the major road to the south.

6.4. POSITIVE IMPACTS

Project implementation will contribute to better environmental and socio-economic conditions and will have positive impacts on the quality of life of the local community. There are several social opportunities which were detected in the project:

- More efficient and safer traffic system: by decreasing the time of travelling, lower number of traffic accidents, lower costs of maintenance and management;
- Improvement of transport system and accessibility;
- Developed road structure with improved access to and out of the project area;
- Benefits to vehicle users and users of public transportation due to improved traffic connections and capacity;
- Lowering traffic congestions by increasing traffic flow;
- Improved pedestrian safety due to construction of separate pedestrian lane along the crossroad;
- Increased travel speed and travel quality;
- Lower adverse impact during operation on river due to the construction of the closed drainage system with waste water treatment;
- Direct employment and service opportunities: according to the Public Procurement Act in BH, the tender will be of international character and for this reason it will be difficult to predict where the contractor will come from; nevertheless, the practice in construction in BH suggests that hiring local contractors will be expected.

6.5. ENHANCEMENT MEASURES

Table 1: Enhancement Measures

Impact	Enhancement Measures	Cost Assessment (US$)		Institutional Responsibility	
		Operative	Implementation	Operative	Implementation
▪ Traffic	▪ Better traffic flow due to increasing travel speed; ▪ Reduction in time travel and cost by enhancing road surface and building a roundabout; ▪ Improved road and travel safety by improving intersection of city entrance with major road M 17; ▪ Increased pedestrian safety by designing separate lane for pedestrians.	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Socio-economic	▪ New job and business opportunities for local construction workers and firms; ▪ Improving connections between the cities and neighbour countries	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Water	▪ Improving the protection of the nearby watercourse due to construction of new road surface drainage system with purifier;	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Visual aesthetic and landscape	▪ Improving visual aspects of the surrounding area with seeding, planting and re-vegetation with autochthonous species;	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Noise	▪ Noise impact on the local residents and businesses is reduced with planting higher types of trees along the route;	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Air	▪ Creating protective green belt along the road and roundabout will partially absorb pollutants.	Included in construction works	Included in supervision	Contractor	PC Roads FBH

7. MITIGATION MEASURES

The purpose of this ESMP is to set forth mitigation measures associated with the environmental impacts identified for this given project activity. The mitigation measures are included in this section and summarized in *Table 5*. This chapter includes also the general provisions and mitigation measures that the contractor hired for this task will need to obey and/or perform. The requirements that the Contractor needs to follow, beyond the provisions of the ESMP, will be outlined in a number of planning documents (plans) that will be developed by the contractor prior to any start of works.

As a part of Tendering Documents (TD) for the Contractor, PC Roads FBH will require that the Contractor submits a Construction Site Organization Plan (CSOP), which will highlight certain requirements both for completion of works and implementation of mitigation measures.

CSOP consists of following components[10]:

(i) Preparation works and works of location organization after construction;

(ii) Technological scheme;

(iii) Elaborate on safety (Elaborate on safety on work and Elaborate on protection from fires and explosions), which shall include according to provision of this ESMP a Management Plan in Case of Accidents (MPCA); and

(iv) Elaborate on environmental protection during construction [that shall include among other a detailed Waste Management Plan (WMP)].

Additional request for the Contractor, as stipulated by ESMF and this ESMP, is to design and submit a detailed Traffic Management Plan (TMP) 30 days prior to commencement of works (in accordance with *Appendix 4. Road Safety Management* of the ESMF).

Within the framework of the project, PC Roads FBH prepared a Resettlement Policy Framework (RPF) which clarifies land acquisition/resettlement and compensation principles, organizational arrangements and procedures for planning land acquisition/resettlement. The RPF also serves as a guide for preparation of site-specific Resettlement Action Plans (RAPs).

7.1. MITIGATION MEASURES IN PRE-CONSTRUCTION PHASE

7.1.1. Contractor Management

PC Roads FBH will ensure that the construction intervention is carried out without risk to the health and safety of all workers and local community. Therefore, the Contractor will plan, coordinate, control and monitor the undertaken activities to effectively minimize the risks presented during their work.

[10] *Ordinance on Construction Site Organization, Mandatory Documents on Site and Participants in Construction (Official Gazette of the FBH No. 48/09)*

The ESMP is forming part of the tendering documents and the Contract for Execution of Works. It is the Contractor's obligation to calculate the implementation of environmental and social mitigation measures into the overall cost.

The Contractor will be required to provide a short statement that confirms that:

- The ESMP conditions have been estimated and included into the bid price,
- The Contractor for Execution of Works has a qualified and experienced person on the Contractor's team who will be responsible for the environmental and social compliance requirements of the ESMP.
- The Contractor will comply with applicable BH and FBH laws, EU standards and WB requirements.

The following contractual conditions shall apply to the Contractors for Execution of Works employed by PC Roads FBH:

- The Contractor will be required to prepare site-specific CSOP in accordance with the requirements of this ESMP. All submitted CSOPs shall be formally reviewed by PC Roads FBH prior to agreement and signing.
- The Contractor shall provide formal written reports to PC Roads FBH in accordance with requirements set-out in the ESMP which is part of this document;
- PC Roads FBH is responsible to introduce all contractors and sub-contractors and personnel working on the Project on the contents and provisions of this ESMP and any penalties arising from non –compliance therewith;
- The Contractor is responsible for notifying PC Roads FBH of any complaints or grievances received and of any corrective actions identified and implemented.

The Contractor shall provide regular reports on its management and monitoring of the working conditions of direct and indirect employees on the work site and ensure that systems are in place to monitor compliance with labor and health and safety standards.

The Contractor shall:

- Ensure that all workers are required to comply with all national / federal legislation on labor and health and safety, as well as any other relevant standards;
- Exchange information and request any plans from sub-contractors which deals with significant health and safety hazards and risks created by or associated with their work activities;
- Maintain regular effective two-way communication with all workers, sharing information and assisting in dealing with any unforeseen problems promptly.

The recommendations and proposed mitigation measures will be attached to the tendering documentation and subsequently the contract with the Contractor. The ESMP is a part of the Contract and as such it must be addressed to the Contractor and carried out as required.

7.2. MITIGATION MEASURES IN CONSTRUCTION PHASE

7.2.1. Labor Management

In the FBH the Law on Labor prescribes, among others, the issues of salaries, benefits and conditions of work and principles of non-discrimination that need to be complied with by the Contractor.

PC Roads FBH and the Contractor will create grievance mechanisms and explain them to all workers with an aim of enabling internal resolution of workplace concerns.

7.2.2. Environmental Management

During the construction phase, the Contractor shall award the responsibility of supervising everyday compliance with ESMP to a senior engineer.

The Contractor will be responsible for the implementation of all measures included in the ESMP for all activities undertaken in terms of the construction contract (including work undertaken by sub-contractors).

Compliance of Contractors with provision of ESMP will be assessed by the Construction Supervisor appointed by PC Roads FBH, in accordance with the Ordinance on Construction Site Development, Obligatory Documents on Construction Site and Participants in Construction Work.

Compliance reviews will be submitted by Contractor to PC Roads FBH on a monthly basis. Non-conformances, incidents and deviations from the ESMP will be communicated to PC Roads FBH as soon as possible, within 24 hours form the time of occurrence.

7.2.3. Construction Site Organization

- The Contractor shall be responsible for ensuring that order, discipline and professional responsibility of all employees on the construction sites are maintained at all times. Work must be restricted exclusively to the construction site, and damage to private property, land and crops must be avoided.
- The timing of construction activities should, if possible, be planned at the time of the year when the advantages of dry soil conditions can be utilized, i.e. when compacting and degradation through use is at minimum level. Additionally, it is recommended that machines only operate in the period 07-20 h in all sections of the route whose distance from nearest residential houses is less than 60 m.
- The Contractor is responsible for establishing temporary disposal sites for construction materials, area for washing and cleaning machinery (on site or off-site) and vehicles in accordance with CSOP. Temporary disposal sites for excavation material (topsoil) are to be reduced to maximum 2 m height, in order to prevent compaction caused by weight of the soil, and storage time is to be reduced to minimum - applicable to construction of bypasses.

- The Contractor is responsible for ensuring that all construction equipment is licensed and approved in accordance with local regulations, and certified in compliance with EU standards. This includes use of modern machines and vehicles that fulfill environmental standards in terms of emission of harmful gases (complete combustion) and those that have enclosed sources of noise (engines, exhaust system).
- The Contractor is responsible for ensuring that machines and vehicles parking places and worker's residence containers (if used during the course of the Project implementation) are not located inside any forested areas, that they do not impact watercourses and do not affect endangered flora and fauna.
- The Contractor is obliged to reinstate the construction areas in accordance with the planned land use and to restore species preserved in topsoil and supplement them by adequate material if needed.

7.2.4. Raw Material Sourcing and Supply

The Contractor shall identify borrow site in collaboration with PC Roads FBH.

- Borrow material can originate from:
  - Infertile land or land without trees, outside of the reach of roads,
  - Dredging the land to create new water containers,
  - Temporary acquired land outside of the reach of roads,
  - Excavations for the proposed ducts;
- The Contractor shall rehabilitate the borrow site after the completion of works, as follows:
  - Restore stocks of material for covering the borrow site, if it is used in agriculture;
  - Stabilize the slopes of the borrow site by compacting the soil and by using the cover layer of soil;
  - Return the stocks of cover to the borrow site and stabilize all work areas by new vegetation, by using appropriate and similar plants as in the surrounding area.
  - The Contractor should assess borrow sites and quarry locations before use to ensure avoidance of impacts on surface drainage patterns.
- The Contractor shall rehabilitate borrow pits and quarries as soon as possible after use, and where appropriate, will landscape them to best fit into the existing environment.
- The Contractor shall avoid unnecessary driving of vehicles to minimize use of fuels and air emissions.

- The Contractor is responsible for buying construction material from suppliers that operate in accordance with valid operation permits, environmental permits and national and EU environmental standards.

7.2.5. Management of Hazardeous Materials and Substances

The materials which are used on the occasion of reconstruction of the crossroad area are potential source of pollution. Inappropriate storage and handling oils, lubricants, chemicals and hazardous substances on construction site and potential spills of those substances may harm the environment or health of employees working on road rehabilitation. In order to mitigate that, the Contractor is obliged to:

- Prepare the procedure of spills control and submit the plan to PC Roads FBH for approval.
- Train relevant construction works staff for handling fuels and procedure of spills control.
- Storage of hazardous substances in fenced areas in sealed plastic foil far from watercourses.
- Fueling is allowed only inside fenced area.
- Ensure absorbing and retaining material (for example, absorbing covering), where the staff will be appropriately trained regarding safe handling practices, use and storage.
- Provide protective clothes, safety booths, helmets, masks, gloves, glasses, staff for promoting construction works, material appropriate for use.
- Check whether all containers, drums and cisterns used at storage are in good condition and with a designation of expiry date. Each container, tank or drum which is indented, cracked or rusty may cause leakage. Check leakage on a regular basis in order to identify potential problems in time.
- Put containers and drums in temporary storage in clearly designated areas where they will not be ran over by vehicles or heavy machinery. Storage must be on a slope or with drainage for safe collection of fluids in case of spill.
- Take all precaution measures on handling and storing fuels and lubricants, while avoiding environmental pollution.
- Avoid the use of material with a higher possibility of pollution, by replacing them with more eco-friendly materials.
- Ensure special storage area for fuels/oils and/or other hazardous substances used during construction.
- All storage areas should be equipped with an appropriate spill kit.
- The staff using the hazardous material should be appropriately trained regarding safe handling practices and emergency response procedure.

- Provide all workers with appropriate personal protective equipment from harmful effects of hazardous substances.
- Ensure that hazardous waste i.e. waste oils are solved by specialized licensed bodies for hazardous waste management.
- Identify and register hazardous substances by marking in details place and amount of hazardous substances, including storage, use and disposal.
- Train the staff and implement a safe work practice for minimizing the risk of spill.
- Establish the cause of pollution if it appears and control the area of pollution. The impact can be controlled by isolating the source of pollution or by implementing control of the affected area.
- Rehabilitate contaminated soil by using the most appropriate available method.

7.2.6. Waste Management

Following measures shall be implemented:

- Waste generation, where practicable, will be minimized through the adoption of efficient designs, reduction of materials required, construction method selections and reuse and recycling where practicable.
- Where absorbents, (e.g. sand, oil pads or booms) have been used to absorb a leak or contain a spill, the contaminated waste absorbent is to be disposed of as hazardous waste on a special area inside the construction site before the licensed operator takes over the waste and dispose it permanently.
- The Contractor is responsible for ensuring that all waste is disposed of by licensed operators for waste management at appropriate waste management facilities.

Due to inappropriate waste management and construction waste pollution of soil and water is possible. Therefore, the Contractor is obliged to:

- Create a Waste Management Plan (WMP) for various types of waste (for example, usable waste, flammable waste, construction waste, food waste ect.).
- Organize waste disposal in eco-friendly manner, which was created during works on road rehabilitation. That will include consideration of nature and landfill, in order to reduce the environmental impact to the lowest level possible.
- Reduce creation of waste by the following approach: reduce, recycle, reuse.
- Wherever possible separate the entire waste and reuse or recycle it.
- Prohibit waste incineration.
- Collection and transport of non-hazardous waste in all approved landfills. Vehicles for transport of solid waste must be covered with tarpaulin or nets to prevent dissipation of waste on the road.
- Provide containers on construction site.
- To request from supplies fewer packaging material, wherever possible.

- Maintain construction site clean, tidy and safe, and provide and maintain appropriate facilities as temporary storage of the entire waste prior to transport and final disposal.
- Collect chemical waste in 200 liter drums (or similar sealed container), appropriately labeled for safe transport to an approved chemical waste depot.
- Store, transport and handle all chemicals avoiding potential environmental pollution.
- Store all hazardous waste appropriately in fenced areas away from watercourses.
- Collect hydrocarbon waste, including lube oils, for safe transport off-site for reuse.
- Ensure proper collection and disposal of solid waste within the construction camp.
- Locate the garbage pit/waste disposals item at least 500 m away from the residential areas so that people are not disturbed with the odor likely to be produced from anaerobic decomposition of waste at the waste dumping places. Enclose the waste dumping place by fencing and tree plantation to prevent children to enter and play.
- Do not establish site-specific landfill sites. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites.

7.2.7. Road Transport and Road Traffic Management

Dust generation on construction sites, stocks of materials and access roads poses disturbance to the surroundings and may be harmful to health. In order to prevent this adverse impact, the Contractor shall:

- Prevent dust emissions by transporting asphalt, gravel, stone, earth and other material in covered trucks. The speed of transport vehicles should not exceed 30 km/h and 20 km/h on unpaved sections.
- Define control measures for dust generated through handling of equipment and/or during rehabilitation works. The Contractor must submit the plan in which the above proposed paths for transport of material have been listed (Technological scheme and TMP), and is also required to provide statements about proposed method of dust control in places where transport through settlements may not be avoided.
- To water the stocks of material, access roads and bare soil in order to reduce the possibility of disturbing the surrounding due to dust. Increase frequency of irrigation during high risk periods of time (for example, high winds). Stock materials such as gravel and sand must be covered and closed in order to prevent dissipation by wind.
- Decrease range and period of exposure of bare surfaces.
- Postpone the activities of earthworks or cleaning of vegetation if it is necessary for avoidance of the periods of high wind or if dust is seen outside the construction site.

- Rehabilitate the disrupted area as soon as possible by planting greenery or grass.
- Establish appropriate areas for storage, mixing and load of construction material in the way that dispersion of dust is prevented due to such operations.

In order to ensure proper traffic management, the Contractor is obliged to do as follows:

- To create TMP as part of CSOP in accordance with ESMP.
- Implement adequate traffic control measures, in accordance with national legislation and such measures must first be approved by the Supervision Engineer.
- Traffic safety management measures need to include temporary lighting and adequate signalization during excavation and rehabilitation/construction works.
- Appoint permanent staff that will be engaged on traffic safety issues, and would be responsible for implementation of traffic safety measures and implementation of traffic measures as prescribed by national legislation, which would include: (i) inspection of the condition and position of equipment for traffic control in use; (ii) design review – part related to traffic control equipment necessary to provide safe and efficient traffic flow; (iii) correction of all traffic deficiencies where applicable; (iv) inspection of work areas, handling of equipment and storage, handling of material and storage related to traffic safety.

7.2.8. Environmental Impacts Management

Air Quality, Noise Levels and Vibrations

The contractor shall:

- Ensure that high quality fossil fuels (with low percentage of sulphur and lead) are used for construction machinery and equipment;
- The Contractor needs to ensure that all construction machines are operated during normal working hours (07 - 20 h);
- Avoid unnecessary operation of construction machinery and vehicles;
- Maintain all vehicles in order to keep them in good working order in accordance with manufactures maintenance procedures
- Make sure all drivers comply with the traffic codes concerning maximum speed limit, driving hours, etc.
- Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site,
- Appropriately site all noise generating activities to avoid noise pollution to local residents,
- Use the quietest available plant and equipment,
- Modify equipment to reduce noise (for example, noise control kits),
- Install acoustic enclosures around generators to reduce noise levels.,

- Fit high efficiency mufflers to appropriate construction equipment,
- Avoid the unnecessary use of alarms, horns and sirens,
- Notify adjacent landholders prior any typical noise events outside of daylight hours,
- Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions,
- Employ best available work practices on-site to minimize occupational noise levels,
- Install temporary noise control barriers where appropriate,
- Plan activities on site and deliveries to and from site to minimize impact,
- Monitor and analyze noise and vibration results and adjust road rehabilitation practices as required,
- Avoid undertaking the noisiest activities, where possible, when working at night near residential areas.

Surface Water Quality

- The Contractor will use biodegradable lubricants and gear oils. Maintenance, filling and cleaning of machines must be carried out off the site and outside of the area with surface water.
- Wastewater from workers toilets should not be discharged on land or in water resources.

During the works on reconstruction of the crossroad, quality of surface area might deteriorate due to activities on construction sites. Works on reconstruction of the crossroad may lead to an increased outflow rate of residue and polluted sediments into surface water and thus affect fish habitats and the rest of aquaculture. Therefore, the Contractor shall:

- Install temporary drainage works (channels and bunds) required for sediment and erosion control and around storage areas for road rehabilitation materials,
- Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site,
- Divert runoff from undisturbed areas around the construction site,
- Place stockpile materials away from drainage lines,
- Prevent all solid and liquid waste entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport them an approved waste disposal site or recycling depot.
- Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved fenced areas on site.
- Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the

wheels. This should be done in every exit of each vehicle to ensure the local roads are kept clean.

- Sediment-laden run-off prior to the final disposal should be directed so as to leak into the deeper layer of soil or discharge it into lagoon.
- Restore and protect clean areas as soon as possible.
- Dust from storage materials will increase residue and contaminated deposits on surface water bodies. In order to reduce pollution, the Contractor shall perform as follows:
    - Ensure that the roads used by construction vehicles are regularly cleaned, for the purpose of removing residue;
    - To water the stocks of material, access roads and bare soil in order to reduce the possibility of disturbing the surrounding due to dust. To increase frequency of irrigation during high risk periods of time (for example, high winds).

In order to mitigate spillage of hazardous and poisonous chemicals polluting the soil, the Contractor shall:

- Strictly implement the WMP;
- Construct appropriate contents for drainage of pollution for all areas of fuel storage;
- Establish and maintain hazardous substances by marking place and amount of harmful substances in detail, including storage, usage and disposal;
- Train the staff and implement a safe work practice to minimize the risk of spill;
- Determine the cause of pollution if it appears, and control the area of pollution. The impact can be controlled be isolating the resource or by implementing control of affected terrain.
- Rehabilitate contaminated soil by using the most appropriate available method.

<u>Use of Land</u>

- The Contractor shall ensure that construction-related activities are performed strictly and in enclosed construction area;
- The Contractor shall ensure that the natural conditions of the surroundings of the construction site are reinstated after completion of works.

<u>Biological and Ecological Sources</u>

- The Contractor shall ensure that removal of vegetation is minimally limited to the marked construction area.

7.2.9. Health and Safety

Works on the reconstruction may pose health and safety risks for construction workers and visitors to the construction site, which may cause severe injuries or death. Population near the construction site and construction workers will be exposed to a large number of: biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc.), and (ii) road accidents from construction traffic.

Therefore, the Contractor is obliged to:

- Implement suitable safety standards for all workers and site visitors, which should not be less than those laid down in the international standards in addition to complying with the national standards of the FBH,
- Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular road rehabilitation activity and specific classes of hazards in the work areas,
- Provide personal protective equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty equipment and by replacing damaged equipment with new one.
- Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job.
- Appoint an environment, health and safety manager to look after the health and safety of the workers.
- The contractor should provide portable toilets at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities should be at least 6 m away from storm drain system and surface waters. These portable toilets should be cleaned once a day and all the sewerage should be pumped from the collection tank once a day and should be brought to the common septic tank for further treatment.
- Contractor should provide bottled drinking water facilities to the construction workers at all the construction sites.

7.2.9.1. Safety Engagements

The Contract should ensure that all possible risks in the course of work are eliminated or reduced to a minimum. In order to prevent the possibility of higher-scale accidents it is necessary to plan and develop the measures to help reduce the adverse impacts. The Contractor’s duty is to create a Management Plan in Case of Accidents (MPCA).

The MPCA should include organizational structure, responsibilities, procedures, communication, training, resources and other measures needed to provide appropriate

reaction of the Contractor in case of accidents which might occur during the project. The most important items of the MPCA are as follows:

- Identify potential hazards and large-scale accidents,
- General procedures for all emergencies and accidents that might occur during the project due to natural disasters, defects on equipment of human errors,
- Description of preventive measures against accidents,
- Workers training for their roles and responsibilities when accident occurs,
- Determining responsible person at the spot,
- Urgent communication procedures,
- Information and contacts of important local authorities and emergency services,
- Internal and external alarming,
- Response plans for specific types of hazards, for example medical assistance, fire etc.

The MPCA should include:

- Spill Response Plan,
- Emergency Preparedness,
- Response Plan to Accidents.

7.2.9.2. First Aid

The Contractor shall:

- Ensure that facilities that provide health care and first aid are easily accessible. Appropriately equipped first aid stations are to be easily accessible in the whole work area;
- Documenting and reporting accidents, diseases and incidents on workplace;
- Prevent accidents, injuries and diseases originating from, in connection with or arising in the course of work, reducing as much as possible the possible cause of danger in the way which is in accordance with good international practice of industry;
- Identify potential dangers for works, particularly those that might pose threat to life, and provide the necessary preventive and protective measures;
- Ensure that construction site drivers strictly comply with the rules of driving;
- Ensure appropriate lighting in city urban area and alongside roads.

7.2.10. Traffic and Road safety

The Contractor shall ensure traffic and road safety during performance of works.

The Contractor shall develop the CSOP which includes preparation and organization of construction site during and after construction, including roads on the construction site ie. Traffic Management Plan (TMP).

Traffic on construction site is to be regulated the same way as public traffic roads.

The Contractor is obliged to:

- Prepare and deliver TMP to PC Roads FBH for its approval, no later than 30 days upon the beginning of works on any component of the project included in traffic redirection and management.
- For the purpose of uninterrupted traffic movement during the reconstruction of the crossroad, include in TMP the following parts: detailed drawings of traffic solutions by showing all bypasses, temporary roads, temporary turns, necessary barricades, signalization/lighting, traffic signs etc.
- Ensure signs in strategic parts of traffic roads.
- Install and maintain a sign on each important crossroad, on roads which will be used during reconstruction works, which will clearly indicate the following data in a local language:
    - Location: station label and settlement name
    - Duration of construction
    - Period of the proposed bypass/alternative road
    - Map of the proposed bypass
    - Name and contact address/telephone number of responsible personnel
    - Name and contact address/telephone number of contractor
    - Sincere apology for the caused inconvenience

TMP should include details about the following:

- Construction plan by phases,
- Beginning and duration of works,
- Overview of the existing conditions near the construction site,
- Identification of affected areas,
- Mitigation measures,
- Plan of public transport, for example, timetable, change of timetable, disturbance and the like;
- Circulation plans, including zones of entry and exit, routes for towing of material, turnaround points, parking areas, zones of interlocking with other traffic roads etc.,
- Routes for pedestrians and vehicles,
- Traffic controls for each expected intervention, including illustrations of barriers, paths, signalization plan, warning signs etc.,

- Requirements for special vehicles, for example, those of large dimensions,
- Construction works paths (access, ramps, loading, unloading),
- Connection roads for supply vehicles and storage of material,
- Expected interaction of pedestrians and vehicles,
- Roles and responsibilities of persons on construction site regarding traffic management,
- Instructions on the procedures regarding traffic control, including urgent situations.

TMP should also include appropriate communication with affected population about traffic and timely information of traffic changes/road blockage.

TMP should be monitored on a regular basis (responsibility of the supervision engineer) and audited to ensure effective implementation and to take into consideration any changes on construction site. All workers on construction site should be acquainted with the TMP.

7.2.11. Construction Site Safety

The Contractor shall secure the construction site. The area should be fences in order to prevent entry of unauthorized persons. The construction site should be accompanied with a board with information on works and participants in construction (investor's name, contractor's name, project designer's name, name and type of construction being built, beginning and end of works). These measures are necessary so the Contractor could ensure safety of construction site and prohibit entry ensure of unauthorized persons.

The Elaborate on safety on work and Elaborate on protection from fires and explosions should include detailed measures of safety on construction site in order to ensure safety of location and remove possible risks and adverse impacts on employees and unauthorized persons.

7.2.12. Land Acquisition, Involuntary Resettlement and Economic Displacement

There will be smaller acquisition of state-owned land for the needs of the Project and there will be no involuntary resettlement nor economic displacement.

The Contractor shall comply CSOP with the City and use protection zones of the roads for disposal of construction material and material used for maintenance purposes. In case that occasional use of other land cannot be avoided, compensation will be provided to the affected owner/beneficiary in accordance with provisions determined in the RPF. Land acquisition can only proceed when there's a site-specific Resettlement Action Plan (RAP) in place for this Project.

7.3 MITIGATION MEASURES IN OPERATION PHASE

It is required from PC Roads FBH to undertake the following measures:

- Regular inspection of road integrity and constant maintenance of roads, including such road infrastructure as fences in accordance with the Regulation on Maintenance of Public Roads (Official Gazette of the FBH no. *48/03)*
- Regular maintenance of vegetation along the crossroad and road, ensuring appropriate visibility and passability of roads;
- Cleaning of roads (removal of waste, debris caused by erosion, snow, etc.) and road signalization and lighting equipment;
- Ensuring all absorption substances used for absorption of spills on roads are treated as hazardous waste and handed over to authorized operators of hazardous waste.
- PC Roads FBH shall hire a Contractor for maintenance works, whose obligations will be as follows:
- Maintenance of Road Inspection Logs, Road Maintenance Logs and Log of Construction Works in accordance with Guidelines for the Design, Construction, Maintenance and Supervision of Roads (FBH Roads, 2010).

7.4 SUMMARY OF MITIGATION MEASURES

Table 2: Environmental and Social Impacts Management Plan

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
PRE-CONSTRUCTION PHASE						
▪ Land acquisition.	▪ Implementation of RPF and RAP.	Internal resources	Internal resources	Project designer + PC Roads FBH	PC Roads FBH	
▪ Restricted access.	▪ Development of the TMP.	Included in the bid	Internal resources	Contractor	PC Roads FBH	
▪ Impacts on living conditions.	▪ Informing the local communities on the extent of works and duration prior to the commencement of construction works.	Internal resources	Internal resources	PC Roads FBH	PC Roads FBH	
▪ Compliance with national legislation.	▪ Obtaining all necessary permits for Project implementation.	Internal resources	Internal resources	PC Roads FBH + Project designer	Competent body for issuing the permit	
▪ Restrictions on land use and damages on private property and businesses.	▪ Avoid private properties where possible; ▪ The Contractor will organization the construction site in collaboration and agreement with Municipality or city where the works shall be done; ▪ In case occasional land use cannot be avoided, compensation will be provided to affected owners/users	Internal resources	Internal resources	Contractor + PC Roads FBH	PC Roads FBH	

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	(application of RPF and RAP), as well as compensation for loss of the possibility to continue to use land and businesses as intended.					
▪ Job creation and impacts on local business.	▪ Informing the public in advance about the construction works, in order to enable businesses and workforce in the area to prepare for the demand on the market.	Internal resources	Internal resources	Contractor + PC Roads FBH	Contractor + PC Roads FBH	
CONSTRUCTION PHASE						
▪ Access restriction.	▪ Implementation of the provisions on providing timely information to citizens about upcoming construction works, expected duration of the works, alternative routes, etc.; ▪ Ensuring safe and continuous access to all adjacent office facilities, shops and residences during construction; ▪ Implementation of TMP.	Included in construction works	Included in supervision	Contractor	Supervisory body*	Supervisory body is appointed by investor PC Roads FBH
▪ Impacts on living conditions of local community;	▪ Undertaking adequate actions to prevent or mitigate adverse impacts; ▪ Providing timely information to the citizens on any type of disruption and inconvenience.	Included in construction works	Included in supervision	PC Roads FBH + Contractor	Supervisory body*	

** Supervisory body shall be a Consultant appointed by PC Roads FBH according to Federal legislative*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Impacts on local traffic: ▪ increase of local traffic, including heavy machinery and trucks; ▪ closing one of the traffic lanes for construction purposes causing traffic delays and limited access.	▪ Implementation of TMP; ▪ Introduction of appropriate signalization and warning signs; ▪ Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours; ▪ Traffic management system and staff training, especially for site access and near-site heavy traffic; ▪ Provision of safe passages and crossings for pedestrians where traffic interferes.	Included in construction works	Included in supervision	Contractor	Supervisory body*	In collaboration with the local Ministry of the Interior
▪ Temporary occupation of privately owned land plots for the purpose of construction of access roads and placement of staff, machines and material.	▪ Implementation of RPF and RAPs.	Internal resources	Internal resources	PC Roads FBH	PC Roads FBH	
▪ Air emissions: - exhaust gasses; - dust generation.	▪ High quality fossil fuels (with low percentage of sulphur and lead) need to be used for construction machinery and equipment; ▪ All machines and vehicles to be used in construction/ reconstruction/ rehabilitation activities must have use permit; ▪ Vehicles need to be regularly maintained ;	Included in construction works	Included in supervision	Contractor	Supervisory body*	

** Supervisor shall be a Consultant appointed by PC Roads FBH according to Federal legislative*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	▪ Equipment with installed filters to reduce soot emission needs to be used; ▪ When not in use the equipment and machinery need to be shut down; ▪ Maximum speed of the vehicle on unpaved roads should be restricted to 20 km/h; ▪ Moistening/ wetting the site to prevent dust occurrence (in areas with dry soils or where activities generate dust); ▪ Sand and gravel materials need to be transported in covered trucks.					
▪ Increased level of noise and vibration: - noise emission and noise disturbance; - vibration.	▪ Restriction of works to period of day only (period of day: 06:00 to 22:00, period of night: 22:00-06:00) ▪ In the case of noise complaints by local residents, simultaneous use of machines that generate noise over 70 dB needs to be limited; ▪ In the case of noise complaints by local residents, number of trucks per day visiting the site needs to be reduced; ▪ All machines and vehicles to be used in construction/ reconstruction/ rehabilitation activities must have use permit; ▪ When not in use the equipment and machinery need to be shut down;	Included in construction works	Included in supervision	Contractor	Supervisory body*	

* *Supervisor shall be a Consultant appointed by PC Roads FBH according to Federal legislative*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	▪ Maximum speed of the vehicle on unpaved roads should be restricted to 20 km/h.					
▪ Water consumption and emissions into water: - creation of additional water demand, - possible contamination of surface water.	▪ Monitoring water consumption; ▪ Monitoring of water quality; ▪ Proper waste disposal and separation of hazardous waste is required, as well as the engagement of authorized companies for final waste disposal; ▪ Oil and fuel collection systems to be fitted to prevent leakage; ▪ Vehicles and machines need to be regularly maintained to prevent leakage. ▪ Installation of oil separators in accordance with EN ISO 858-1 and 858-2.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Soil degradation and emissions to soil: - soil erosion; - borrow pit excavation; - soil contamination by oils, fuels and other hazardous substances.	▪ Topsoil from borrow pit areas should be saved and reused in re-vegetating the pits; ▪ Control during earthworks to prevent degradation of terrain stability is required; ▪ Borrow pit areas will be graded to ensure drainage and visual uniformity; ▪ Installation of drainage structures for proper drainage of water from construction site is required;	Included in construction works	Included in supervision	Contractor	Supervisory body*	

** Supervisor shall be a Consultant appointed by PC Roads FBH according to Federal legislative*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	▪ Proper waste disposal; separation of hazardous waste; engagement of authorized companies for final waste disposal; ▪ Oil and fuel collection systems to be fitted to prevent leakage.					
▪ Conversion of the area and conversion of present land use: - changes in land use; - interrupted land use by uncontrolled and inadequate waste management.	▪ The land determined for use by the Project can only be used for the construction/ reconstruction/ rehabilitation activities and no other land is available for i.e. storage of building material, parking of the heavy machinery etc. in terms of preventing land disturbance; ▪ Proper waste disposal; separation of hazardous waste; engagement of authorized companies for final waste disposal; ▪ Oil and fuel collection systems to be fitted to prevent leakage.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Removal of vegetation cover and topsoil, degradation of biological and ecological resources: - destruction of aquatic habitat due to changes in water flow and quality in terms of sediment load;	▪ Prevent and control oil, fuel, and chemical spillages that can find their way to the streams; ▪ Topsoil must be must be returned and re-vegetation must be performed after construction/ reconstruction/ rehabilitation activities are done; ▪ Planting ligneous plants around roads and adjacent areas can help to support local flora and fauna;	Included in construction works	Included in supervision	Contractor	Supervisory body*	

** Supervisor shall be a Consultant appointed by PC Roads FBH according to Federal legislative*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
- arranged trenches (corridor restrictions) pose a risk to small animals (they might fall into the trench and get injured) and cause temporary fragmentation of habitat; - removal of vegetative cover.	▪ Fencing of the sites to prevent fall of small animals into trenches; ▪ All trenches up to 0,5 m of depth must be sloped or have ramps in case of necessity for animals' exit. All trenches shall be checked whether there any animals in the prior to covering them with soil; ▪ The land determined for use by the Project can only be used for the construction activities and no other land is available for i.e. storage of building material, parking of the heavy machinery etc. in terms of soil disruption.					
▪ Decrease in the aesthetic value of the landscape due to construction site organization.	▪ The land determined for use by the Project can only be used for the construction activities and no other land is available for i.e. storage of building material, parking of the heavy machinery etc. in terms of soil disruption; ▪ Fencing around construction site with non-transparent fence is required for visual protection and keeping the aesthetic value of the construction area.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Inadequate traffic management during construction: - traffic congestion and obstructions on road sections;	▪ Implementation of EMP which includes the: - TMP, - Levelling of ground to reduce the occurrence of trenches and slopes.	Included in construction works	Included in supervision	Contractor	Supervisory body*	

** Supervisor shall be a Consultant appointed by PC Roads FBH according to Federal legislative*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
- occurrence of trenches and slopes						
▪ Inadequate waste handling.	▪ Implementation of WMP.	Included in construction works	Included in supervision	Contractor	Supervisory body*	+ local waste management operator
▪ Inadequate organization of construction site.	▪ Implementation of CSOP	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Inadequate workers safety.	▪ Implementation of work safety measures: - Provide workers with a safe and healthy work environment, - Provide personal protective equipment, - Respect safety procedures, - Provide portable toilets, - Provide drinking water	Included in construction works	Included in supervision	Contractor	Supervisory body*	

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Accidental situations i.e. spills, leakage of oils, fats, fuels and similar hazardous materials.	▪ Implementation of MPCA which includes: - Spill Response Plan, - Emergency Preparedness and Response Plan. ▪ Implementation of Elaborate on protection from fires and explosions	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Materials supply and transport.	▪ Implementation of CSOP to ensure materials are transported in covered vehicles to reduce impacts on environment and Management Plan on Safety at Work to ensure materials are used in accordance with Bill of Quantities	Included in construction works	Included in supervision	Contractor	Supervisory body*	
CHANCE-FIND PROCEDURES DURING CONSTRUCTION PHASE						
▪ Impacts on cultural heritage.	▪ If archeological findings appear on or near construction site immediate work suspension and local authorities notification is required; ▪ Implementation of CSOP.	Included in construction works	Included in supervision	Contractor	Supervisory body*	In case of finding cultural heritage, supervision is implemented by the competent institution
OPERATION PHASE						

** Supervisor shall be a Consultant appointed by PC Roads FBH according to Federal legislative*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Access restrictions – during maintenance.	▪ Introduction of appropriate traffic signalization and appropriate warning signs; ▪ Information to citizens through the media about upcoming maintenance, expected duration of the works, alternative routes.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Air emissions: - exhaust gasses; - dust generation	▪ Influence on the air quality is dependent on the movement of vehicle traffic, and cannot be controlled, ▪ if the emission exceeds limiting values a protective green belt shall be built to absorb pollutants (CO2).	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Increased level of noise and vibration: - noise emission; - vibration.	▪ In the case of noise complaints by local residents, the reduction of permissible vehicle speed limit should be performed, ▪ Vibration will be reduced because of the improvement of new state of crossroad in comparison to the present state and therefore no mitigation measures are required.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Emissions into water: - possible contamination of surface water and groundwater in the cases of leakage of hazardous substance.	▪ Procurement and use of adsorbing material for the case of accidental spills during everyday traffic; ▪ Regular maintenance of oil separators and ensuring that waste oils are handed over to authorized companies for management of hazardous waste.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Soil degradation and emissions to soil: - soil contamination by oils, - fuels and other hazardous substances.	▪ Procurement and use of adsorbing material for the case of accidental spills during everyday traffic.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Accidental situations i.e. spills, leakage.	▪ Procurement and use of adsorbing material for the case of accidental spills during everyday traffic.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	

8. ENVIRONMENTAL MONITORING PROGRAM

The table below presents summary of potential impacts in connection with the project, along with monitoring measures necessary as information for construction site – development of a certain plan during project implementation and connection of mitigation measures to avoid or reduce their impact.

The main components of the Monitoring Plan are as follows:

- Parameters to be monitored,
- Location of monitoring parameters,
- The way how monitoring will be performed,
- When monitoring will be performed,
- Costs of monitoring activities,
- Responsibility for monitoring activities.

The Contractor shall create Environmental Monitoring Programs (EMP), prior to commencement of works, in accordance with requirements of this ESMP, which will include a minimum of monitoring requirements, described in table below, without limitation to these requirements. PC Roads FBH will be responsible for reviewing the state of the EMP prepared by the Contractor and for ensuring that these monitoring programs are in accordance with this document.

The list for monitoring in the field will be prepared on the basis of ESMP. The list for monitoring in the field will be used by Supervision Engineers of PC Roads FBH. These signed lists will be forwarded to PC Roads FBH, who will be responsible for monitoring and reporting about the compliance.

PC Roads FBH will maintain a registry of grievances, which will contain all information on grievances or complaints received by the community or other interested parties. That will include type of grievance, time and actions for their resolution and outcome.

Table 3: Environmental Monitoring Program

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
PRE-CONSTRUCTION PHASE								
▪ Job creation and impacts on local businesses.	▪ Number of employed persons from local communities; ▪ Timely informing the local communities about the forthcoming works.	Wider area of construction	Inspection	Prior to construction	Included in performance	Included in performance	Contractor	Contractor
▪ Temporary occupation of privately owned land plots for the purpose of construction of access roads and placement of Staff, machines and material.	▪ Implementation of RPF and creation of RAPs for each road section affected by land acquisition.	Construction site	Visual inspection and inspection	Prior to construction and during construction when necessary	Included in supervision	Included in supervision	Supervisory body + PC Roads FBH	Supervisory body + PC Roads FBH
CONSTRUCTION PHASE								
▪ Access restrictions.	▪ Provided alternative access, ▪ TMP in place, ▪ Implementation of RPF, provisions on compensation procedures for businesses affected by access restrictions and livelihood restoration.	Construction site	Visual inspection	Random checks at least once a week during the construction	Included in supervision + Included in RPF (RAP)	Included in supervision + Included in RPF (RAP)	Supervisory body + PC Roads FBH	Supervisory body + PC Roads FBH
▪ Restrictions on land use and damage to the private property	▪ CSOP in place;	Construction site	Visual inspection	Prior to construction and random	Included in supervision	Included in supervision	Supervisory body	Supervisory body

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
(agricultural plots, horizontal infrastructure, fences and railings) due to disposal of construction waste, work camps and parks of heavy machinery	▪ Disposal of construction and maintenance materials; ▪ Position of work camps and heavy machinery parks; ▪ Implementation of RPF provisions on compensation procedures in case occasional land use cannot be avoided, compensation will be provided to affected owners/users and livelihood restoration assistance.			checks at least once a week during the construction	+ Included in RPF (RAP)	+ included RPF (RAP)	+ PC Roads FBH	+ PC Roads FBH
▪ Impacts on local traffic (increase of local traffic, including heavy machinery and trucks, operation of roads with only one lane causing traffic delays and limited access)	▪ TMP in place; ▪ Traffic patterns; ▪ Timely information to the citizens.	On construction site and nearby	Visual inspection and inspection	random checks during the week	Included in supervision	Included in supervision	Supervisory body	Supervisory body
▪ Air emissions: - exhaust gasses; - dust generation	▪ Level of dust (amount of particles of sediment and floating particles); ▪ Emissions of exhaust gases from vehicles and equipment; ▪ (SO_2, NO_2, dim and PM_{10}).	Construction site	Measuring devices	During construction when needed and upon complaints by the citizens	-	500 USD/measuring	Contractor + Supervision	Authorized laboratory
▪ Increased level of noise and vibration: - noise emission,	▪ Level of noise.	In populated places near the	Measuring devices	Upon order by supervisory organ or upon	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
- vibration.		construction site		complaints by the citizens				
▪ Emissions into water: ▪ possible contamination of surface water and groundwater	▪ Analysis of parameters of surface water quality: - Chemical analysis (PH, turbidity, conductivity, temperature, suspended particles, KPK, BPK_5, ingredients with nitrogen); - Standard bacteriological analyses.	In watercourse near construction site downstream	Standard laboratory equipment and methods of water quality monitoring	Upon order by supervisory organ or upon complaints by the citizens	-	1000 USD /measuring	Contractor + Supervision	Authorized laboratory
▪ Pollution of surface watercourses.	▪ Presence of oil film in surface watercourses.	In watercourse near construction site downstream	Visual inspection + Standard laboratory equipment and methods of water quality monitoring	Upon order by supervisory organ or upon complaints by the citizens	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory
▪ Increased water consumption.	▪ Amount of affected water.	Construction site	Water meter, record-taking	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Emissions into water and soil due to improper waste handling.	▪ CSOP in place, ▪ Waste generation and management.	Construction site	Visual inspection, disposal records or	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
			receipts from landfills					
▪ Soil degradation: - soil erosion; - borrow pit excavation; - occurrence of landslide	▪ Implementation of CSOP, ▪ Implementation of WMP.	Construction site	Visual inspection	Regularly during construction	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Removal of vegetation cover	▪ Number and type of planted vegetation and analysis of vegetation cover prior to the beginning and upon completion of works.	Construction site	Visual inspection and record-taking	Prior to beginning and upon completion of works	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Degradation of biological and ecological resource	▪ All excavated trenches over 0.5 min depth will be sloped or have escape ramps installed which are suitable for the escape of animals. All trenches shall be inspected for wildlife prior to backfilling.	Construction site	Visual inspection	Regularly during construction, as appropriate	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Waste management.	▪ Implementation of CSOP and WMP.	Construction site	Visual inspection, disposal records or receipts from landfills	Regularly during construction, as appropriate. Amount and disposal records	Included in performance	Included in performance	Contractor + Supervision	Contractor

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
				internal reports will be made daily and monthly				
▪ Accidental situations i.e. spills, leakage.	- Implementation of MPCA which includes: - Spill Response Plan, - Emergency Preparedness and - Response Plan.	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Materials supply.	▪ Implementation of CSOP (the origin of material, material approvals etc.).	Construction site	Reports	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Material transport.	▪ Implementation of CSOP (the origin of material, licenses etc.).	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Workers safety.	▪ Implementation of work safety measures (protection equipment, toilets, drinkable water etc.).	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
OPERATION PHASE								
▪ Access restrictions during maintenance.	▪ Development and implementation of TMP (safe passages for vehicles and pedestrians; application of	Construction site	Supervision	Prior to maintenance works	Internal resources	Included in maintenance	PC Roads FBH	Consultant for maintenance

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
	proper horizontal and vertical signalization; timely information to public etc.).			and random checks at least once per week during maintenance activities				
▪ Emissions to water: possible contamination of surface water and groundwater in the cases of leakage of hazardous substances.	▪ Status of water bodies adjacent to road sections ▪ Analysis of parameters of surface water quality: - Chemical analysis (PH, turbidity, conductivity, temperature, suspended particles, KPK, BPK_5, ingredients with nitrogen); - Standard bacteriological analyses.	Nearby watercourse	Visual inspection + Sampling if necessary	Random checks during maintenance	Internal resources	1000 USD/measuring	PC Roads FBH	Authorized laboratory
▪ Soil degradation and emissions to soil: soil contamination by oils, fuels and other hazardous substances.	▪ State of soil in proximity to the road; ▪ Soil quality, including, PH, heavy metals, phosphorus, nitrogen, Na, Ca, salts and pesticides.	Along the crossroad	Visual inspection + Sampling if necessary	Random checks during maintenance	Internal resources	1500 USD/measuring	PC Roads FBH	Authorized laboratory
▪ Air emissions: - Exhaust gases.	▪ Level of dust (amount of particles of sediment and floating particles); ▪ Emissions of exhaust gases from vehicles and equipment;	Along the crossroad	Visual inspection + Sampling if necessary	Random checks during maintenance	Internal resources	500 USD/measuring	PC Roads FBH	Authorized laboratory

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
	▪ (SO_2, NO_2, dim and PM_{10}).							
▪ Increased level of noise and vibration: - noise emission and noise disturbance; - vibration.	▪ Level of noise.	In populated places near the construction site	Measuring devices	Upon order by supervisory organ or upon complaints by the citizens	Internal resources	500 USD/measuring	PC Roads FBH	Authorized laboratory
▪ Accidental situations i.e. spills, leakage.	▪ Status of road sections.	Along the crossroad / close to the watercourse	Inspection	Random checks during maintenance	Internal resources	Included in maintenance	PC Roads FBH	Consultant for maintenance

Note: All mitigation measures and parameters to be monitored should be included in total price of works performance. The table includes additionally provided prices of sampling and laboratory testing, solely as information for assessment of overall costs of construction.

9. IMPLEMENTATION AND REPORTING

9.1. PROJECT IMPLEMENTATION

PC Roads FBH is the implementer of the Project and shall be responsible for the implementation and compliance of the Project in line with the ESMP and the ESMF.

Prior to the beginning of works, the Contractor will implement baseline data of the environment during the preparation phase.

Application of all identified social and environmental mitigation measures and the EMP will be provided. The Contractor will be responsible for the implementation of the environmental mitigation measures during construction and will employ environmental experts to supervise the implementation of Contractor's responsibilities and will be in communication with the investor and with the FMoET. PC Roads FBH will constitute a Grievances Committee which will receive all grievances during Project implementation in accordance with grievance mechanisms as prescribed in the ESMF. During project implementation, PC Roads FBH will supervise compliance of the Contractor with provisions and ESMP.

Upon project completion, PC Roads FBH will be in charge of facilities management and maintenance. Regular and timely payment will be carried out in accordance with monitoring plan.

Upon project completion, the public has the right to participate directly or indirectly, with a possibility to state their interests and opinion in decision-making process.

9.2. REPORTING PROCESS

9.2.1. Contractor to PC Roads FBH

The Contractor shall prepare a Report on compliance with ESMP in form of a monthly progress report and submit it to PC Roads FBH in a local language (C/S/B) and in English, in analogue and digital form.

If there shall be any accidental situations or jeopardizing the environment and society the reporting process must be immediate. The Contractor is obliged to inform the PC Roads FBH and local community immediately after any accidental situations that happened over the phone +387 33 250 370 or via email form at the PC Roads FBH website: http://www.jpcfbih.ba/ba/kontakti/kontakti.shtml.

The Contractor's reports to PC Roads FBH are to include a list and description of the performed activities, as well as recommendations and planned future activities and protection measures.

9.2.2. Supervision Engineer to PC Roads FBH

The Supervision Engineer shall prepare a Report on compliance with ESMP in form of a monthly progress report and submit it to PC Roads FBH in a local language (C/S/B) and in English, in analogue and digital form.

9.2.2. PC Roads FBH to FMoET and WB

PC Roads FBH shall prepare Annual Environmental Health and Safety Reports (AEHS), including monitoring indicators and reports on the implementation of their requirements set in ESPM and submit them to the WB for review.

PC Roads FBH shall prepare and submit monthly progress reports to WB.

PC Roads FBH has the responsibility of preparing and submitting to the Federal Ministry of Environment and Tourism (FMoET) the reports which will include:

- status of implementation of mitigation measures,
- needs for possible additional mitigation measures,
- description of cases of non-compliance with environmental requirements,
- received grievances by local population and other participants, and the way how the grievances were resolved.

In case of higher-scale accidents or deaths on construction site, PC Roads FBH shall promptly notify the WB thereof.

10. PUBLIC DISCUSSION AND INFORMATION DISCLOSURE

10.1. PUBLIC CONSULTATION

Public consultation of the subject ESMP will be organized after the WB and PC Roads FBH approve the draft of the ESMF at time and place accessible to the general public and interested stakeholders, in Sarajevo. Afterwards, there shall be a site-specific public discussion organized for this particular ESMP in the project area.

Minimum 10 day before the public consultation the document shall be published and made accessible to the public.

The record on public discussion, that is, grievances presented at the public discussion shall be recorded in the Grievance Register, and opinions and suggestions of the public shall be integrated into the final ESMP.

After public discussion the documents shall be disclosed again.

10.2. INFORMATION DISCLOSURE

ESMP draft will be available on the website of PC Roads of the (www.jpcfbih.ba) in a local language and on the website of the WB in English. During the process of public consultation the interested public will obtain all information regarding the project, including anticipated social and environmental impacts. The findings of the assessment will be presented in a simple way.

During construction period, the Contractors will submit monthly information to PC Roads FBH regarding process of work, which will be published on the websites of PC Roads FBH and BHAMK (Car Association of BH) regarding temporary traffic regulation.

Schedule of works and potential changes to the schedule will also be reported two weeks prior to the beginning of works on the website of PC Roads FBH and in local newspapers, radio and television stations for disclosure. The schedules will provide information on the beginning and end of works, which can impact the affected groups (such as changes to traffic/water/regime of electric energy supply and access, noise and dust due to construction).

10.2.1. Grievance Mechanisms

Besides the institutionally available ordinary and extraordinary legal remedy, and existing institutional channels, PC Roads FBH will ensure and form a special Grievance Redress Mechanism in collaboration and direct involvement of those municipalities under whose administrative authority the project is carried out.

Grievance Redress Mechanism designed for this project is the **Central Feedback Desk (CFD)** at the level of the implementing agency PC Roads FBH which shall serve as both Project level information center and grievance mechanism, available to those affected by implementation of all project sub-components. The CFD shall serve the persons affected directly or indirectly by construction works.

The Grievance Registration Sheet as print out shall be available at city administration and shall be available for download on the website of JP Roads FBH (www.jpcfbih.ba).

The grievance can be logged in writing within PC Roads FBH, with the Contractor, by phone, by fax, and by e-mailing it to the designated e-mail address zalbena@jpcfbih.ba, or by mail to the address Terezija 54, 71000 Sarajevo.

Further information on Grievances can be found in the ESMF and RPF for the FBH Road Sector Modernization Project.

Appendix 8. Environmental and Social Management Plan for the Project of Bridge Rehabilitation

TABLE OF CONTENTS

1. INTRODUCTION

This Environmental and Social Management Plan (ESMP) was developed within the Environmental and Social Management Framework (ESMF) for FBH Road Sector Modernization Project, as one of the three site-specific examples.

The Public Company Roads of Federation of Bosnia and Herzegovina (further in the document PC Roads FBH) has initiated an overarching program for the project "Modernization of Major roads in the Territory of the Federation of Bosnia and Herzegovina" (The Program) to ensure appropriate road infrastructure by 2020. For this purpose, it has been requested from the Government of the FBH to ensure credit funds from international finance institutions (IFI).

In the framework of the abovementioned umbrella Program, the Public Company "Roads of FBH" (PC Roads FBH), a limited liability company wholly owned by the Government of FBH, has initiated the FBH Road Sector Modernization Project. FBH filed an application for a credit/loan from the European Investment Bank (EIB) and from the World Bank (WB) in total amount of 103,38 million EUR for funding abovementioned Project.

FBH Road Sector Modernization Project comprises several small and mid-sized investment schemes including:

10. Reconstruction of roads, this component includes:
    - Construction works for completion of the construction of major road M17.3 Neum–Stolac (in total 32,9 km);
    - Construction of third lanes for slow vehicles (in total 40 km on 8 sections of major roads);
    - Reconstruction of roadway, correction of axes (in total 18 km on 5 sections of major roads, where a correction of axes is to be done on one section only in the length of 1 km),
    - Reconstruction of 3 tunnels (with a total length of 1,86 km);
    - Reconstruction of 7 bridges (with a total length of 0,55 km).
11. Interventions on improving road safety: The reconstruction of intersections, which are classified as "black spots" on major roads, in total 9;
12. Institutional reforms: Road Management in the FBH with a particular focus on sustainability of investments and road safety;
13. Project Implementation Support: Construction supervision and capacity building of the PC Roads FBH.

2. METHODOLOGY AND OBJECTIVES OF ESMP

Reconstruction of Crossroad is characterized as a category B project according to the Operational Policies (OP) of the WB as well as the screening procedure outlined in the project-specific ESMF. As such, this activity needs to have an ESMP developed, whereas pursuant to the local legislation this project does not require an environmental assessment nor an

environmental permit - whether federal or cantonal[11]. PC Roads FBH will ensure all required local permits for this Project are obtained

This ESMP aims at identifying all of the potential environmental and social impacts associated with this project activity. As such, the ESMP includes mitigation measures for all identified potential impacts that are to be undertaken throughout the different phases of the project including preparation, implementation and operation of the facilities. The measures set forth in this ESMP are meant to avoid, neutralize or diminish adverse environmental and social impacts if not completely then to an acceptable level.

ESMP identifies feasible and cost-effective measures which can reduce potentially negative impacts on the environment and society to an acceptable level. If mitigation measures are not possible, profitable or sufficient, compensation should be included as the last measure.

In order to ensure the mitigation measures have been implemented, fully or partially, the ESMP sets forth a monitoring plan to be implemented during the specific stages of project implementation. Monitoring during project implementation provides information on the key environmental and social aspects of the project, particularly on the environmental and social aspects of the project and efficiency of mitigation measures.

3. LOCATION DESCRIPTION

    3.1. ROAD SAFETY AND TRAFFIC DATA

4. PROJECT DESCRIPTION

5. BASELINE OF PARTICULAR INTEREST

    5.1. PHYSICAL BASELINE

    5.2. BIOLOGICAL BASELINE

    5.3. SOCIO-ECONOMIC BASELINE

6. DESCRIPTION OF POSSIBLE IMPACTS DURING PRE-CONSTRUCTION, CONSTRUCTION, OPERATION AND MAINTENANCE

    6.1. PRE-CONSTRUCTION IMPACTS

[11] *In FBH investments requiring EIA are identified by the Regulation on Plants and Facilities Subject to Obligatory Environmental Impact Assessment, and Facilities Which May be Constructed and Commissioned Only if Granted Environmental Permit (Official Gazette of FBH No. 19/04). In Herzegovina-Neretvian Canton investments requiring an EP are regulated by Regulation on Activities, Plants and Facilities Which May be Constructed only if Granted Environmental Permit (Official Gazette of HNC, No. 10/12). Reconstruction of a crossroad is not a subject to neither a Federal nor a Cantonal EP.*

6.2. IMPACTS DURING CONSTRUCTION

Impact on Air Quality

Exhaust gases - The machinery which is used during the construction and delays, i.e. traffic standstills on the road due to works on reconstruction of crossroads will lead to an increased emission of such gasses as SO_2,CO_2, CO, NO_X.

Dust generation- where the most important polluters are solid particles (PM10 and PM2,5). Possible sources of dust generation include demolition works, site preparation activities, especially excavation and levelling, handling of building materials such as excavated earth/ substrate, gravel, sand, asphalt, cement and the construction itself.

Impact on Noise Level and Vibrations

Noise emission is likely to appear during site preparation. Possible sources of noise are: ground preparation activities such as excavation and levelling, use of tools and equipment, assembly of building materials on site; offloading of building materials such as gravel, sand, asphalt etc. and the work of construction machines in general.

Impact on Surface Water Quality

Creation of additional water demand - The workers and the construction works will create an increased demand for water in addition to the existing population demand in surrounding area. Water will be mostly used in the creation of aggregates for construction works and for wetting the surfaces, as well for daily water demand of workers.

Possible contamination of water– installation of water treatment is not planned, which means that water pollution is inevitable for the bridge which is in the protected area, in project design phase, construction phase and operation phase.

Water treatment of the drainage water of the bridge should be planned based on provisions of this ESMP.

On top of that, it may occur due to general construction activities, demolition works and malpractice including inappropriate extraction of resource material, handling of hazardous substances (i.e. concrete, asphalt, chemicals and paint), inadequate waste handling, liquid and solid equipment damage which may lead to leakage of lubricants and fuel (increased blurring, input of fats and oils) etc.

Impact on Soil Quality

- Soil compaction due to construction machinery (vehicles and equipment for construction) moving around the location;
- Uncontrolled (storing, handling and depositing) and untreated waste is one of the major sources of pollution that can disrupt soil quality.

Impact on the Land use

Construction and reconstruction may lead to:

- Interrupted land use by inadequate waste management in terms of uncontrolled and untreated waste (e.g. accidental spills from construction machinery, solid waste generated by workers on the construction site) that might be harmful to local communities.

Impact on Biological and Natural Resources

- Work of heavy machinery during construction phase may lead to plants being covered with dust (e.g. blockage and damage to stomata, shading, abrasion of leaf surface or cuticle), which will affect feeding base for animals;
- Pollution of water and soil with hazardous substances (fuel and oils in case of spills) can harm fish, amphibians, as well as animals living in the surrounding area.
- Removal of a layer of vegetation may destroy animals' habitats.
- If not carried out carefully earth works in the riverbed may alter the flow of the river.

Impact on the Protected Areas

The observed project is located in the protected area of the River. Other possible impacts on protected areas are encompassed through other listed impacts (water, fish habitat etc).

Impact on Fish Habitat and Water Quality

These negative impacts on fish habitat may occur during the execution of the following activities: demolition works, works in the immediate vicinity of watercourses or in them, dumping toxic concrete, asphalt or concrete and asphalt, paint and other chemicals leaching into watercourse, disposal of fine particles in watercourses.

Works on the foundations of the bridge may cause changes in the flow of the river if not planned and executed properly.

Paving of the Bridge and Painting Fences on Bridges

Negative impacts may occur due to accidental or careless deposition of toxic substances from the asphalt or toxic paints into watercourses.

Impact on Landscape Values

Partial alternation of landscape and visual aspects that can be expected with organization of construction sites, presence of personnel and machinery on site, makes the negative impact on landscape.

Impact on Traffic Safety and Traffic Flow

Traffic congestion and obstructions on the bridge - increased traffic load, leading to congestion and obstruction is likely to be experienced on regional road (R426) and on major road (M17). This is especially expected during delivery of construction material to site and collection of waste from site. During the reconstruction of the lanes, one of the traffic lane will be closed for traffic therefore there will be decrease in traffic flow and possible standstills on the bridge and wider.

Socio-Economic Impacts

Prohibition of land use and damage to private property: It is expected that it will be necessary to temporarily occupy several privately owned land plots for the purpose of lodging machines and material. Construction activities may cause damage to land plots, fences and railings due to disposal of construction waste and heavy machinery parks.

Impact on cultural-historical heritage: if there are any in the surrounding area.

Impact on the protected natural areas: if there are any in the surrounding area.

Impact on living conditions of local communities

Following adverse impacts during construction are expected:

Noise increase,

Construction waste disposal,

Short-term disruptions to water and electricity supply, telephone and Internet connections, waste collection, regular public transport, delivery of mail.

Impacts on local traffic: Local traffic will be increased (including heavy machinery and trucks) and only one lane will be in function, causing delays and restricted access.

6.3. IMPACTS DURING OPERATION AND MAINTENANCE

Impact on Air Quality

Exhaust gases - Daily traffic in the operation phase will lead to regular emission of such exhaust gasses as SO_2, Co_2, CO, NO_X. During road maintenance, exhaust gasses will be caused by machinery engaged in maintenance activities, i.e. winter maintenance of roads or regular periodic roads maintenance together with exhaust gases arising from daily traffic.

Dust generation - where the most important polluters are solid particles (PM10 and PM2,5). Possible sources of dust generation include materials used in winter road maintenance and handling of building materials used in regular periodic roads maintenance.

Impact on Noise Level and Vibrations

Noise emission and noise disturbance - noise emission will occur due to regular daily traffic on major roads during operation phase.

Vibrations may appear due to machinery, i.e. vehicles for winter road maintenance and specialized measuring vehicles - vans that are used in maintenance phase and can affect the surrounding objects through the foundation or have the impact on animals.

Impact on Surface Water Quality

Possible Contamination of Water – Possible contamination of water i.e. leakage of lubricants and fuel from vehicles traffic on major roads (operation phase) or machinery that will be used for road maintenance or leakage of polluting material during accidents. On top of that, separator of oil and fat for rainwater from the bridge is necessary, because the bridge is located in the protection zone of the River.

Impact on Biological and Environmental Resources

Potential impacts on flora and fauna may be caused by vibration and noise from the traffic and by water contamination and soil contamination (e.g. accidental spills).

Socio-economic impacts:

Access restrictions: occasional repairs that would lead to similar impacts as during construction may be expected, but in a shorter time scale and to lesser extent.

Connectivity and developed road infrastructure (positive): improved technical conditions of traffic roads, higher speeds of travelling, safer travelling and fewer traffic congestions.

6.4. POSITIVE IMPACTS

Project implementation will contribute to better environmental and socio-economic conditions and will have positive impacts on the quality of life of the local community. There are several social and environmental opportunities which were detected in the project:

- Bridge improvement in the sense of constructive stability;
- Reduction of erosion (improvement of drainage);
- Reduced pollution of river and environment, by designing closed drainage system;
- Improved access for vehicles, pedestrian and cyclist;
- Safer traffic conditions for both, pedestrians and drivers;
- Lower number of traffic accidents on the bridge;
- Less damages to vehicles,
- Better traffic flow

6.5. ENHANCEMENT MEASURES

Table 4: Enhancement Measures

Impact	Enhancement Measures	Cost Assessment (US$)		Institutional Responsibility	
		Operative	Implementation	Operative	Implementation
▪ Traffic	▪ Improved road and travel safety by improving construction elements of the pavement structure and safety fence; ▪ Better traffic flow due to increasing travel speed; ▪ Increase od pedestrian safety by reconstructing the pedestrian pavement on both sides of the bridge	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Socio-economic	▪ New job and business opportunities for local construction workers and firms; ▪ Improving connections between towns and region;	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Water	▪ Improvement of the protection of the River with designing and implementing a treatment of drainage water and regular maintenance of it; Improved and renewed hydro-isolation	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Visual aesthetic and landscape	▪ Improving visual aspects of the bridge and surrounding area.	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Noise	▪ Noise impact on the local residents and nature park habitat reduced with construction of a new dilatation, transition slab and pavement structure.	Included in construction works	Included in supervision	Contractor	PC Roads FBH

7. MITIGATION MEASURES

The purpose of this ESMP is to set forth mitigation measures associated with the environmental impacts identified for this given project activity. The mitigation measures are included in this section and summarized in *Table 6*. This chapter includes also the general provisions and mitigation measures that the contractor hired for this task will need to obey and/or perform. The requirements that the Contractor needs to follow, beyond the provisions of the ESMP, will be outlined in a number of planning documents (plans) that will be developed by the contractor prior to any start of works.

As a part of Tendering Documents (TD) for the Contractor, PC Roads FBH will require that the Contractor subm its a Construction Site Organization Plan (CSOP), which will highlight certain requirements both for completion of works and implementation of mitigation measures.

CSOP consists of following components[12]:

(v) Preparation works and works of location organization after construction;

(vi) Technological scheme;

(vii) Elaborate on safety (Elaborate on safety on work and Elaborate on protection from fires and explosions), which shall include according to provision of this ESMP a Management Plan in Case of Accidents (MPCA); and

(viii) Elaborate on environmental protection during construction [that shall include a practical plan of the implementation of this ESMP and among other a detailed Waste Management Plan (WMP)].

Additional request for the Contractor, as stipulated by ESMF and this ESMP, is to design and submit a detailed Traffic Management Plan (TMP) 30 days prior to commencement of works (in accordance with *Appendix 4. Road Safety Management* of the ESMF).

Within the framework of the project, PC Roads FBH prepared a Resettlement Policy Framework (RPF) which clarifies land acquisition/resettlement and compensation principles, organizational arrangements and procedures for planning land acquisition/resettlement. The RPF also serves as a guide for preparation of site-specific Resettlement Action Plans (RAPs).

7.1. MITIGATION MEASURES IN PRE-CONSTRUCTION PHASE

7.1.2. Contractor Management

PC Roads FBH will ensure that the construction activity is carried out without risk to the health and safety of all workers and local community. Therefore, the Contractor will plan, coordinate, control and monitor the undertaken activities to effectively minimize the risks presented during their work.

[12] *Ordinance on Construction Site Organization, Mandatory Documents on Site and Participants in Construction (Official Gazette of the FBH No. 48/09)*

The ESMP is an integrated part of the TD and the Contract for Execution of Works. It is the Contractor's obligation to calculate the implementation of environmental and social mitigation measures into the overall cost.

The Contractor will be required to provide a short statement that confirms that:

- The ESMP conditions have been estimated and included into the bid price,

- The Contractor for Execution of Works has a qualified and experienced person on the Contractor's team who will be responsible for the environmental and social compliance requirements of the ESMP.

- The Contractor will comply with applicable BH and FBH laws, EU standards and WB requirements.

The following contractual conditions shall apply to the Contractors for Execution of Works employed by PC Roads FBH:

- The Contractor will be required to prepare site-specific CSOP in accordance with the requirements of this ESMP. All submitted CSOPs shall be formally reviewed by PC Roads FBH prior to agreement and signing.
- The Contractor will provide formal written reports to PC Roads FBH in accordance with requirements set-out in the ESMP which is part of this document;
- PC Roads FBH is responsible to introduce all contractors and sub-contractors and personnel working on the Project on the contents and provisions of this ESMP and any penalties arising from non –compliance therewith;
- The Contractor is responsible for notifying PC Roads FBH of any complaints or grievances received and of any corrective actions identified and implemented.

The Contractor shall provide regular reports on its management and monitoring of the working conditions of direct and indirect employees on the work site and ensure that systems are in place to monitor compliance with labour and health and safety standards.

The contractor shall:

- Ensure that all workers are required to comply with all national/ federal legislation on labour and health and safety, as well as any other relevant standards;
- Exchange information and request any plans from sub-contractors which deals with significant health and safety hazards and risks created by or associated with their work activities;
- Maintain regular effective two-way communication with all workers, sharing information and assisting in dealing with any unforeseen problems promptly.

The recommendations and proposed mitigation measures will be attached to the tendering documentation and subsequently the contract with the Contractor. The ESMP is a part of the work program and as such, it needs to be addressed to the Contractor and carried out as required.

7.2. MITIGATION MEASURES IN CONSTRUCTION PHASE

7.2.1. Labor Management

In the FBH the Law on Labour prescribes, among others, the issues of salaries, benefits and conditions of work and principles of non-discrimination that need to be complied with by the Contractor.

PC Roads FBH and the Contractor will create grievance mechanisms and explain them to all workers with an aim of enabling internal resolution of workplace concerns.

7.2.2. Construction Site Organization

The Contractor shall be responsible for ensuring that order, discipline and professional responsibility of all employees on the construction sites are maintained at all times. Work must be restricted exclusively to the construction site, and damage to private property, land and crops must be avoided.

It is recommended that machines only operate in the period 07-20h.

The Contractor is responsible for establishing temporary disposal sites for construction materials, area for washing and cleaning machinery (on site or off-site) and vehicles in accordance with CSOP. Temporary disposal sites for excavation material (topsoil) are to be reduced to maximum 2 m height, in order to prevent compaction caused by weight of the soil, and storage time is to be reduced to minimum - applicable to construction of bypasses.

The Contractor is responsible for ensuring that all construction equipment is licensed and approved in accordance with local regulations, and certified in compliance with EU standards. This includes use of modern machines and vehicles that fulfil environmental standards in terms of emission of harmful gases (complete combustion) and those that have enclosed sources of noise (engines, exhaust system).

The Contractor is responsible for ensuring that machines and vehicles parking places and worker's residence containers (if used during the course of the Project implementation) are not located inside any forested areas, that they do not impact watercourses and do not affect endangered flora and fauna.

The Contractor is obliged to reinstate the construction areas in accordance with the planned land use and to restore species preserved in topsoil and supplement them by adequate material if needed.

7.2.3. Raw Material Sourcing and Supply

The Contractor should avoid unnecessary driving of vehicles to minimize use of fuels and air emissions.

The Contractor is responsible for buying construction material from suppliers that operate in accordance with valid operation permits, environmental permits and national and EU environmental standards.

7.2.4. Management of Hazardous Materials and Substances

The materials which are used on the occasion of rehabilitation of the bridge are potential source of pollution. Inappropriate storage and handling oils, lubricants, chemicals and hazardous substances on construction site and potential spills of those substances may harm the environment or health of employees working on road rehabilitation. In order to mitigate that, the Contractor is obliged to:

- Prepare the procedure of spills control and submit the plan to PC Roads FBH for approval.
- Train relevant construction works staff for handling fuels and procedure of spills control.
- Storage of hazardous substances in restricted areas in sealed plastic foil far from watercourses.
- Fueling is allowed only inside restricted area.
- Ensure absorbing and retaining material (for example, absorbing covering), where the staff will be appropriately trained regarding safe handling practices, use and storage.
- Provide protective clothes, safety booths, helmets, masks, gloves, glasses, staff for promoting construction works, material appropriate for use.
- Check whether all containers, drums and cisterns used at storage are in good condition and with a designation of expiry date. Each container, tank or drum that is indented, cracked or rusty may cause leakage. Check leakage on a regular basis in order to identify potential problems in time.
- Put containers and drums in temporary storage in clearly designated areas where they will not be ran over by vehicles or heavy machinery. Storage must be on a tilt or with drainage for safe collection of fluids in case of spill.
- Take all precaution measures on handling and storing fuels and lubricants, while avoiding environmental pollution.
- Avoid the use of material with a higher possibility of pollution, by replacing them with more eco-friendly materials.
- Ensure special storage area for fuels/oils and/or other hazardous substances used during construction.
- All storage areas should be equipped with an appropriate spill kit.
- The staff using the hazardous material should be appropriately trained regarding safe handling practices and emergency response procedure.
- Provide all workers with appropriate personal protective equipment from harmful effects of hazardous substances.
- Ensure that hazardous waste i.e. waste oils are solved by specialized licensed bodies for hazardous waste management.
- Identify and register hazardous substances by marking in details place and amount of hazardous substances, including storage, use and disposal.
- Train the staff and implement a safe work practice for minimizing the risk of spill.

- Establish the cause of pollution if it appears and control the area of pollution. The impact can be controlled by isolating the source of pollution or by implementing control of the affected area.
- Rehabilitate contaminated soil by using the most appropriate available method.

7.2.5. Waste Management

Following measures shall be implemented:

- Waste generation, where practicable, will be minimized through the adoption of efficient designs, reduction of materials required, construction method selections and reuse and recycling where practicable.
- Where absorbents, (e.g. sand, oil pads or booms) have been used to absorb a leak or contain a spill, the contaminated waste absorbent is to be disposed of as hazardous waste on a special area inside the construction site before the licensed operator takes over the waste and dispose it permanently.
- The Contractor is responsible for ensuring that all waste is disposed of by licensed providers of waste management services at appropriate waste management facilities.

Due to inappropriate waste management and construction waste pollution of soil and water is possible. Therefore, the Contractor is obliged to:

- Create a Waste Management Plan (WMP) prior to the beginning of road rehabilitation for various types of waste (for example, usable waste, flammable waste, construction waste, food waste etc.) and submit it to PC Roads FBH for approval.
- Organize waste disposal in eco-friendly manner, which was created during works on road rehabilitation. That will include consideration of nature and landfill, in order to reduce the environmental impact to the lowest level possible.
- Reduce creation of waste by the following approach: reduce, recycle, reuse.
- Wherever possible separate the entire waste and reuse or recycle it.
- Prohibit waste incineration.
- Collection and transport of non-hazardous waste in all approved landfills. Vehicles for transport of solid waste must be covered with tarpaulin or nets to prevent dissipation of waste on the road.
- Provide containers on construction site.
- Ensure that the sandblasting of the bridge construction is carried out with protective covers and the dripping of paint is caught in tarps.
- To request from supplies fewer packaging material, wherever possible.
- Maintain construction site clean, tidy and safe, and provide and maintain appropriate facilities as temporary storage of the entire waste prior to transport and final disposal.
- Collect chemical waste in 200 litre drums (or similar sealed container), appropriately labelled for safe transport to an approved chemical waste depot.

- Store, transport and handle all chemicals avoiding potential environmental pollution.
- Store all hazardous waste appropriately in restricted areas away from watercourses.
- Collect hydrocarbon waste, including lube oils, for safe transport off-site for reuse.
- Locate the garbage pit/waste disposals item in 500 m away from the residence so that people are not disturbed with the odour likely to be produced from anaerobic decomposition of waste at the waste dumping places. Enclose the waste dumping place by fencing and tree plantation to prevent children to enter and play.

7.2.6. Road Transport and Road Traffic Management

Dust generation on construction sites, stocks of materials and access roads poses disturbance for the surroundings and may be harmful to health. In order to prevent this adverse impact, the Contractor shall:

- Prevent dust emissions by transporting asphalt, gravel, stone, earth and other material in covered trucks. The speed of transport vehicles should not exceed 30 km/h and 20 km/h on unpaved sections.
- Define control measures for dust generated through handling of equipment and/or during rehabilitation works. The Contractor must submit the plan in which the above proposed paths for transport of material have been listed (Technological scheme and TMP), and is also required to provide statements about proposed method of dust control in places where transport through settlements may not be avoided.
- To water the stocks of material, access roads and bare soil in order to reduce the possibility of disturbing the surrounding due to dust. Increase frequency of irrigation during high-risk periods of time (for example, high winds). Stock materials such as gravel and sand must be covered and closed in order to prevent dissipation by wind.
- Decrease range and period of exposure of bare surfaces.
- Postpone the activities of earthworks or cleaning of vegetation if it is necessary for avoidance of the periods of high wind or if dust is seen outside the construction site.
- Rehabilitate the disrupted area as soon as possible by planting greenery or grass.
- Establish appropriate areas for storage, mixing and load of construction material in the way that dispersion of dust is prevented due to such operations.

In order to ensure proper traffic management, the Contractor is obliged to do as follows:

- To create TMP as part of CSOP.
- Implement adequate traffic control measures, in accordance with national legislation and such measures must first be approved by the Supervision Engineer.
- Traffic safety management measures need to include temporary lighting and adequate signalization during excavation and rehabilitation/construction works.
- Appoint permanent staff that will be engaged on traffic safety issues, and would be responsible for implementation of traffic safety measures and implementation of traffic measures as prescribed by national legislation, which would include: (i)

inspection of the condition and position of equipment for traffic control in use; (ii) design review – part related to traffic control equipment necessary to provide safe and efficient traffic flow; (iii) correction of all traffic deficiencies where applicable; (iv) inspection of work areas, handling of equipment and storage, handling of material and storage related to traffic safety.

7.2.7. Environmental Impacts Management

Air Quality, Noise Levels and Vibrations

The contractor shall:

- Ensure that high quality fossil fuels (with low percentage of sulphur and lead) are used for construction machinery and equipment;
- The Contractor needs to ensure that all construction machines are operated during normal working hours (07 - 20 h);
- Avoid unnecessary operation of construction machinery and vehicles;
- Maintain all vehicles in order to keep them in good working order in accordance with manufactures maintenance procedures
- Make sure all drivers comply with the traffic codes concerning maximum speed limit, driving hours, etc.
- Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site,
- Appropriately site all noise generating activities to avoid noise pollution to local residents,
- Use the quietest available plant and equipment,
- Modify equipment to reduce noise (for example, noise control kits),
- Install acoustic enclosures around generators to reduce noise levels.,
- Fit high efficiency mufflers to appropriate construction equipment,
- Avoid the unnecessary use of alarms, horns and sirens,
- Notify adjacent landholders prior any typical noise events outside of daylight hours,
- Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions,
- Employ best available work practices on-site to minimize occupational noise levels,
- Install temporary noise control barriers where appropriate,
- Plan activities on site and deliveries to and from site to minimize impact,
- Monitor and analyze noise and vibration results and adjust road rehabilitation practices as required,
- Avoid undertaking the noisiest activities, where possible, when working at night near residential areas.

Surface Water Quality

- Works to be executed on the protected river need to be carried out with utmost compliance to this ESMP, any additional local provisions (protection plans of the river, etc) and with the highest measures of protection of the water quality and quantity. No changes in the flow patterns would be made during works and highest attention will be paid in order to avoid any spills or contamination of the river.
- The Contractor will use biodegradable lubricants and gear oils. Maintenance, filling and cleaning of machines must be carried out off the site and outside of the area with surface water.
- With an aim to reduce the impacts on the nearby Rivers, activities of construction near these water bodies are to be undertaken during low water regime. Lowest water regime is during the period from July to September, but this is also the period of tourism peak, that should be avoided. The works as well need to be organized outside the spawning fish season.
- Wastewater from workers toilets must not be discharged on land or in water resources.
- During bridge reconstruction, river bed should be protected and should not be completely blocked during reconstruction in order to protect the existing water corridor. Natural renewal of the existing embankments should be ensured by planting appropriate vegetation.
- Driving machinery inside river or streams, or on their embankments should be avoided as possible.
- Ensure that the sandblasting of the bridge construction and demolition works are carried out with protective covers, so waste cannot reach the river; and that the dripping of paint is caught in tarps.

During the works on reconstruction of the bridge, quality of surface water might deteriorate due to activities on river, sewage on construction sites and work camps. Works on reconstruction of the bridge with change the earth cover layer and topography, by changing surface drainage of the area, including infiltration and disposal of rainwater. These changes to hydrological regime may lead to an increased rate of residue and polluted sediments into surface water and thus affect fish habitats and the rest of aquaculture. Therefore, the Contractor shall:

- Install temporary drainage works (channels and bunds) required for sediment and erosion control and around storage areas for road rehabilitation materials,
- Divert runoff from undisturbed areas around the construction site,
- Place stockpile materials away from drainage lines,
- Prevent all solid and liquid waste entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport them an approved waste disposal site or recycling depot.

- Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved restricted areas on site.
- Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done in every exit of each vehicle to ensure the local roads are kept clean.
- Sediment-laden run-off prior to the final disposal should be directed so as to leak into the deeper layer of soil or discharge it into lagoon.
- Restore and protect clean areas as soon as possible.
- Soil erosion and dust from storage materials will increase residue and contaminated deposits on surface water bodies. In order to reduce erosion the Contractor shall perform as follows:
  - Stabilize the cleared areas not used for road rehabilitation activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion.
  - Ensure that roads used by construction vehicles are swept regularly to remove sediment.
  - Water the material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds).

In order to mitigate spillage of hazardous and poisonous chemicals polluting the soil, the Contractor shall:

- Strictly implement the WMP;
- Construct appropriate contents for drainage of pollution for all areas of fuel storage;
- Establish and maintain hazardous substances by marking place and amount of harmful substances in detail, including storage, usage and disposal;
- Train the staff and implement a safe work practice to minimize the risk of spill;
- Determine the cause of pollution if it appears, and control the area of pollution. The impact can be controlled be isolating the resource or by implementing control of affected terrain.
- Rehabilitate contaminated soil by using the most appropriate available method.

Use of Land

- The Contractor shall ensure that construction-related activities are performed strictly and in construction area;
- The Contractor shall ensure that the natural conditions of the surroundings of the construction site are reinstated after completion of works.

Biological and Ecological Sources

- Night work will not be carried out in order to prevent the possibility of disturbing wild game and other wildlife.
- The Contractor shall ensure that removal of vegetation is minimally limited to the marked construction area.
- All accidental leaks, spills or events that are opposite the provisions of this ESMP shall be immediately reported and intervention measures shall be applied due to the proximity of protected areas, and working on the protected area of river.

7.2.8. Health and Safety

Works on the rehabilitation of the bridge may pose health and safety risks for construction workers and visitors to the construction site, which may cause severe injuries or death. Population near the construction site and construction workers will be exposed to a large number of: biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, wastewater, vector transmitted diseases etc.), and (ii) road accidents from construction traffic.

Therefore, the Contractor is obliged to:

- Implement suitable safety standards for all workers and site visitors, which should not be less than those laid down in the international standards in addition to complying with the national standards the FBH,
- Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular road rehabilitation activity and specific classes of hazards in the work areas,
- Provide personal protective equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty equipment and by replacing damaged equipment with new one.
- Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job.
- Appoint an environment, health and safety manager to look after the health and safety of the workers.
- The contractor should provide portable toilets at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities should be at least 6 m away from storm drain system and surface waters. These portable toilets should be cleaned once a day and all the sewerage should be pumped from the collection tank once a day and should be brought to the common septic tank for further treatment.
- Contractor should provide bottled drinking water facilities to the construction workers at all the construction sites.

7.2.8.1. Safety Engagements

The Contract should ensure that all possible risks in the course of work are eliminated or reduced to a minimum. In order to prevent the possibility of higher-scale accidents it is necessary to plan and develop the measures to help reduce the adverse impacts. The Contractor's duty is to create a Management Plan in Case of Accidents (MPCA).

The MPCA should include organizational structure, responsibilities, procedures, communication, training, resources and other measures needed to provide appropriate reaction of the Contractor in case of accidents which might occur during the project. The most important items of the MPCA are as follows:

- Identify potential hazards and large-scale accidents,
- General procedures for all emergencies and accidents that might occur during the project due to natural disasters, defects on equipment of human errors,
- Description of preventive measures against accidents,
- Workers training for their roles and responsibilities when accident occurs,
- Determining responsible person at the spot,
- Urgent communication procedures,
- Information and contacts of important local authorities and emergency services,
- Internal and external alarming,
- Response plans for specific types of hazards, for example medical assistance, fire etc.

The MPCA should include:

- Spill Response Plan,
- Emergency Preparedness,
- Response Plan to Accidents.

7.2.8.2. First Aid

The Contractor shall:

- Ensure that facilities that provide health care and first aid are easily accessible. Appropriately equipped first aid stations are to be easily accessible in the whole work area;
- Documenting and reporting accidents, diseases and incidents on workplace;
- Prevent accidents, injuries and diseases originating from, in connection with or arising in the course of work, reducing as much as possible the possible cause of danger in the way which is in accordance with good international practice of industry;
- Identify potential dangers for works, particularly those that might pose threat to life, and provide the necessary preventive and protective measures;
- Ensure that construction site drivers strictly comply with the rules of driving;
- Ensure appropriate lighting alongside roads.

7.2.9. Traffic and Road safety

The Contractor shall develop the CSOP which includes preparation and organization of construction site during and after construction, including roads on the construction site ie. Traffic Management Plan (TMP). Traffic on construction site is to be regulated the same way as public traffic roads.

The Contractor is obliged to:

- Prepare and deliver the TMP to PC Roads FBH for its approval, no later than 30 days upon the beginning of works on any component of the project included in traffic redirection and management.
- For the purpose of uninterrupted traffic movement during the reconstruction of the crossroads, include in TMP the following parts: detailed drawings of traffic solutions by showing all bypasses, temporary roads, temporary turns, necessary barricades, signalization/lighting, traffic signs etc.
- Ensure signs in strategic parts of traffic roads.
- Install and maintain a sign on each important crossroads, on roads which will be used during reconstruction works, which will clearly indicate the following data in a local language:
    - Location: station label and settlement name,
    - Duration of construction,
    - Period of the proposed bypass/alternative road,
    - Map of the proposed bypass,
    - Name and contact address/telephone number of responsible personnel,
    - Name and contact address/telephone number of contractor,
    - Sincere apology for the caused inconvenience .

TMP should include details about the following:

- Construction plan by phases,
- Beginning and duration of works,
- Overview of the existing conditions near the construction site,
- Identification of affected areas,
- Mitigation measures
- Plan of public transport, for example, timetable, change of timetable, disturbance and the like;
- Circulation plans, including zones of entry and exit, routes for towing of material, turnaround points, parking areas, zones of interlocking with other traffic roads etc.,
- Routes for pedestrians and vehicles,

- Traffic controls for each expected intervention, including illustrations of barriers, paths, signalization plan, warning signs etc.,
- Requirements for special vehicles, for example, those of large dimensions,
- Construction works paths (access, ramps, loading, unloading),
- Connection roads for supply vehicles and storage of material,
- Expected interaction of pedestrians and vehicles,
- Roles and responsibilities of persons on construction site regarding traffic management,
- Instructions on the procedures regarding traffic control, including urgent situations.

TMP should also include appropriate communication with affected population about traffic and timely information of traffic changes/road blockage.

TMP should be monitored on a regular basis (responsibility of the supervision engineer) and audited to ensure effective implementation and to take into consideration any changes on construction site. All workers on construction site should get acquainted with the TMP.

7.2.10. Construction Site Safety

The Contractor shall secure the construction site. The area should be fences in order to prevent entry of unauthorized persons. The construction site should be accompanied with a board with information on works and participants in construction (investor's name, contractor's name, project designer's name, name and type of construction being built, beginning and end of works). These measures are necessary so the Contractor could ensure safety of construction site and prohibit entry ensure of unauthorized persons.

The Elaborate on safety on work and Elaborate on protection from fires and explosions should include detailed measures of safety on construction site in order to ensure safety of location and remove possible risks and adverse impacts on employees and unauthorized persons.

7.3 MITIGATION MEASURES IN OPERATION PHASE

It is required from PC Roads FBH to undertake the following measures:

- Regular inspection of road integrity and constant maintenance of roads, including such road infrastructure as fences in accordance with the Regulation on Maintenance of Public Roads (Official Gazette of the FBH no. *48/03)*
- Regular maintenance of vegetation along the bridge, ensuring appropriate visibility and passability of the bridge;
- Cleaning of bridge (removal of waste, debris caused by erosion, snow, etc.) and road signalization and lighting equipment;

- Ensuring all absorption substances used for absorption of spills on the bridge are treated as hazardous waste and handed over to authorized operators of hazardous waste.

PC Roads FBH will hire a Contractor for maintenance works, whose obligations will be as follows:

- Maintenance of Road Inspection Logs,
- Road Maintenance Logs and,
- Log of Construction Works,

in accordance with Guidelines for the Design, Construction, Maintenance and Supervision of Roads (FBH Roads, 2010).

7.4. SUMMARY OF MITIGATION MEASURES

Environmental and Social Impacts Management Plan

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
PRE-CONSTRUCTION PHASE						
▪ Restricted access	▪ Development of the TMP.	Included in the bid	Internal resources	Contractor	PC Roads FBH	▪ Restricted access
▪ Impacts on living conditions	▪ Informing the local communities on the extent of works and duration prior to the commencement of construction works.	Internal resources	Internal resources	PC Roads FBH	PC Roads FBH	▪ Impacts on living conditions
▪ Compliance with national legislation	▪ Obtaining all necessary permits for Project implementation.	Internal resources	Internal resources	PC Roads FBH + Project designer	Competent body for issuing the permit	▪ Compliance with national legislation
▪ Restrictions on land use and damages on private property	▪ Avoid private properties where possible; ▪ The Contractor will organization the construction site in collaboration and agreement with Čapljina municipality; ▪ In case occasional land use cannot be avoided, compensation will be provided to affected owners/users (application of RPF and RAP), as well as compensation for loss of the possibility to continue to use land as intended.	Internal resources	Internal resources	Contractor + PC Roads FBH	PC Roads FBH	

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Job creation and impacts on local business	▪ Informing the public in advance about the construction works, in order to enable businesses and workforce in the area to prepare for the demand on the market.	Internal resources	Internal resources	Contractor + PC Roads FBH	Contractor + PC Roads FBH	
▪ Redesign of the Main design	▪ Main project design of the rehabilitation of the bridge should include installation of treatment for rainwater from the bridge. Storm water should be taken in a controlled manner from the bridge to appropriate before discharge into the environment. The Main design shall be updated.	Internal resources	Included in the project	PC Roads FBH	Design consultant	
CONSTRUCTION PHASE						
▪ Access restriction	▪ Implementation of the provisions on providing timely information to citizens through the media about upcoming construction works, expected duration of the works, alternative routes, etc. ▪ Implementation of TMP. ▪ Clear signs posted. Notifications made through media or other road safety clubs on road closure. ▪ Area where materials and equipment are stored are clearly marked and closed off to unauthorized access.	Included in construction works	Included in supervision	Contractor	Supervisory body*	Supervisory body is appointed by investor PC Roads FBH
▪ Impact on the protected River	▪ Infill must be controlled in order not to endanger the flow profile of the River control ▪ Ensure that the sandblasting of the bridge construction and demolition works are carried out with protective	Included in construction works	Included in supervision	Contractor	Supervisory body*	

** Supervisor shall be a Consultant appointed by PC Road FBH according to Federal Legislation.*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	covers, so waste cannot reach the river; and that the dripping of paint is caught in tarps.					
▪ Impact on fish habitat and water quality	▪ In order to avoid negative impacts the following mitigation measures can be used: - Limit the execution of works outside the spawning fish season; - Ensure that concrete works are isolated from watercourses; - Ensure that dirty water from machines, during the rehabilitation works, is collected and disposed properly - Ensure that equipment is not washed in the vicinity of the watercourse. - Ensure that the sandblasting of the bridge construction and demolition works are carried out with protective covers, so waste cannot reach the river; and that the dripping of paint is caught in tarps. - Ensure no changes to the flow of the river are caused by diversions during works on foundations - Respect all protection provisions in line with the local regulations that call for protection of the river and riverbanks	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Impacts on living conditions of local community	▪ Undertaking of all adequate actions to prevent or mitigate adverse impacts; ▪ Providing timely information to the citizens on any type of disruption and inconvenience.	Included in construction works	Included in supervision	PC Roads FBH + Contractor	Supervisory body*	

** Supervisor shall be a Consultant appointed by PC Road FBH according to Federal Legislation.*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Impacts on local traffic (increase of local traffic, including heavy machinery and trucks), operation of roads with only one lane causing traffic delays and limited access	▪ Implementation of TMP; ▪ Introduction of appropriate signalization and warning signs.	Included in construction works	Included in supervision	Contractor	Supervisory body*	In collaboration with the local Ministry of the Interior
▪ Temporary occupation of privately owned land plots for the purpose of placement of staff, machines and material	▪ Implementation of RPF and RAPs.	Internal resources	Internal resources	PC Roads FBH	PC Roads FBH	
▪ Air emissions: - exhaust gasses; - dust generation	▪ High quality fossil fuels (with low percentage of sulphur and lead) need to be used for construction machinery and equipment; ▪ All machines and vehicles to be used in construction/ reconstruction/ rehabilitation activities must have use permit; ▪ Vehicles need to be regularly maintained ; ▪ Equipment with installed filters to reduce soot emission needs to be used;	Included in construction works	Included in supervision	Contractor	Supervisory body*	

** Supervisor shall be a Consultant appointed by PC Road FBH according to Federal Legislation.*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	▪ When not in use the equipment and machinery need to be shut down; ▪ Maximum speed of the vehicle on unpaved roads should be restricted to 20 km/h; ▪ Moistening/ wetting the site to prevent dust occurrence (in areas with dry soils or where activities generate dust); ▪ Sand and gravel materials need to be transported in covered trucks.					
▪ Increased level of noise and vibration: - noise emission and noise disturbance; - vibration	▪ Restriction of works to period of day only (period of day: 06:00 to 22:00, period of night: 22:00-06:00; or agreed with the local community) ▪ In the case of noise complaints by local residents, simultaneous use of machines that generate noise over 70 dB needs to be limited; ▪ In the case of noise complaints by local residents, number of trucks per day visiting the site needs to be reduced; ▪ All machines and vehicles to be used in construction/ reconstruction/ rehabilitation activities must have use permit; ▪ When not in use the equipment and machinery need to be shut down; ▪ Maximum speed of the vehicle on unpaved roads should be restricted to 20 km/h.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Water consumption and emissions into water:	▪ Monitoring water consumption; ▪ Ensure there is an emergency plan to contain all leaks and spills that result from an accident.	Included in construction works	Included in supervision	Contractor	Supervisory body*	

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
- creation of additional water demand, - possible contamination of surface water and groundwater	▪ Prevent any repairs, handling of machinery, fuels or lubricants in areas that are not designated for such use. ▪ Proper waste disposal and separation of hazardous waste is required, as well as the engagement of authorized companies for final waste disposal; ▪ Oil and fuel collection systems to be fitted to prevent leakage; ▪ Vehicles and machines need to be regularly maintained to prevent leakage. ▪ Installation of oil separators in accordance with EN ISO 858-1 and 858-2					
▪ Soil degradation and emissions to soil: - soil erosion; - borrow pit excavation; - soil contamination by oils, fuels and other hazardous substances - occurrence of landslide and rockfall	▪ Topsoil from borrow pit areas should be saved and reused in re-vegetating the pits; ▪ Control during earthworks to prevent degradation of terrain stability is required; ▪ Borrow pit areas will be graded to ensure drainage and visual uniformity; ▪ Installation of drainage structures for proper drainage of water from construction site is required; ▪ Proper waste disposal; separation of hazardous waste; engagement of authorized companies for final waste disposal; ▪ Oil and fuel collection systems to be fitted to prevent leakage	Included in construction works	Included in supervision	Contractor	Supervisory body*	

** Supervisor shall be a Consultant appointed by PC Road FBH according to Federal Legislation.*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Conversion of the area and conversion of present land use: - changes in land use; - interrupted land use by uncontrolled and inadequate waste management	▪ The land determined for use by the Project can only be used for the construction/ reconstruction/ rehabilitation activities and no other land is available for i.e. storage of building material, parking of the heavy machinery etc. in terms of preventing land disturbance. ▪ Proper waste disposal; separation of hazardous waste; engagement of authorized companies for final waste disposal; ▪ Oil and fuel collection systems to be fitted to prevent leakage.	Included in construction works	Included in supervision	Contractor	Supervisory body**	
▪ Removal of vegetation cover and topsoil, degradation of biological and ecological resources: - destruction of aquatic habitat due to changes in water flow and quality in terms of sediment load ▪ removal of vegetative cover	▪ Prevent and control oil, fuel, and chemical spillages that can find their way to the streams; ▪ Topsoil must be must be returned and re-vegetation must be performed after construction/ reconstruction/ rehabilitation activities are done; ▪ The land determined for use by the Project can only be used for the construction activities and no other land is available for i.e. storage of building material, parking of the heavy machinery etc. in terms of soil disruption.	Included in construction works	Included in supervision	Contractor	Supervisory body*	

* *Supervisor shall be a Consultant appointed by PC Road FBH according to Federal Legislation*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Decrease in the current aesthetic value of the landscape - structure and pattern of the landscape	▪ The land determined for use by the Project can only be used for the construction activities and no other land is available for i.e. storage of building material, parking of the heavy machinery etc. in terms of soil disruption.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Inadequate waste handling	▪ Implementation of WMP that shall ensure environmentally sound collection of waste, its storage, transport and final disposal, or reuse / recycling. ▪ No clandestine waste disposal will be allowed on site, including open burning of wastes.	Included in construction works	Included in supervision	Contractor	Supervisory body*	+ local waste management operator
▪ Inadequate organization of construction site	▪ Implementation of CSOP	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Inadequate workers safety	▪ Implementation of work safety measures: - Provide workers with a safe and healthy work environment, - Provide personal protective equipment, - Respect safety procedures, - Provide portable toilets, - Provide drinking water	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Accidental situations i.e. spills, leakage of oils, fats,	▪ Implementation of Environmental Management Plan which includes: - Spill Response Plan,	Included in construction works	Included in supervision	Contractor	Supervisory body*	

* *Supervisor shall be a Consultant appointed by PC Road FBH according to Federal Legislation*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
fuels and similar hazardous materials	- Emergency Preparedness and Response Plan. ▪ Implementation of Management Plan of Fire and Explosion					
▪ Materials supply and transport	▪ Implementation of CSOP to ensure materials are transported in covered vehicles to reduce impacts on environment	Included in construction works	Included in supervision	Contractor	Supervisory body**	
▪ Paving of the bridges and painting fences on bridges	▪ Ensure that the asphalt is not deposited on purpose or accidentally into watercourses; ▪ Ensure that the sandblasting of the bridge construction is carried out with protective covers and the dripping of paint is caught in tarps.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Impact to the flow profile of river	▪ Works should be carried out in the period of low water; ▪ Strictly control work of excavation around foundations; ▪ Restrict the movement of vehicles in the river bed; ▪ Excavated material cannot be disposed in the river bed or on river banks. ▪ No waste disposal in river. ▪ No cutting off of flow of the river in entirety ▪ Maintain high standard of protection of the river banks and river profile during works.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
CHANCE-FIND PROCEDURES DURING CONSTRUCTION PHASE						

* *Supervisor shall be a Consultant appointed by PC Road FBH according to Federal Legislation.*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Impacts on cultural heritage	▪ If archaeological findings appear on or near construction site immediate work suspension and local authorities notification is required;	Included in construction works	Included in supervision	Contractor	Supervisory body*	In case of finding cultural heritage, supervision is implemented by the competent institution
OPERATION PHASE						
▪ Access restrictions – during maintenance	▪ Introduction of appropriate traffic signalization and appropriate warning signs; ▪ Information to citizens through the media about upcoming maintenance, expected duration of the works, alternative routes.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Air emissions: - exhaust gasses; - dust generation	▪ Influence on the air quality is dependent on the movement of vehicle traffic, and cannot be controlled.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Level of noise and vibration: - noise emission - vibration	▪ In the case of noise complaints by local residents, the reduction of permissible vehicle speed limit should be performed ▪ Vibration will be reduced because of the improvement of new state of crossroads in comparison to the present state and therefore no mitigation measures are required.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Emissions into water: - possible contamination of surface water in the cases of leakage of hazardous substance	▪ Procurement and use of adsorbing material for the case of accidental spills during everyday traffic ▪ Regular maintenance of oil separators and ensuring that waste oils are handed over to authorized companies for management of hazardous waste. ▪ Regular maintenance of the drainage water treatment system.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Soil degradation and emissions to soil: - soil contamination by oils, - fuels and other hazardous substances	▪ Procurement and use of adsorbing material for the case of accidental spills during everyday traffic.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Accidental situations i.e. spills, leakage	▪ Procurement and use of adsorbing material for the case of accidental spills during everyday traffic.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	

7. ENVIRONMENTAL MONITORING PROGRAM

The table below presents summary of potential impacts in connection with the project, along with monitoring measures necessary as information for construction site – development of a certain plan during project implementation and connection of mitigation measures to avoid or reduce their impact.

The main components of the Monitoring Plan are as follows:

- Parameters to be monitored,
- Location of monitoring parameters,
- The way how monitoring will be performed,
- When monitoring will be performed,
- Costs of monitoring activities,
- Responsibility for monitoring activities.

The Contractor shall create an Environmental Monitoring Program (EMP), prior to commencement of works, in accordance with requirements of this ESMP, which will include a minimum of monitoring requirements, described in table below, without limitation to these requirements. PC Roads FBH will be responsible for reviewing the EMP prepared by the Contractor and for ensuring that these monitoring programs are in accordance with this document.

The list for monitoring in the field will be prepared on the basis of ESMP. The list for monitoring in the field will be used by Supervision Engineers of PC Roads FBH. These signed lists will be forwarded to PC Roads FBH , who will be responsible for monitoring and reporting about the compliance.

PC Roads FBH will maintain a registry of grievances, which will contain all information on grievances or complaints received by the community or other interested parties. That will include: type of grievance, time and actions for their resolution and outcome.

Environmental Monitoring Program

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed ?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
PRE-CONSTRUCTION PHASE								
▪ Recording baseline data of water quality	▪ State of water bodies near reconstruction project; ▪ Analysis of parameters of surface water quality: - Chemical analysis (PH, turbidity, conductivity, temperature, suspended particles, KPK, BPK_5, ingredients with nitrogen) - Standard bacteriological analyses	Downstream from construction site on the River	Standard methods of water quality testing	Once prior to the beginning of works	Included in performance	1000 USD/measuring	Contractor	Authorized laboratory
▪ Job creation and impacts on local businesses	▪ Number of employed persons from local communities ▪ Timely informing the local communities	Wider area of construction	Inspection	Prior to construction	Included in performance	Included in performance	Contractor	Contractor
▪ Impacts on living conditions of local communities	▪ Number of employed persons from local communities ▪ Timely informing the local communities	Wider area of construction	Visual inspection and inspection	Prior to construction	Included in supervision	Included in supervision	Supervisory body	Supervisory body
▪ Temporary occupation of privately owned land plots for the purpose of construction of access	▪ Implementation of RPF and creation of RAPs for each land affected by acquisition	Construction site	Visual inspection and inspection	Prior to construction and during	Included in supervision	Included in supervision	Supervisory body +	Supervisory body +

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
roads and placement of Staff, machines and material				construction when necessary			PC Roads FBH	PC Roads FBH
CONSTRUCTION PHASE								
▪ Access restrictions	▪ Provided alternative access, ▪ TMP in place, ▪ Implementation of RPF, provisions on compensation procedures for businesses affected by access restrictions and livelihood restoration.	Construction site	Visual inspection	Random checks at least once a week during the construction	Included in supervision + Included in RPF (RAP)	Included in supervision + Included in RPF (RAP)	Supervisory body + PC Roads FBH	Supervisory body + PC Roads FBH
▪ Restrictions on land use and damage to the private property (agricultural plots, horizontal infrastructure, fences and railings) due to disposal of construction waste, work camps and parks of heavy machinery	▪ CSOP in place, ▪ Disposal of construction and maintenance materials, ▪ Position of work camps and heavy machinery parks, ▪ Implementation of RPF provisions on compensation procedures in case occasional land use cannot be avoided, compensation will be provided to affected owners/users and livelihood restoration assistance	Construction site	Visual inspection	Prior to construction and random checks at least once a week during the construction	Included in supervision + Included in RPF (RAP)	Included in supervision + included RPF (RAP)	Supervisory body + PC Roads FBH	Supervisory body + PC Roads FBH
▪ Impacts on local traffic (increase of local traffic,	▪ TMP in place ▪ Traffic patterns,	On construction	Visual inspection	random checks during the week	Included in supervision	Included in supervision	Supervisory body	Supervisory body

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
including heavy machinery and trucks, operation of roads with only one lane causing traffic delays and limited access)	▪ Timely information to the citizens	site and nearby	and inspection					
▪ Impact on cultural heritage	▪ Implementation of CSOP	Wider area of construction	Visual inspection	during the construction	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Air emissions: - exhaust gasses; - dust generation	▪ Level of dust (amount of particles of sediment and floating particles) ▪ Emissions of exhaust gases from vehicles and equipment ▪ (SO_2, NO_2, dim and PM_{10})	Construction site	Measuring devices	During construction when needed and upon complaints by the citizens	-	500 USD/measuring	Contractor + Supervision	Authorized laboratory
▪ Increased level of noise and vibration: - noise emission - vibration	▪ Level of noise	In populated places near the construction site	Measuring devices	Upon order by supervisory organ or upon complaints by the citizens	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory
▪ Emissions into water: - possible contamination of surface water	▪ Analysis of parameters of surface water quality: - Chemical analysis (PH, turbidity, conductivity, temperature, suspended particles, KPK, BPK_5, ingredients with nitrogen)	In watercourse near construction site (River) downstream	Standard laboratory equipment and methods of water	Upon order by supervisory organ or upon complaints by the citizens	-	1000 USD /measuring	Contractor + Supervision	Authorized laboratory

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed ?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
	- Standard bacteriological analyses		quality monitoring					
▪ Pollution of surface watercourses	▪ Presence of oil film in surface watercourses	In watercourse near construction site (river) downstream	Visual inspection + Standard laboratory equipment and methods of water quality monitoring	Upon order by supervisory organ or upon complaints by the citizens	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory
Soil pollution	▪ Soil quality, including, PH, heavy metals, phosphorus, nitrogen, Na, Ca, salts and pesticides K	On representative plots of land near construction sites	Taking samples and standard laboratory analyses	Upon order by supervisory organ or upon complaints by the citizens	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory
▪ Increased water consumption	▪ Amount of affected water	Construction site	Water meter, record-taking	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Emissions into water and soil due to improper waste handling	▪ CSOP in place, ▪ WMP in place	Construction site	Visual inspection, disposal records or	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
	▪ Placing protective covers during demolition works and sandblasting works		receipts from landfills					
▪ Soil degradation:: - soil erosion. -	▪ Implementation of CSOP, ▪ Implementation of WMP	Construction site	Visual inspection	Regularly during construction	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Changes of land and change of current intended purpose of land: - Disrupted use of land by uncontrolled and inadequate waste management	▪ Implementation of CSOP, ▪ Implementation of WMP	Construction site	Visual inspection, disposal records or receipts from landfills	Regularly during construction, as appropriate. Amount and disposal records internal reports will be made daily and monthly	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Removal of vegetation cover	▪ Number and type of planted vegetation and analysis of vegetation cover prior to the beginning and upon completion of works	Construction site	Visual inspection and record-taking	Prior to beginning and upon completion of works	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Degradation of biological and ecological resources	▪ All trenches up to 0,5 m of depth must be tilted or have ramps in case of necessity for animals' exit. All trenches shall	Construction site	Visual inspection	Regularly during construction, as appropriate.	Included in performance	Included in performance	Contractor + Supervision	Contractor

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed ?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
	be checked whether there any animals in the prior to covering them with soil.							
▪ Waste management	▪ Implementation of WMP	Construction site	Visual inspection, disposal records or receipts from landfills	Regularly during construction, as appropriate. Amount and disposal records internal reports will be made daily and monthly	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Accidental situations i.e. spills, leakage	▪ Implementation of EMP which includes: - Spill Response Plan, - Emergency Preparedness and - Response Plan	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Materials supply	▪ Implementation of CSOP (the origin of material, material approvals etc.)	Construction site	Reports	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Material transport	▪ Implementation of CSOP (the origin of material, licenses etc.)	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
▪ Workers safety	▪ Implementation of work safety measures (protection equipment, toilets, drinkable water etc.)	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ River bed and river flow	▪ Changes in the river flow, including flooding, water retention or complete cutting off of river flow during works. ▪ Changes to the river banks ▪ Disposal of wastes or materials on river banks or in river ▪ Unauthorized activities being conducted within the river bed	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
OPERATION PHASE								
▪ Access restrictions – during maintenance	▪ Development and implementation of TMP (safe passages for vehicles and pedestrians; application of proper horizontal and vertical signalization; timely information to public etc.)	Construction site	Supervision	Prior to maintenance works and random checks at least once per week during maintenance activities	Internal resources	Included in maintenance	PC Roads FBH	Consultant for maintenance

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
▪ Emissions to water: possible contamination of surface water and groundwater in the cases of leakage of hazardous substances	▪ Status of water bodies adjacent to the bridge ▪ Analysis of parameters of surface water quality: - Chemical analysis (PH, turbidity, conductivity, temperature, suspended particles, KPK, BPK_5, ingredients with nitrogen) - Standard bacteriological analyses	Closer area of the bridge (downstream)	Visual inspection + Sampling if necessary	Random checks during maintenance	Internal resources	1000 USD/measuring	PC Roads FBH	Authorized laboratory
▪ Soil degradation and emissions to soil: soil contamination by oils, fuels and other hazardous substances	▪ State of soil in proximity to the road ▪ Soil quality, including, PH, heavy metals, phosphorus, nitrogen, Na, Ca, salts and pesticides	Along the crossroads	Visual inspection + Sampling if necessary	Random checks during maintenance	Internal resources	1500 USD/measuring	PC Roads FBH	Authorized laboratory
▪ Air emissions: - Exhaust gases	▪ Level of dust (amount of particles of sediment and floating particles) ▪ Emissions of exhaust gases from vehicles and equipment ▪ (SO_2, NO_2, dim and PM_{10})	Along the crossroads	Visual inspection + Sampling if necessary	Random checks during maintenance	Internal resources	500 USD/measuring	PC Roads FBH	Authorized laboratory
▪ Increased level of noise and vibration: - noise emission and noise disturbance;	▪ Level of noise	In populated places near the construction site	Measuring devices	Upon order by supervisory organ or upon complaints by the citizens	Internal resources	500 USD/measuring	PC Roads FBH	Authorized laboratory

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
- vibration								
▪ Accidental situations i.e. spills, leakage	▪ Status of bridge and river	Along the crossroads / close to the river	Inspection	Random checks during maintenance	Internal resources	Included in maintenance	PC Roads FBH	Consultant for maintenance

Note: All mitigation measures and parameters to be monitored should be included in total price of works performance. The table includes additionally provided prices of sampling and laboratory testing, solely as information for assessment of overall costs of construction.

8. IMPLEMENTATION AND REPORTING

8.4. PROJECT IMPLEMENTATION

PC Roads FBH is the implementer of the project and will be responsible for the implementation and compliance of the project in line with ESMP and the ESMF.

Prior to the beginning of works, the Contractor will implement baseline data of the environment during the preparation phase.

Application of all identified social and environmental mitigation measures and the State of the EMP will be provided. The Contractor will be responsible for the implementation of the environmental mitigation measures during construction, will employ environmental experts to supervise the implementation of Contractor's responsibilities, and will be in communication with the investor and with the FMoET. PC Roads FBH will constitute a Grievances Committee which will receive all grievances during Project implementation in accordance with grievance mechanisms as prescribed in the Environmental Management Plan and Environmental and Social Management Framework for the Program of Modernization of Major roads of the FBH (ESMF). During project implementation, the Investor will supervise compliance of the Contractor with provisions and ESMP.

Upon project completion, PC Roads FBH will be in charge of facilities management and maintenance. Regular and timely payment will be carried out in accordance with monitoring plan.

Upon project completion, the public has the right to participate directly or indirectly, with a possibility to state their interests and opinion in decision-making process.

8.5. REPORTING PROCESS

8.5.1. Contractor to PC Roads FBH

The Contractor shall prepare a Report on compliance with ESMP in form of a monthly progress report and submit it to PC Roads FBH in a local language (C/S/B and in English, in analogue and digital form.

If there shall be any accidental situations or jeopardizing the environment and society the reporting process must be immediate. The Contractor is obliged to inform the PC Roads FBH and local community immediately after any accidental situations that happened over the phone +387 33 250 370 or via email form at the PC Roads FBH website: http://www.jpcfbih.ba/ba/kontakti/kontakti.shtml.

The Contractor's reports to PC Roads FBH are to include a list and description of the performed activities, as well as recommendations and planned future activities and protection measures.

8.5.2. Supervision Engineer to PC Roads FBH

The Supervision Engineer shall prepare a Report on compliance with ESMP in form of a monthly progress report and submit it to PC Roads FBH in a local language (C/S/B and in English, in analogue and digital form.

8.5.3. PC Roads FBH to FMoET and WB

PC Roads FBH shall prepare Annual Environmental Health and Safety Reports (AEHS)[13], including monitoring indicators and reports on the implementation of their requirements set in ESPM and submit them to the World Bank for review.

PC Roads FBH shall prepare monthly progress reports to World Bank.

PC Roads FBH has the responsibility of preparing and submitting to the FMoET the reports which will include:

- status of implementation of mitigation measures,
- needs for possible additional mitigation measures,
- description of cases of non-compliance with environmental requirements,
- received grievances by local population and other participants, and the way how the grievances were resolved.

In case of higher-scale accidents or deaths on construction site, PC Roads FBH shall promptly notify the World Bank thereof.

[13] *Annual Environmental Health and Safety*

9. PUBLIC DISCUSSION AND INFORMATION DISCLOSURE

9.4. PUBLIC CONSULTATION

Public consultation of the subject ESMP will be organized after the WB and PC Roads FBH approve the draft of the ESMF at time and place accessible to the general public and interested stakeholders, in Sarajevo. Afterwards, there shall be a site-specific public discussion organized for this particular ESMP in the project area (Čapljina).

Minimum 10 day before the public consultation the document shall be published and made accessible to the public.

The record on public discussion, that is, grievances presented at the public discussion shall be recorded in the Grievance Register, and opinions and suggestions of the public shall be integrated into the final ESMP.

After public discussion the documents shall be disclosed again.

9.5. INFORMATION DISCLOSURE

ESMP draft will be available on the website of PC Roads of the (www.jpcfbih.ba) in a local language and on the website of the World Bank in English. During the process of public consultation the interested public will obtain all information regarding the project, including social and environmental issues.

During construction works the Contractors will submit monthly information to PC Roads FBH regarding process of work, which will be published on the websites of PC Roads FBH and BHAMK (Car Association of BH) regarding temporary traffic regulation.

Schedule of works and potential changes to the schedule will also be reported two weeks prior to the beginning of works on the website of PC Roads FBH and in local newspapers, radio and television stations for disclosure. The schedules will provide information on the beginning and end of works, which can impact the affected groups (such as changes to traffic/water/regime of electric energy supply and access, noise and dust due to construction works).

9.5.1. Grievance Mechanisms

Besides the institutionally available ordinary and extraordinary legal remedy, and existing institutional channels, PC Roads FBH will ensure and form a special Grievance Redress Mechanism in collaboration and direct involvement of those municipalities under whose administrative authority the project is carried out, in this case with the Čapljina municipality.

Grievance Redress Mechanism designed for this project is the **Central Feedback Desk (CFD)** at the level of the implementing agency PC Roads FBH which shall serve as both Project level information center and grievance mechanism, available to those affected by implementation of all project sub-components. The CFD shall serve the persons affected directly or indirectly by construction works.

The Grievance Registration Sheet as print out shall be available at city administration and shall be available for download on the website of JP Roads FBH (www.jpcfbih.ba).

The grievance can be logged in writing within PC Roads FBH, with the Contractor, by phone, by fax, and by e-mailing it to the designated e-mail address zalbena@jpcfbih.ba, or by mail to the address Terezija 54, 71000 Sarajevo.

Further information on Grievances can be found in the ESMF and RPF for the FBH Road Sector Modernization Project.

Appendix 9. Environmental and Social Management Plan for the Project of building a Third Lane for slow vehicles

TABLE OF CONTENTS

1. INTRODUCTION

This Environmental and Social Management Plan (ESMP) was developed within the Environmental and Social Management Framework (ESMF) for FBH Road Sector Modernization Project, as one of the three site-specific examples.

The Public Company Roads of Federation of Bosnia and Herzegovina (further in the document PC Roads FBH) has initiated an overarching program for the project "Modernization of Major roads in the Territory of the Federation of Bosnia and Herzegovina" (The Program) to ensure appropriate road infrastructure by 2020. For this purpose, it has been requested from the Government of the FBH to ensure credit funds from international finance institutions (IFI).

In the framework of the abovementioned umbrella Program, the Public Company "Roads of FBH" (PC Roads FBH), a limited liability company wholly owned by the Government of FBH, has initiated the FBH Road Sector Modernization Project. FBH filed an application for a credit/loan from the European Investment Bank (EIB) and from the World Bank (WB) in total amount of 103,38 million EUR for funding abovementioned Project.

FBH Road Sector Modernization Project comprises several small and mid-sized investment schemes including:

14. Reconstruction of roads, this component includes:
    - Construction works for completion of the construction of major road M17.3 Neum–Stolac (in total 32,9 km);
    - Construction of third lanes for slow vehicles (in total 40 km on 8 sections of major roads);
    - Reconstruction of roadway, correction of axes (in total 18 km on 5 sections of major roads, where a correction of axes is to be done on one section only in the length of 1 km),
    - Reconstruction of 3 tunnels (with a total length of 1,86 km);
    - Reconstruction of 7 bridges (with a total length of 0,55 km).
15. Interventions on improving road safety: The reconstruction of intersections, which are classified as "black spots" on major roads, in total 9;
16. Institutional reforms: Road Management in the FBH with a particular focus on sustainability of investments and road safety;
17. Project Implementation Support: Construction supervision and capacity building of the PC Roads FBH.

2. METHODOLOGY AND OBJECTIVES OF ESMP

Project ofBbuilding a Third Lane for slow vehicles is characterized as a category B project according to the Operational Policies (OP) of the WB as well as the screening procedure outlined in the project-specific ESMF. As such, this activity needs to have an ESMP developed, whereas pursuant to the local legislation this project does not require an environmental assessment nor an environmental permit - whether federal or cantonal[14]. PC Roads FBH will ensure all required local permits for this Project are obtained

This ESMP aims at identifying all of the potential environmental and social impacts associated with this project activity. As such, the ESMP includes mitigation measures for all identified potential impacts that are to be undertaken throughout the different phases of the project including preparation, implementation and operation of the facilities. The measures set forth in this ESMP are meant to avoid, neutralize or diminish adverse environmental and social impacts if not completely then to an acceptable level.

ESMP identifies feasible and cost-effective measures which can reduce potentially negative impacts on the environment and society to an acceptable level. If mitigation measures are not possible, profitable or sufficient, compensation should be included as the last measure.

In order to ensure the mitigation measures have been implemented, fully or partially, the ESMP sets forth a monitoring plan to be implemented during the specific stages of project implementation. Monitoring during project implementation provides information on the key environmental and social aspects of the project, particularly on the environmental and social aspects of the project and efficiency of mitigation measures.

3. LOCATION DESCRIPTION

3.2. ROAD SAFETY AND TRAFFIC DATA

4. PROJECT DESCRIPTION

5. PROJECT DESCRIPTION

5.2. PHYSICAL BASELINE

5.3. BIOLOGICAL BASELINE

5.4. SOCIO-ECONOMIC BASELINE

[14] *In FBH investments requiring EIA are identified by the Regulation on Plants and Facilities Subject to Obligatory Environmental Impact Assessment, and Facilities Which May be Constructed and Commissioned Only if Granted Environmental Permit (Official Gazette of FBH No. 19/04). In Herzegovina-Neretvian Canton investments requiring an EP are regulated by Regulation on Activities, Plants and Facilities Which May be Constructed only if Granted Environmental Permit (Official Gazette of HNC, No. 10/12). Reconstruction of a crossroad is not a subject to neither a Federal nor a Cantonal EP.*

6. DESCRIPTION OF POSSIBLE IMPACT DURING PRE-CONSTRUCTION, CONSTRUCTION, OPERATION AND MAINTENANCE

6.2. IMPACTS DURING PRE-CONSTRUCTION

Socio-economic Impacts

Land acquisition and resettlement: The Project is expected to involve land acquisition of a part of land (69 plots of infertile forest land). Exact data on land acquisition (ownership, use etc) as well as the precise range of activities will be known after the expropriation studies for the whole project are made.

6.3. IMPACTS DURING CONSTRUCTION

Impact on Air Quality

Exhaust gases - The machinery which is used during the construction and delays, i.e. traffic standstills on the road due to construction works will lead to an increased emission of such gasses as SO_2, CO_2, CO, NO_X.

Dust generation- where the most important polluters are solid particles (PM10 and PM2,5). Possible sources of dust generation include: site preparation activities, especially excavation and levelling, handling of building materials such as excavated earth/ substrate, gravel, sand, asphalt, cement and the construction itself.

Impact on Noise Level and Vibrations

Noise emission is likely to appear during site preparation. Possible sources of noise are: ground preparation activities such as excavation and levelling, blasting works, use of tools and equipment, assembly of building materials on site; offloading of building materials such as gravel, sand, asphalt etc. and the work of construction machines in general.

Impact on Groundwater Quality

Creation of additional water demand - The workers and the construction works will create an increased demand for water in addition to the existing population demand in surrounding area. Water will be mostly used in the creation of aggregates for construction works and for wetting the surfaces, as well for daily water demand of workers.

Possible contamination of water – may occur due to general construction activities and malpractice including inappropriate extraction of resource material, handling of hazardous substances (i.e. chemicals and paint), inadequate waste handling, liquid and solid equipment damage which may lead to leakage of lubricants and fuel (increased blurring, input of fats and oils) etc.

Impact on Geomorphology and Soil Quality

- Possible occurrence of rockfall depending on the type of terrain and stability of slopes;
- Erosion – removal of topsoil may poses risk from erosion of bare soil and enhances the impact of rainwater;

- Soil compaction due to construction machinery (vehicles and equipment for construction) moving around the location;
- Uncontrolled (storing, handling and depositing) and untreated waste is one of the major sources of pollution that can disrupt soil quality.

Impact on Land use

Construction of the third lanes may lead to:

- Conversion of present land use: for example from forest to construction land,
- Tree cutting, cleaning and removal of forests or alleys where land is transformed into non forest land;
- Interrupted land use by inadequate waste management in terms of uncontrolled and untreated waste (e.g. accidental spills from construction machinery, solid waste generated by workers on the construction site) that might be harmful to local communities.

Impact on Biological and Natural Resources

- Work of heavy machinery during construction phase may lead to plants being covered with dust (e.g. blockage and damage to stomata, shading, abrasion of leaf surface or cuticle), which will affect feeding base for animals;
- Pollution of soil with hazardous substances (fuel and oils in case of spills) can harm biodiversity of the surrounding area.
- Arranged trenches (corridor restrictions) pose a risk to small animals (they might fall into the trench and get injured) and cause temporary fragmentation of habitat.
- Removal of a layer of vegetation may destroy animals' habitats.

Impact on the Protected areas

- The observed project is not situated in any of the planned protected, nor in their close vicinity. No impact on protected areas is expected.

Impact on Landscape Values

- Partial and temporary alternation of landscape and visual aspects can be expected with organization of construction sites, presence of personnel and machinery on site.
- Major impact on landscape in the area can be expected at the disposal site for excavated material.

Impact on Traffic Safety

Traffic congestion and obstructions on road sections - increased traffic flow, leading to congestion and obstruction is likely to be experienced on local roads and on major roads due to occupation of the areas of existing roads.

Socio-economic Impacts

Prohibition of land use and damage to private property: It is expected that it will be necessary to temporarily occupy several privately owned land plots for the purpose of lodging/placement of staff, machines and material. Construction activities may cause damage to land plots, fences and railings due to disposal of construction waste and heavy machinery parks.

Access restrictions: Impacts related to road access restrictions are expected to be temporary and are associated with limited access due to heavy machinery parks and disposal of construction waste.

New workplaces and impacts on local businesses (positive): New business opportunities are expected to be created for local businesses such as transporters, suppliers and other service providers. The Project is expected to have positive impacts on the local employment opportunities with opening new workplaces.

Impact on living conditions of local communities:

- Noise increase; Short-term disruptions to water and electricity supply, telephone and Internet connections, waste collection, regular public transport, delivery of mail; and
- Construction waste disposal.

Waste disposal is one of the largest impacts of this Project. Approximately 175.000 m^3 of loose excavated material needs to be transported and disposed. According to the data from the Main design, this material is to be disposed in a nearby depot of construction material.

Impacts on local traffic: Local traffic will be increased (including heavy machinery and trucks) or with traffic restrictions and speed limits, which will cause traffic delays and limited access to these parts.

6.4. IMPACTS DURING OPERATION AND MAINTENANCE

Impact on Air Quality

There shall be no additional impacts on air quality, since it is not expected that the traffic shall increase. Due to the addition of third lanes, the traffic flow will be improved, there will be less congestion, and thus there will be a slight improvement of the air quality.

Impact on Noise Level and Vibrations

Noise emission and noise disturbance - noise emission will occur due to regular daily traffic on major roads during operation phase.

Vibrations may appear due to machinery traffic, i.e. vehicles for winter road maintenance and specialized measuring vehicles - vans that are used in maintenance phase and can affect the surrounding objects through the foundation or have the impact on animals.

Impact on Groundwater Quality

Possible Contamination of Water – Possible contamination of water i.e. leakage of lubricants and fuel from vehicles traffic on major roads (operation phase) or machinery that will be used for road maintenance or leakage of polluting material during accidents.

Impact on Soil Quality

Soil pollution as a result of the emissions from traffic pollutants (e.g. particulate matter PM2.5 and PM10, SO2, NOx, CO), but as in the case of air quality due to the addition of third lanes there will be less traffic congestion what will lead into slight improvement compared to the current condition.

During winter, salting the roads might cause soil contamination and subsequent decrease in soil fertility.

Impact on Biological and Environmental Resources

Potential impacts on flora and fauna may be caused by vibration and noise from the traffic and by water and soil contamination (e.g. accidental spills).

Socio-economic impacts:

Access restrictions: occasional repairs that would lead to similar impacts as during construction may be expected, but in a shorter time scale and to lesser extent.

Connectivity and developed road infrastructure (positive): better connection, improved technical conditions of traffic roads, higher speeds of travelling, safer travelling and better availability of infrastructure will improve quality of life of inhabitants and users of the road. Benefits in the industrial sector are also expected because of lower costs due to fewer traffic congestions.

6.5. POSITIVE IMPACTS

Project implementation will contribute to better environmental and socio-economic conditions and will have positive impacts on the quality of life of the local community. There are several social opportunities which were detected in the project:

- Adding third lane will improve the connection between the municipality and cantons in the area;
- More efficient and safer traffic system: by decreasing the time of travelling, lower number of traffic accidents, lower costs of maintenance and management;
- Reduced erosion (improved road drainage)
- Improved quality of life on the whole (better access to important institutions: health, education, job etc.);
- Benefits to vehicle users and users of public transportation due to improved traffic connections and capacity;
- Direct employment and service opportunities: according to the Public Procurement Act in BH, the tender will be of international character and for this reason it will be difficult to predict where the contractor will come from; nevertheless, the practice in construction in BH suggests that hiring local contractors will be expected.
- Additional third lanes for slow vehicles as a direct consequence will have better traffic flow and less congestion, what means the emissions from traffic pollutants shall decrease.

6.6. ENHANCEMENT MEASURES

Enhancement Measures

Impact	Enhancement Measures	Cost Assessment (US$)		Institutional Responsibility	
		Operative	Implementation	Operative	Implementation
▪ Traffic	▪ High improvement of drivers safety with constructing a separate lane for slow vehicles and enhancing drivers traffic visibility; ▪ Better traffic flow due to increasing travel speed; ▪ Reduction in time travel and cost by enhancing road surface, improving road and travel safety by building a third lane for slow vehicles.	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Socio-economic	▪ New job and business opportunities for local construction workers and firms; ▪ Improving connections between three cantons of the FBH (HNC; WHC; HBC), FBH with the Republic Srpska and BH with the Republic Croatia; ▪ Better access to important institutions: health, education, job etc.	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Air and Soil	▪ Due to construction of third lanes for slow vehicles there will be less congestion, meaning the emissions of traffic pollutants will decrease what will as a result have better air quality and lesser soil pollution.	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Land	▪ Improved drainage system will reduce erosion and pollution.	Included in construction works	Included in supervision	Contractor	PC Roads FBH

7. MITIGATION MEASURES

The purpose of this ESMP is to set forth mitigation measures associated with the environmental impacts identified for this given project activity. The mitigation measures are included in this section and summarized in table 7.4. This chapter includes also the general provisions and mitigation measures that the contractor hired for this task will need to obey and/or perform. The requirements that the Contractor needs to follow, beyond the provisions of the ESMP, will be outlined in a number of planning documents (plans) that will be developed by the contractor prior to any start of works.

As a part of Tendering Documents (TD) for the Contractor, PC Roads FBH will require that the Contractor submits a Construction Site Organization Plan (CSOP), which will highlight certain requirements both for completion of works and implementation of mitigation measures.

CSOP consists of following components[15]:

(ix) Preparation works and works of location organization after construction;

(x) Technological scheme;

(xi) Elaborate on safety (Elaborate on safety on work and Elaborate on protection from fires and explosions), which shall include according to provision of this ESMP a Management Plan in Case of Accidents (MPCA); and

(xii) Elaborate on environmental protection during construction [that shall include a practical plan of the implementation of this ESMP and among other a detailed Waste Management Plan (WMP)].

Additional request for the Contractor, as stipulated by ESMF and this ESMP, is to design and submit a detailed Traffic Management Plan (TMP) 30 days prior to commencement of works (in accordance with *Appendix 4. Road Safety Management* of the ESMF).

Within the framework of the project, PC Roads FBH prepared a Resettlement Policy Framework (RPF) which clarifies land acquisition/resettlement and compensation principles, organizational arrangements and procedures for planning land acquisition/resettlement. The RPF also serves as a guide for preparation of site-specific Resettlement Action Plans (RAPs).

7.2. MITIGATION MEASURES IN PRE-CONSTRUCTION PHASE

7.2.1. Contractor Management

PC Roads FBH will ensure that the construction intervention is carried out without risk to the health and safety of all workers and local community. Therefore, the Contractor will plan, coordinate, control and monitor the undertaken activities to effectively minimize the risks presented during their work.

[15] *Ordinance on Construction Site Organization, Mandatory Documents on Site and Participants in Construction (Official Gazette of the FBH No. 48/09)*

The ESMP is a forming part of the tendering documents and the Contract for Execution of Works. It is the Contractor's obligation to calculate the implementation of environmental and social mitigation measures into the overall cost.

The Contractor will be required to provide a short statement that confirms that:

- The ESMP conditions have been estimated and included into the bid price,
- The Contractor for Execution of Works has a qualified and experienced person on the Contractor's team who will be responsible for the environmental and social compliance requirements of the ESMP.
- The Contractor will comply with applicable BH and FBH laws, EU standards and WB requirements.

The following contractual conditions will apply to the Contractors for Execution of Works employed by PC Roads of the FBH:

- The Contractor will be required to prepare site-specific CSOP in accordance with the requirements of this ESMP.CSOP will be formally reviewed by PC Roads FBH prior to agreement and signing.
- The Contractor will provide formal written reports to PC Roads FBH in accordance with requirements set-out in the ESMP which is part of this document;
- PC Roads FBH is responsible to introduce all contractors and sub-contractors and personnel working on the Project on the contents and provisions of this ESMP and any penalties arising from non –compliance therewith;
- The Contractor is responsible for notifying PC Roads FBH of any complaints or grievances received and of any corrective actions identified and implemented.

The Contractor shall provide regular reports on its management and monitoring of the working conditions of direct and indirect employees on the work site and ensure that systems are in place to monitor compliance with labor and health and safety standards.

The contractor shall:

- Ensure that all workers are required to comply with all national/ federal legislation on labor and health and safety, as well as any other relevant standards;
- Exchange information and request any plans from sub-contractors which deals with significant health and safety hazards and risks created by or associated with their work activities;
- Maintain regular effective two-way communication with all workers, sharing information and assisting in dealing with any unforeseen problems promptly.

The recommendations and proposed mitigation measures will be attached to the tendering documentation and subsequently the contract with the Contractor and as such, will be legally binding for the Contractor to implement. The ESMP is a part of the work program and as such it must be addressed by the Contractor and carried out as required.

7.2.2. Design Phase

The Main design for this Project is already done, meaning that the design phase is over. But, since waste disposal is one of the largest impacts of this Project, i.e. approximately 175.000 m^3 of loose excavated material needs to be transported and disposed. According to the data from the Main design, this material is to be disposed in a nearby depot of construction material.

Additional effort should invested in the design in terms that the reuse of excavated material needs to be considered. The disposal at a site should be the last option, and should be developed with a thought-through closure and mitigation plan. Additional consultation with the local authorities are required in order to find a better solution for the excavated material for example to landscape a certain barren area and develop it into a more green area.

7.3. MITIGATION MEASURES IN CONSTRUCTION PHASE

7.3.1. Labor Management

In the FBH the Law on Labor prescribes, among others, the issues of salaries, benefits and conditions of work and principles of non-discrimination that need to be complied with by the Contractor.

PC Roads FBH and the Contractor will create grievance mechanisms and explain them to all workers with an aim of enabling internal resolution of workplace concerns.

7.3.2. Environmental Management

During the construction phase, the Contractor shall award the responsibility of supervising everyday compliance with ESMP to a senior engineer.

The Contractor will be responsible for the implementation of all measures included in the ESMP for all activities undertaken in terms of the construction contract (including work undertaken by sub-contractors).

Compliance of Contractors with provision of ESMP will be assessed by the Construction Supervisor appointed by PC Roads FBH , in accordance with the Regulation on Construction Site Development, Obligatory Documents on Construction Site and Participants in Construction Work (Official Gazette of the FBH, No. 48/09, 75/09 and 93/12).

Compliance reviews will be submitted by Contractor to PC Roads FBH on a monthly basis. Non-conformances, incidents and deviations from the ESMP will be communicated to PC Roads FBH as soon as possible, within 24 hours form the time of occurrence.

7.3.2.1. Construction Site Organization

- The Contractor will be responsible for ensuring that order, discipline and professional responsibility of all employees on the construction sites are maintained at all times. Work must be restricted exclusively to the construction site, and damage to private property, land and crops must be avoided.

- The timing of construction activities should, if possible, be planned at the time of the year when the advantages of dry soil conditions can be utilized, i.e. when compacting and degradation through use is at minimum level. Additionally, it is recommended that machines only operate in the period 07-20 h in all sections of the route whose distance from nearest residential houses is less than 60 m.
- The Contractor is responsible for establishing temporary disposal sites for construction materials, area for washing and cleaning machinery (on site or off-site) and vehicles in accordance with CSOP. Temporary disposal sites for excavation material (topsoil) are to be reduced to maximum 2 m height, in order to prevent compaction caused by weight of the soil, and storage time is to be reduced to minimum - applicable to construction of bypasses.
- The Contractor is responsible for ensuring that all construction equipment is licensed and approved in accordance with local regulations, and certified in compliance with EU standards. This includes use of modern machines and vehicles that fulfill environmental standards in terms of emission of harmful gases (complete combustion) and those that have enclosed sources of noise (engines, exhaust system).
- The Contractor is responsible for ensuring that machines and vehicles parking places and worker's residence containers (if used during the course of the Project implementation) are not located inside any forested areas, that they do not impact watercourses and do not affect endangered flora and fauna.
- The Contractor is obliged to reinstate the construction areas in accordance with the planned land use and to restore species preserved in topsoil and supplement them by adequate material if needed. This applies to the borrow pits, construction area and the disposal area.

7.3.2.2. Management of Hazardous Materials and Substances

The materials which are used in construction are potential source of pollution. Inappropriate storage and handling oils, lubricants, chemicals and hazardous substances on construction site and potential spills of those substances may harm the environment or health of employees working on road rehabilitation. In order to mitigate that, the Contractor is obliged to:

- Prepare the procedure of spills control and submit the plan to PC Roads FBH for approval.
- Train relevant construction works staff for handling fuels and procedure of spills control.
- Fueling is allowed only inside fenced area.
- Ensure absorbing and retaining material (for example, absorbing covering), where the staff will be appropriately trained regarding safe handling practices, use and storage.
- Provide protective clothes, safety booths, helmets, masks, gloves, glasses, staff for promoting construction works, material appropriate for use.

- Check whether all containers, drums and cisterns used at storage are in good condition and with a designation of expiry date. Each container, tank or drum which is indented, cracked or rusty may cause leakage. Check leakage on a regular basis in order to identify potential problems in time.
- Put containers and drums in temporary storage in clearly designated areas where they will not be ran over by vehicles or heavy machinery. Storage must be on a slope or with drainage for safe collection of fluids in case of spill.
- Take all precaution measures on handling and storaging fuels and lubricants, while avoiding environmental pollution.
- Avoid the use of material with a higher possibility of pollution, by replacing them with more eco-friendly materials.
- Ensure special storage area for fuels/oils and/or other hazardous substances used during construction.
- All storage areas should be equipped with an appropriate spill kit.
- The staff using the hazardous material should be appropriately trained regarding safe handling practices and emergency response procedure.
- Provide all workers with appropriate personal protective equipment from harmful effects of hazardous substances.
- Ensure that hazardous waste i.e. waste oils are solved by specialized licensed bodies for hazardous waste management.
- Identify and register hazardous substances by marking in details place and amount of hazardous substances, including storage, use and disposal.
- Train the staff and implement a safe work practice for minimizing the risk of spill.
- Establish the cause of pollution if it appears and control the area of pollution. The impact can be controlled by isolating the source of pollution or by implementing control of the affected area.
- Rehabilitate contaminated soil by using the most appropriate available method.

7.3.2.3. Waste Management

- Waste generation, where practicable, will be minimized through the adoption of efficient designs, reduction of materials required, construction method selections and reuse and recycling where practicable.
- Where absorbents, (e.g. sand, oil pads or booms) have been used to absorb a leak or contain a spill, the contaminated waste absorbent is to be disposed of as hazardous waste.
- The Contractor is responsible for ensuring that all waste is disposed of by licensed providers of waste management services at appropriate waste management facilities.

Due to inappropriate waste management and construction waste pollution of soil and groundwater is possible Therefore, the Contractor is obliged to:

- Create a WMP prior to the beginning of road rehabilitation for various types of waste (for example, usable waste, flammable waste, construction waste, food waste ect.) and submit it to PC Roads FBH for approval.
- Organize waste disposal in eco-friendly manner, which was created during works on road rehabilitation. That will include consideration of nature and landfill, in order to reduce the environmental impact to the lowest level possible.
- Reduce creation of waste by the following approach: reduce, recycle, reuse.
- Wherever possible separate the entire waste and reuse or recycle it.
- Prohibit waste incineration.
- Collection and transport of non-hazardous waste in all approved landfills. Vehicles for transport of solid waste must be covered with tarpaulin or nets to prevent dissipation of waste on the road.
- Provide containers on all construction sites.
- To request from supplies fewer packaging material, wherever possible.
- Maintain construction site clean, tidy and safe, and provide and maintain appropriate facilities as temporary storage of the entire waste prior to transport and final disposal.
- Collect chemical waste in 200 liter drums (or similar sealed container), appropriately labeled for safe transport to an approved chemical waste depot.
- Store, transport and handle all chemicals avoiding potential environmental pollution.
- Store all hazardous waste appropriately in fenced areas away from watercourses.
- Collect hydrocarbon waste, including lube oils, for safe transport off-site for reuse.
- Ensure proper collection and disposal of solid waste within the construction camps.
- Locate the garbage pit/waste disposals item in 500 m away from the residence so that people are not disturbed with the odor likely to be produced from anaerobic decomposition of waste at the waste dumping places. Enclose the waste dumping place by fencing and tree plantation to prevent children to enter and play.
- Do not establish site-specific landfill sites. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites.

For inert excavated waste following measures apply:

- Excavated material shall be reused if possible;
- Inert material shall be disposed only at the area assigned for disposal;
- In the dry season the excavated material shall be transported in covered trucks in order to mitigate impacts on air quality;
- Topsoil from disposal areas should be saved and reused in re-vegetating the area;
- Disposal areas will be graded to ensure drainage and visual uniformity;
- Disposed waste excavated material shall be compacted as necessary;

- Slopes of the waste excavated material shall be shaped to meet safety criteria and visual uniformity.

7.3.2.4. Road Transport and Road Traffic Management

Dust generation on construction sites, stocks of materials and access roads poses disturbance for the surroundings and may be harmful to health. In order to prevent this adverse impact, the Contractor shall:

- Prevent dust emissions, so as to transport asphalt, gravel, stone, earth and other material in covered trucks. The speed of transport vehicles should not exceed 30 km/h and 20 km/h on unpaved sections.
- Define control measures for dust generated through handling of equipment and/or during rehabilitation works. The Contractor must submit the plan in which the above proposed paths for transport of material have been listed, and is also required to provide statements about proposed method of dust control in places where transport through settlements may not be avoided.
- To water the stocks of material, access roads and bare soil in order to reduce the possibility of disturbing the surrounding due to dust. Increase frequency of irrigation during high risk periods of time (for example, high winds). Stock materials such as gravel and sand must be covered and closed in order to prevent dissipation by wind.
- Decrease range and period of exposure of bare surfaces.
- Postpone the activities of earthworks or cleaning of vegetation if it is necessary for avoidance of the periods of high wind or if dust is seen outside the construction site.
- Rehabilitate the disrupted area as soon as possible by planting greenery or grass.
- Establish appropriate areas for storage, mixing and load of construction material in the way that dispersion of dust is prevented due to such operations.

In order to ensure proper traffic management, the Contractor is obliged to do as follows:

- To create TMP as part of CSOP.
- Implement adequate traffic control measures, in accordance with national legislation and such measures must first be approved by the Supervision Engineer.
- Traffic safety management measures need to include temporary lighting and adequate signalization during excavation and rehabilitation/construction works.
- Appoint permanent staff that will be engaged on traffic safety issues, and would be responsible for implementation of traffic safety measures and implementation of traffic measures as prescribed by national legislation, which would include: (i) inspection of the condition and position of equipment for traffic control in use; (ii) design review – part related to traffic control equipment necessary to provide safe and efficient traffic flow; (iii) correction of all traffic deficiencies where applicable; (iv) inspection of work areas, handling of equipment and storage, handling of material and storage related to traffic safety.

7.3.2.5. Environmental Impacts Management

Air Quality, Noise Levels and Vibrations

The contractor shall:

- Ensure that high quality fossil fuels (with low percentage of sulphur and lead) are used for construction machinery and equipment;
- The Contractor needs to ensure that all construction machines are operated during normal working hours (07 - 20 h);
- Avoid unnecessary operation of construction machinery and vehicles;
- Maintain all vehicles in order to keep them in good working order in accordance with manufactures maintenance procedures
- Make sure all drivers comply with the traffic codes concerning maximum speed limit, driving hours, etc.
- Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site,
- Appropriately site all noise generating activities to avoid noise pollution to local residents,
- Use the quietest available plant and equipment,
- Modify equipment to reduce noise (for example, noise control kits),
- Install acoustic enclosures around generators to reduce noise levels,
- Fit high efficiency mufflers to appropriate construction equipment,
- Avoid the unnecessary use of alarms, horns and sirens,
- Notify adjacent landholders prior any typical noise events outside of daylight hours,
- Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions,
- Employ best available work practices on-site to minimize occupational noise levels,
- Install temporary noise control barriers where appropriate,
- Plan activities on site and deliveries to and from site to minimize impact,
- Monitor and analyze noise and vibration results and adjust road rehabilitation practices as required,
- Avoid undertaking the noisiest activities, where possible, when working at night near residential areas.

Groundwater Quality

- The Contractor will use biodegradable lubricants and gear oils. Maintenance, filling and cleaning of machines must be carried out off the site;
- Wastewater from workers toilets should not be discharged on land;

During the works, quality of surface area might deteriorate due to activities on construction sites. Works may lead to an increased outflow rate of residue and polluted sediments on to land and thus affect the soil and groundwater. Therefore, the Contractor shall:

- Install temporary drainage works (channels and bunds) required for sediment and erosion control and around storage areas for road rehabilitation materials,
- Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site,
- Divert runoff from undisturbed areas around the construction site,
- Place stockpile materials away from drainage lines,
- Prevent all solid and liquid waste entering soil by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport them an approved waste disposal site or recycling depot.
- Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved fenced areas on site.
- Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done in every exit of each vehicle to ensure the local roads are kept clean.
- Sediment-laden run-off prior to the final disposal should be directed so as to leak into the deeper layer of soil or discharge it into lagoon.
- Restore and protect clean areas as soon as possible.
- Dust from storage materials will increase residue and contaminated deposits on to soil. In order to reduce pollution, the Contractor shall perform as follows:
    - Ensure that the roads used by construction vehicles are regularly cleaned, for the purpose of removing residue;
    - To water the stocks of material, access roads and bare soil in order to reduce the possibility of disturbing the surrounding due to dust. To increase frequency of irrigation during high risk periods of time (for example, high winds).

In order to mitigate spillage of hazardous and poisonous chemicals polluting the soil, the Contractor shall:

- Strictly implement the WMP;
- Construct appropriate contents for drainage of pollution for all areas of fuel storage;
- Establish and maintain hazardous substances by marking place and amount of harmful substances in detail, including storage, usage and disposal;
- Train the staff and implement a safe work practice to minimize the risk of spill;
- Determine the cause of pollution if it appears, and control the area of pollution. The impact can be controlled be isolating the resource or by implementing control of affected terrain.

- Rehabilitate contaminated soil by using the most appropriate available method.

Land use

- The Contractor shall ensure that construction-related activities are performed strictly and in fenced construction area;
- The Contractor shall ensure that the natural conditions of the surroundings of the construction site are reinstated after completion of works.

Biological and Ecological Sources

- Night work will be carried out to a minimum extent, in order to prevent the possibility of disturbing the wild animals.
- The Contractor shall ensure that removal of vegetation is minimally limited to the marked construction area.
- The Contractor is obliged to afforest the forest land after use and tree cutting. Tree cutting, if inevitable, must be performed after compensation planting of at least three young trees for each tree being cut down. It is necessary to ensure that planting is performed only in the areas where water can be at disposal during dry seasons and the plant can be protected during the initial growth phase and development. The species will be identified by paying attention on the local flora.

7.3.3. Health and Safety

Works on the reconstruction may pose health and safety risks for construction workers and visitors to the construction site, which may cause severe injuries or death. Population near the construction site and construction workers will be exposed to a large number of: biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc.), and road accidents from construction traffic.

Therefore, the Contractor is obliged to:

- Implement suitable safety standards for all workers and site visitors, which should not be less than those laid down in the international standards in addition to complying with the national standards of the FBH,
- Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular road rehabilitation activity and specific classes of hazards in the work areas,
- Provide personal protective equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty equipment and by replacing damaged equipment with new one.
- Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job.
- Appoint an environment, health and safety manager to look after the health and safety of the workers.

- The contractor should provide portable toilets at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities should be at least 6 m away from storm drain system and surface waters. These portable toilets should be cleaned once a day and all the sewerage should be pumped from the collection tank once a day and should be brought to the common septic tank for further treatment.
- Contractor should provide bottled drinking water facilities to the construction workers at all the construction sites.

7.3.3.1. Safety Engagements

The Contract should ensure that all possible risks in the course of work are eliminated or reduced to a minimum. In order to prevent the possibility of higher-scale accidents it is necessary to plan and develop the measures to help reduce the adverse impacts. The Contractor's duty is to create a Management Plan in Case of Accidents (MPCA).

The MPCA should include organizational structure, responsibilities, procedures, communication, training, resources and other measures needed to provide appropriate reaction of the Contractor in case of accidents which might occur during the project. The most important items of the MPCA are as follows:

- Identify potential hazards and large-scale accidents,
- General procedures for all emergencies and accidents that might occur during the project due to natural disasters, defects on equipment of human errors,
- Description of preventive measures against accidents,
- Workers training for their roles and responsibilities when accident occurs,
- Determining responsible person at the site,
- Urgent communication procedures,
- Information and contacts of important local authorities and emergency services,
- Internal and external alarming,
- Response plans for specific types of hazards, for example medical assistance, fire etc.

The MPCA should include:

- Spill Response Plan
- Emergency Preparedness,
- Response Plan to Accidents.

7.3.3.2. First Aid

The Contractor shall:

- Ensure that facilities that provide health care and first aid are easily accessible. Appropriately equipped first aid stations are to be easily accessible in the whole work area;
- Documenting and reporting accidents, diseases and incidents on workplace;
- Prevent accidents, injuries and diseases originating from, in connection with or arising in the course of work, reducing as much as possible the possible cause of danger in the way which is in accordance with good international practice of industry;
- Identify potential dangers for works, particularly those that might pose threat to life, and provide the necessary preventive and protective measures;
- Ensure that construction site drivers strictly comply with the rules of driving;
- Ensure appropriate lighting in city urban area and alongside roads.

7.3.4. Traffic and Road Safety

The Contractor shall ensure traffic and road safety during performance of works.

The Contractor shall develop the CSOP which includes preparation and organization of construction site during and after construction, including roads on the construction site.

Traffic on construction site is to be regulated the same way as public traffic roads.

The Contractor is obliged to:

- Prepare and deliver TMP to PC Roads FBH for its approval, no later than 30 days upon the beginning of works on any component of the project included in traffic redirection and management.
- For the purpose of uninterrupted traffic movement during the construction works, the TMP shall include: detailed drawings of traffic solutions by showing all bypasses, temporary roads, temporary turns, necessary barricades, signalization/lighting, traffic signs etc.
- Ensure signs in strategic parts of traffic roads.
- Install and maintain a sign on each important point on roads which will be used during reconstruction works, which will clearly indicate the following data in a local language:
    - Location: station label and settlement name
    - Duration of construction
    - Period of the proposed bypass/alternative road
    - Map of the proposed bypass
    - Name and contact address/telephone number of responsible personnel
    - Name and contact address/telephone number of contractor
    - Sincere apology for the caused inconvenience

TMP should include details about the following:

- Construction plan by phases,
- Beginning and duration of works,
- Overview of the existing conditions near the construction site,
- Identification of affected areas,
- Mitigation measures
- Plan of public transport, for example, timetable, change of timetable, disturbance and the like;
- Circulation plans, including zones of entry and exit, routes for towing of material, turnaround points, parking areas, zones of interlocking with other traffic roads etc.,
- Routes for pedestrians and vehicles,
- Traffic controls for each expected intervention, including illustrations of barriers, paths, signalization plan, warning signs etc.,
- Requirements for special vehicles, for example, those of large dimensions,
- Construction works paths (access, ramps, loading, unloading),
- Connection roads for supply vehicles and storage of material,
- Expected interaction of pedestrians and vehicles,
- Roles and responsibilities of persons on construction site regarding traffic management,
- Instructions on the procedures regarding traffic control, including urgent situations.

TMP should also include appropriate communication with affected population about traffic and timely information of traffic changes/road blockage.

TMP should be monitored on a regular basis (responsibility of the supervision engineer) and audited to ensure effective implementation and to take into consideration any changes on construction site. All workers on construction site should get acquainted with the TMP.

7.3.5. Construction Site Safety

The Contractor shall secure the construction site. The construction site should be accompanied with a board with information on works and participants in construction (investor's name, contractor's name, project designer's name, name and type of construction being built, beginning and end of works). These measures are necessary so the Contractor could ensure safety of construction site and prohibit entry ensure of unauthorized persons.

The Elaborate on safety on work and Elaborate on protection from fires and explosions should include detailed measures of safety on construction site in order to ensure safety of location and remove possible risks and adverse impacts on employees and unauthorized persons.

7.3.6. Land Acquisition, Involuntary Resettlement and Economic Displacement

There will be land acquisition of state-owned land for the needs of the Project and there will be no involuntary resettlement nor economic displacement.

The Contractor shall comply CSOP with municipalities and use protection zones of the roads for disposal of construction material and material used for maintenance purposes. In case that occasional use of other land cannot be avoided, compensation will be provided to the affected owner/beneficiary in accordance with RPF.

7.4. MITIGATION MEASURES IN OPERATION PHASE

It is required from PC Roads FBH to undertake the following measures:

- Regular inspection of road integrity and constant maintenance of roads, including such road infrastructure as fences in accordance with the Regulation on Maintenance of Public Roads (Official Gazette of the FBH no. *48/03)*
- Regular maintenance of vegetation along the road, ensuring appropriate visibility and passability of roads;
- Cleaning of roads (removal of waste, debris caused by erosion, snow, etc.) and road signalization and lighting equipment;
- Ensuring all absorption substances used for absorption of spills on roads are treated as hazardous waste and handed over to authorized operators of hazardous waste.
- PC Roads FBH will hire a Contractor for maintenance works, whose obligations will be as follows: Maintenance of Road Inspection Logs, Road Maintenance Logs and Log of Construction Works in accordance with Guidelines for the Design, Construction, Maintenance and Supervision of Roads (FBH Roads, 2010).

7.5. SUMMARY OF MITIGATION MEASURES

Table 5: Environmental and Social Impacts Management Plan

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
PRE-CONSTRUCTION PHASE						
▪ Land acquisition.	▪ Implementation of RPF and RAPs.	Internal resources	Internal resources	Project designer + PC Roads FBH	PC Roads FBH	
▪ Restricted access.	▪ Development of the TMP.	Included in the bid	Internal resources	Contractor	PC Roads FBH	
▪ Impacts on living conditions.	▪ Informing the local communities on the extent of works and duration prior to the commencement of construction works.	Internal resources	Internal resources	PC Roads FBH	PC Roads FBH	
▪ Compliance with national legislation.	▪ Obtaining all necessary permits for Project implementation.	Internal resources	Internal resources	PC Roads FBH + Project designer	Competent body for issuing the permit	
▪ Restrictions on land use and damages on private property.	▪ Avoid private properties where possible; ▪ The Contractor will organization the construction site in collaboration and agreement with project municipalities; ▪ In case temporary land use cannot be avoided, compensation will be provided to affected owners/users	Internal resources	Internal resources	Contractor + PC Roads FBH	PC Roads FBH	

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	(application of RPF and RAP), as well as compensation for loss of the possibility to continue to use land as intended.					
▪ Job creation and impacts on local business.	▪ Informing the public in advance about the construction works, in order to enable businesses and workforce in the area to prepare for the demand on the market.	Internal resources	Internal resources	Contractor + PC Roads FBH	Contractor + PC Roads FBH	
▪ Construction waste disposal.	▪ The location for the disposal of excavated material shall be revised in consultation with local authorities in order to find a proper reuse of the excavated material. ▪ Disposal of the excavated material on the construction waste depot should be the last option.	Internal resources	Internal resources	PC Roads FBH + Municipalities	PC Roads FBH	In the Main design it is stated that 170.000 m^3 of excavated material shall be disposed at a local construction waste depot.
CONSTRUCTION PHASE						
▪ Access restriction.	▪ Providing timely information to citizens through the media about upcoming construction works, expected duration of the works, alternative routes, etc. ▪ Implementation of TMP. ▪ Clear signs posted. ▪ Area where materials and equipment are stored are clearly marked and closed off to unauthorized access.	Included in construction works	Included in supervision	Contractor	Supervisory body*	Supervisory body is appointed by investor PC Roads FBH
▪ Impacts on living conditions of local community	▪ Undertaking adequate actions to prevent or mitigate adverse impacts; ▪ Providing timely information to the citizens on any type of disruption and inconvenience.	Included in construction works	Included in supervision	PC Roads FBH + Contractor	Supervisory body*	

** Supervisor shall be a Consultant appointed by PC Roads FBH in accordance to Federal legislation*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Impacts on local traffic: - increase of local traffic, including heavy machinery and trucks; - closing one of the traffic lanes for construction purposes causing traffic delays and limited access.	▪ Implementation of TMP; ▪ Introduction of appropriate signalization and warning signs.	Included in construction works	Included in supervision	Contractor	Supervisory body*	In collaboration with the local Ministry of the Interior
▪ Air emissions: - exhaust gasses; - dust generation.	▪ High quality fossil fuels (with low percentage of sulphur and lead) need to be used for construction machinery and equipment; ▪ All machines and vehicles to be used in construction activities must have use permit; ▪ Vehicles need to be regularly maintained ; ▪ Equipment with installed filters to reduce soot emission needs to be used; ▪ When not in use the equipment and machinery need to be shut down; ▪ Maximum speed of the vehicle on unpaved roads should be restricted to 20 km/h; ▪ Moistening/ wetting the site to prevent dust occurrence (in areas with dry soils or where activities generate dust);	Included in construction works	Included in supervision	Contractor	Supervisory body*	

* *Supervisor shall be a Consultant appointed by PC Roads FBH in accordance to Federal legislation*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	▪ Sand and gravel materials need to be transported in covered trucks.					
▪ Increased level of noise and vibration: - noise emission and noise disturbance; - vibration.	▪ Restriction of works to period of day only or agreed with the local community(period of day: 06:00 to 22:00, period of night: 22:00-06:00) ▪ In the case of noise complaints by local residents, simultaneous use of machines that generate noise over 70 dB needs to be limited; ▪ In the case of noise complaints by local residents, number of trucks per day visiting the site needs to be reduced; ▪ All machines and vehicles to be used in construction activities must have use permit; ▪ When not in use the equipment and machinery need to be shut down; ▪ Maximum speed of the vehicle on unpaved roads should be restricted to 20 km/h.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Water consumption and emissions into water: - creation of additional water demand, - possible contamination of groundwater.	▪ Monitoring water consumption; ▪ Ensure there is an emergency plan to contain all leaks and spills that result from an accident. ▪ Prevent any repairs, handling of machinery, fuels or lubricants in areas that are not designated for such use. ▪ Proper waste disposal and separation of hazardous waste is required, as well as the engagement of authorized companies for final waste disposal;	Included in construction works	Included in supervision	Contractor	Supervisory body*	

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Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	▪ Oil and fuel collection systems to be fitted to prevent leakage; ▪ Vehicles and machines need to be regularly maintained to prevent leakage; ▪ Installation of oil separators in accordance with EN ISO 858-1 and 858-2 at sites where handling of oil or fuel will be done, and where there is potential for contamination through drainage					
▪ Soil degradation and emissions to soil at the construction site and at the disposal site: - soil erosion; - soil contamination by oils, fuels and other hazardous substances; - occurrence of rockfall.	▪ Control during earthworks to prevent degradation of terrain stability is required; ▪ Installation of drainage structures for proper drainage of water from construction site is required; ▪ Proper waste disposal; separation of hazardous waste; engagement of authorized companies for final waste disposal; ▪ Oil and fuel collection systems to be fitted to prevent leakage.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Conversion of the area and conversion of present land use: - changes in land use; - deforestation; - interrupted land use by uncontrolled and inadequate waste management.	▪ The land determined for use by the Project can only be used for the construction activities and no other land is available for i.e. storage of building material, parking of the heavy machinery etc. in terms of preventing land disturbance. ▪ Proper waste disposal; separation of hazardous waste; engagement of authorized companies for final waste disposal;	Included in construction works	Included in supervision	Contractor	Supervisory body*	

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Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	▪ Oil and fuel collection systems to be designed to prevent leakage; ▪ Rehabilitate deforested areas after completion of works.					
▪ Removal of vegetation cover and topsoil, degradation of biological and ecological resources at the construction site and at the disposal site: - arranged trenches (corridor restrictions) pose a risk to small animals (they might fall into the trench and get injured) and cause temporary fragmentation of habitat; - removal of vegetative cover.	▪ Prevent and control oil, fuel, and chemical spillages that can find their way to the ground water; ▪ Topsoil must be must be returned and re-vegetated after construction activities are done; ▪ Planting ligneous plants around roads and adjacent areas can help to support local flora and fauna; ▪ Fencing of the sites to prevent fall of small animals into trenches; ▪ All trenches up to 0,5 m of depth must be sloped or have ramps in case of necessity for animals' exit. All trenches shall be checked whether there are any animals before covering them with soil; ▪ The land intended for the Project needs can only be used for the construction activities and no other land is available for i.e. storage of building material, parking of the heavy machinery etc. in terms of soil disruption.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Construction waste landfill.	▪ If possible, the excavated material shall be reused. ▪ All environmental protection measures stated in this ESMP apply for the disposal site, as well. This includes improvements to the area of disposal, including leveling, improved aesthetic appearance and development of a green cover. In case of a disposal site that is used by multiple parties, the contractor is encouraged to utilize	Included in construction works	Included in supervision	Contractor	Supervisory body*	

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Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	a site that is operated in a planned manner that is compatible with the provisions of this ESMP.					
▪ Decrease in the current aesthetic value of the landscape (construction site, disposal site); ▪ Structure and pattern of the landscape (construction site, disposal site).	▪ Seeding, planting and re-vegetation with autochthonous species should cover areas affected by the Project; ▪ The land determined for use by the Project can only be used for the construction activities and no other land is available for i.e. storage of building material, parking of the heavy machinery etc. in terms of soil disruption.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Inadequate traffic management during construction: - traffic congestion and obstructions on road sections; - occurrence of trenches and slopes.	▪ Implementation of TMP; ▪ Levelling of ground to reduce the occurrence of trenches and slopes.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Inadequate waste handling.	▪ Implementation of WMP that shall ensure environmentally sound collection of waste, its storage, transport and final disposal, or reuse / recycling. ▪ No clandestine waste disposal will be allowed on site, including open burning of wastes.	Included in construction works	Included in supervision	Contractor	Supervisory body*	+ local waste management operator
▪ Inadequate organization of construction site.	▪ Implementation of CSOP.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Inadequate workers safety.	▪ Implementation of Elaborate on work safety: - Provide workers with a safe and healthy work environment,	Included in construction works	Included in supervision	Contractor	Supervisory body*	

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Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	- Provide personal protective equipment, - Respect safety procedures, - Provide portable toilets, - Provide drinking water, - Etc.					
▪ Accidental situations i.e. spills, leakage of oils, fats, fuels and similar hazardous materials.	▪ Implementation of MPCA which includes: - Spill Response Plan, - Emergency Preparedness and - Response Plan; ▪ Implementation of Elaborate on Fire and Explosion.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Materials supply and transport.	▪ Implementation of CSOP to ensure materials are transported in covered vehicles to reduce impacts on environment and Management Plan on Safety at Work to ensure materials are used in accordance with Bill of Quantities.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
CHANCE-FIND PROCEDURES DURING CONSTRUCTION PHASE						
▪ Impacts on cultural heritage.	▪ If archaeological findings appear on or near construction site immediate work suspension and local authorities notification is required; ▪ Implementation of CSOP;	Included in construction works	Included in supervision	Contractor	Supervisory body*	In case of finding cultural heritage, supervision is implemented by the competent institution

**Supervisor shall be a Consultant appointed by PC Roads FBH in accordance to Federal legislation.*

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
OPERATION PHASE						
▪ Access restrictions – during maintenance	▪ Introduction of appropriate traffic signalization and appropriate warning signs; ▪ Information to citizens through the media about upcoming maintenance, expected duration of the works, alternative routes.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Emissions into water: possible contamination of the groundwater in the cases of leakage of hazardous substance	▪ Procurement and use of adsorbing material for the case of accidental spills during everyday traffic ▪ Regular maintenance of oil separators and ensuring that waste oils are handed over to authorized companies for management of hazardous waste.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Soil degradation and emissions to soil: - soil contamination by oils, - fuels and other hazardous substances	▪ Procurement and use of adsorbing material for the case of accidental spills during everyday traffic.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Accidental situations i.e. spills, leakage, land slides	▪ Procurement and use of adsorbing material for the case of accidental spills during everyday traffic.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	
▪ Accidental situations i.e. rockfall.	▪ The area shall be immediately secured; ▪ The cavernous and fractured areas shall be cleaned; ▪ If needed protective steel meshes anchored in healthy rock shall be applied to protect the road and its users from rockfall.	Included in maintenance	Internal resources	Contractor for maintenance	PC Roads FBH	

8. ENVIRONMENTAL MONITORING PROGRAM

Table 7 presents summary of potential impacts in connection with the project, along with monitoring measures necessary as information for construction site – development of a certain plan during project implementation and connection of mitigation measures to avoid or reduce their impact.

The main components of the Monitoring Plan are as follows:

- Parameters to be monitored,
- Location of monitoring parameters,
- The way how monitoring will be performed,
- When monitoring will be performed,
- Costs of monitoring activities,
- Responsibility for monitoring activities.

The Contractor shall create an Environmental Monitoring Programs (EMP) in accordance with requirements of this ESMP, which will include a minimum of monitoring requirements, described in table below, without limitation to these requirements. PC Roads FBH will be responsible for reviewing the EMP prepared by the Contractor and for ensuring that these monitoring programs are in accordance with this document.

The list for monitoring in the field will be prepared on the basis of ESMP. The list for monitoring in the field will be used by Supervision Engineers of PC Roads FBH. These signed lists will be forwarded to PC Roads FBH, who will be responsible for monitoring and reporting about the compliance.

PC Roads FBH will maintain a registry of grievances, which will contain all information on grievances or complaints received by the community or other interested parties. That will include: type of grievance, time and actions for their resolution and final outcome.

Table 6. State of the Environment Monitoring Program

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
PRE-CONSTRUCTION PHASE								
▪ Job creation and impacts on local businesses.	▪ Number of employed persons from local communities; ▪ Timely informing the local communities.	Wider area of construction	Inspection	Prior to construction	Included in performance	Included in performance	Contractor	Contractor
▪ Impacts on living conditions of local communities.	▪ Number of employed persons from local communities; ▪ Timely informing the local communities about the forthcoming works.	Wider area of construction	Visual inspection and inspection	Prior to construction	Included in supervision	Included in supervision	Supervisory body	Supervisory body
▪ Temporary occupation of privately owned land plots for the purpose of construction of access roads and placement of Staff, machines and material.	▪ Implementation of RPF and RAP.	Construction site	Visual inspection and inspection	Prior to construction and during construction when necessary	Included in supervision	Included in supervision	Supervisory body + PC Roads FBH	Supervisory body + PC Roads FBH
CONSTRUCTION PHASE								
▪ Access restrictions;	▪ Provided alternative access; ▪ TMP in place; ▪ Implementation of RPF, provisions on compensation procedures for businesses	Construction site	Visual inspection	Random checks at least once a week during the construction	Included in supervision + Included in RPF (RAP)	Included in supervision + Included in RPF (RAP)	Supervisory body + PC Roads FBH	Supervisory body + PC Roads FBH

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
	affected by access restrictions and livelihood restoration.							
▪ Restrictions on land; ▪ use and damage to the private property (agricultural plots, horizontal infrastructure, fences and railings) due to disposal of construction waste, work camps and parks of heavy machinery.	▪ CSOP in place; ▪ Disposal of construction and maintenance materials; ▪ Position of work camps and heavy machinery parks; ▪ Implementation of RPF provisions on compensation procedures in case occasional land use cannot be avoided, compensation will be provided to affected owners/users and livelihood restoration assistance.	Construction site	Visual inspection	Prior to construction and random checks at least once a week during the construction	Included in supervision + Included in RPF (RAP)	Included in supervision + included RPF (RAP)	Supervisory body + PC Roads FBH	Supervisory body + PC Roads FBH
▪ Impacts on local traffic (increase of local traffic, including heavy machinery and trucks, operation of roads with only one lane causing traffic delays and limited access).	▪ TMP in place; ▪ Traffic patterns; ▪ Timely information to the citizens.	On construction site and nearby	Visual inspection and inspection	Random checks during the week	Included in supervision	Included in supervision	Supervisory body	Supervisory body
▪ Impact on cultural heritage.	▪ CSOP in place, ▪ Implementation of procedures in case of chance findings.	Wider construction area	Visual inspection	During construction	Included in supervision	Included in supervision	Contractor + Supervision	Contractor
▪ Air emissions: - exhaust gasses;	▪ Level of dust (amount of particles of sediment and floating particles);	Construction site	Measuring devices	During construction when	-	500 USD/measuring	Contractor +	Authorized laboratory

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
- dust generation.	▪ Emissions of exhaust gases from vehicles and equipment; ▪ (SO_2, NO_2, dim and PM_{10}).			needed and upon complaints by the citizens			Supervision	
▪ Increased level of noise and vibration: - noise emission, - vibration.	▪ Level of noise.	In populated places near the construction site	Measuring devices	Upon order by supervisory organ or upon complaints by the citizens	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory
▪ Emissions into water: possible contamination of the groundwater.	▪ Analysis of parameters of surface water quality: - Chemical analysis (PH, turbidity, conductivity, temperature, suspended particles, KPK, BPK5, ingredients with nitrogen); - Standard bacteriological analyses.	At the water source Borak	Standard laboratory equipment and methods of water quality monitoring	Upon order by supervisory organ or upon complaints by the citizens	-	1000 USD /measuring	Contractor + Supervision	Authorized laboratory
Soil pollution.	▪ Soil quality, including, PH, heavy metals, phosphorus, nitrogen, Na, Ca.	On representative plots of land near construction sites	Taking samples and standard laboratory analyses	Upon order by supervisory organ or upon complaints by the citizens	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
▪ Increased water consumption.	▪ Amount of affected water.	Construction site	Water meter, record-taking	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Emissions into water and soil due to improper waste handling.	▪ CSOP in place; ▪ Waste generation and management.	Construction site	Visual inspection, disposal records or receipts from landfills	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Soil degradation:: - soil erosion; - occurrence of landslide and rockfall.	▪ Implementation of CSOP; ▪ Implementation of WMP.	Construction site + Disposal site	Visual inspection	Regularly during construction	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Conversion of the area and conversion of present land use: - changes in land use; - deforestation; - interrupted land use by uncontrolled and inadequate waste management.	▪ Implementation of CSOP, ▪ Implementation of WMP.	Construction site	Visual inspection, disposal records or receipts from landfills	Regularly during construction, as appropriate. Amount and disposal records internal reports will be made daily and monthly	Included in performance	Included in performance	Contractor + Supervision	Contractor

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
▪ Removal of vegetation cover.	▪ Number and type of planted vegetation and analysis of vegetation cover prior to the beginning and upon completion of works.	Construction site + Disposal site	Visual inspection and record-taking	Prior to beginning and upon completion of works	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Degradation of biological and ecological resource.	▪ All excavated trenches over 0.5 min depth will be sloped or have escape ramps installed which are suitable for the escape of animals. All trenches shall be inspected for wildlife prior to backfilling.	Construction site + Disposal site	Visual inspection	Regularly during construction, as appropriate	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Waste management.	▪ Implementation of WMP.	Construction site	Visual inspection, disposal records or receipts from landfills	Regularly during construction, as appropriate. Amount and disposal records internal reports will be made daily and monthly	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Accidental situations i.e. spills, leakage.	▪ Implementation of EMP which includes: - Spill Response Plan,	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor +	Contractor

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
	- Emergency Preparedness and - Response Plan.						Supervision	
▪ Materials supply.	▪ Implementation of CSOP.	Construction site	Reports	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Material transport.	▪ Implementation of CSOP.	Construction site + Disposal site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Workers safety.	▪ Implementation of Elaborate on work safety.	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
OPERATION PHASE								
▪ Access restrictions during maintenance	▪ TMP in place (safe passages for vehicles and pedestrians; application of proper horizontal and vertical signalization; timely information of the public etc.).	Construction site	Supervision	Prior to maintenance works and random checks at least once per week during maintenance activities	Internal resources	Included in maintenance	PC Roads FBH	Consultant for maintenance

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
▪ Emissions to water: possible contamination of groundwater in the cases of leakage of hazardous substances.	▪ Status of water bodies adjacent to road sections; ▪ Analysis of parameters of surface water quality: - Chemical analysis (PH, turbidity, conductivity, temperature, suspended particles, KPK, BPK5, ingredients with nitrogen; - Standard bacteriological analyses.	Nearby water source(if there is)	Visual inspection + Sampling if necessary	Random checks during maintenance	Internal resources	1000 USD/measuring	PC Roads FBH	Authorized laboratory
▪ Soil degradation and emissions to soil: soil contamination by oils, fuels and other hazardous substances.	▪ State of soil in proximity to the road; ▪ Soil quality, including, PH, heavy metals, phosphorus, nitrogen, Na, Ca, salts and pesticides.	Along the road	Visual inspection + Sampling if necessary	Random checks during maintenance	Internal resources	1500 USD/measuring	PC Roads FBH	Authorized laboratory
▪ Accidental situations i.e. spills, leakage, rockfall.	▪ Status of road sections.	Along the road	Inspection	Random checks during maintenance	Internal resources	Included in maintenance	PC Roads FBH	Consultant for maintenance

Note: All mitigation measures and parameters to be monitored should be included in total price of works performance. The table includes additionally provided prices of sampling and laboratory testing, solely as information for assessment of overall costs of construction.

9. IMPLEMENTATION AND REPORTING

9.2. PROJECT IMPLEMENTATION

PC Roads FBH is the implementer of the Project and will be responsible for the implementation and compliance of the projects in line with ESMP and ESMF.

Prior to the beginning of works, the Contractor will implement baseline data of the environment during the preparation phase.

Application of all identified social and environmental mitigation measures and the State of the EMP will be provided. The Contractor will be responsible for the implementation of the environmental mitigation measures during construction and will employ environmental experts to supervise the implementation of Contractor's responsibilities and will be in communication with the investor and with the FMoET. PC Roads FBH will constitute a Grievances Committee which will receive all grievances during Project implementation in accordance with grievance mechanisms as prescribed in the ESMP and ESMF. During project implementation, the Investor will supervise compliance of the Contractor with provisions and ESMP.

Upon project completion, PC Roads FBH will be in charge of facilities management and maintenance. Regular and timely payment will be carried out in accordance with monitoring plan.

Upon project completion, the public has the right to participate directly or indirectly, with a possibility to state their interests and opinion in decision-making process.

9.3. REPORTING PROCESS

9.3.1. Contractor to PC Roads FBH

The Contractor shall prepare a Report on compliance with ESMP in form of a monthly progress report and submit it to PC Roads FBH in a local language (C/S/B) and in English, in analogue and digital form.

If there shall be any accidental situations or jeopardizing the environment and society the reporting process must be immediate. The Contractor is obliged to inform the PC Roads FBH and local community immediately after any accidental situations that happened over the phone +387 33 250 370 or via email form at the PC Roads FBH website: http://www.jpcfbih.ba/ba/kontakti/kontakti.shtml.

The Contractor's reports to PC Roads FBH are to include a list and description of the performed activities, as well as recommendations and planned future activities and protection measures.

9.3.2. Supervision Engineer to PC Roads FBH

The Supervision Engineer shall prepare a Report on compliance with ESMP in form of a monthly progress report and submit it to PC Roads FBH in a local language (C/S/B) and in English, in analogue and digital form.

9.3.3. PC Roads FBH to FMoET and WB

PC Roads FBH shall prepare Annual Environmental Health and Safety Reports (AEHS)[16], including monitoring indicators and reports on the implementation of their requirements set in ESPM and submit them to the WB for review.

PC Roads FBH shall prepare and submit a monthly progress report to WB.

PC Roads FBH has the responsibility of preparing and submitting to the FMoET the reports which will include:

- status of implementation of mitigation measures,
- needs for possible additional mitigation measures,
- description of cases of non-compliance with environmental requirements,
- received grievances by local population and other participants, and the way how the grievances were resolved.

In case of higher-scale accidents or deaths on construction site, PC Roads FBH shall promptly notify the WB thereof.

[16] *Annual Environmental Health and Safety*

10. PUBLIC DISCUSSION AND INFORMATION DISCLOSURE

10.2. PUBLIC CONSULTATION

Public consultation of the subject ESMP will be organized after the WB and PC Roads FBH approve the draft of the ESMF at time and place accessible to the general public and interested stakeholders, in Sarajevo. Afterwards, there shall be a site-specific public discussion organized for this particular ESMP in the project area.

Minimum 10 day before the public consultation the document shall be published and made accessible to the public.

The record on public discussion, that is, grievances presented at the public discussion shall be recorded in the Grievance Register, and opinions and suggestions of the public shall be integrated into the final ESMP.

After public discussion the documents shall be disclosed again.

10.3. INFORMATION DISCLOSURE

Draft ESMP will be available on the website of PC Roads of the (www.jpcfbih.ba) in a local language and on the website of the WB in English. During the process of public consultation the interested public will obtain all information regarding the project, including social and environmental issues.

During construction works the Contractors will submit monthly information to PC Roads FBH regarding process of work, which will be published on the websites of PC Roads FBH and BHAMK (Car Association of BH) regarding temporary traffic regulation.

Schedule of works and potential changes to the schedule will also be reported two weeks prior to the beginning of works on the website of PC Roads FBH and in local newspapers, radio and television stations for disclosure. The schedules will provide information on the beginning and end of works, which can impact the affected groups (such as changes to traffic/water/regime of electric energy supply and access, noise and dust due to construction works).

10.3.1. Grievance Mechanisms

Besides the institutionally available ordinary and extraordinary legal remedy, and existing institutional channels, PC Roads FBH will ensure and form a special Grievance Redress Mechanism in collaboration and direct involvement of those municipalities under whose administrative authority the project is carried out.

Grievance Redress Mechanism designed for this project is the **Central Feedback Desk (CFD)** at the level of the implementing agency PC Roads FBH which shall serve as both Project level information center and grievance mechanism, available to those affected by implementation of all project sub-components. The CFD shall serve the persons affected directly or indirectly by construction works.

The Grievance Registration Sheet as print out shall be available at city administration and shall be available for download on the website of JP Roads FBH (www.jpcfbih.ba).

The grievance can be logged in writing within PC Roads FBH, with the Contractor, by phone, by fax, and by e-mailing it to the designated e-mail address zalbena@jpcfbih.ba, or by mail to the address Terezija 54, 71000 Sarajevo.

Further information on Grievances can be found in the ESMF and RPF for the FBH Road Sector Modernization Project.

Appendix 10. Report on Public Consultation

LIST AND CHRONOLOGY OF THE INVITATIONS FOR

The Public Discussion on topic *Resettlement Policy Framework* and *Environmental and Social Management Framework* for The Project of Modernization of the road sector of the FBH

No.	WHO WAS NOTIFIED	THE METHOD OF NOTIFICATION	DATE
1.	Agency for Watershed of the Adriatic Sea, Mostar	Fax: 036 397 883	February 25, 2016.
2.	Federal ministry of Environment and Tourism of the FBH	Fax: 033 726 747	February 25, 2016.
3.	Federal ministry of Agriculture, Water Management and Forestry	Fax: 033 726 669	February 25, 2016.
4.	Ministry of Trade, Tourism and Environmental Protection HNC	Fax: 036 552 806	February 25, 2016.
5.	Ministry of Agriculture, Water Management and Forestry of HNC	Fax: 036 445 901	February 25, 2016.
6.	Department of Physical Planning; B.Petrovac	Fax: 037 881 012	February 25, 2016.
7.	MUNICIPALITY OF BIHAĆ	Fax: 037 222 220	February 25, 2016.
8.	Department for Housing and Utility Services, Renewal and Development of Local Communities; Bugojno	Fax: 030 251 222	February 25, 2016.
9.	Department of Urban Planning and Environmental Protection; Cazin	Fax: 037 514 314	February 25, 2016.
10.	Department of Physical Planning and Construction, Čapljina	Fax: 036 805 983	February 25, 2016.
11.	MUNICIPALITY OF DRVAR	Fax: 034 819 001	February 25, 2016.
12.	Mayor Office, MUNICIPALITY OF FOČA	Fax: 038 210 097	February 25, 2016.
13.	MUNICIPALITY OF GLAMOČ	Fax: 034 206 153	February 25, 2016.
14.	Department of Planning Housing and Communal Affairs and Displaced Persons; Goražde	Fax: 038 228 551	February 25, 2016.
15.	MUNICIPALITY OF JABLANICA	Fax: 036 753 215	February 25, 2016.

16.	The service of Construction/urban planning, physical planning, of geodetic, cadastral and property rights matters; Jajce	Fax: 030 658 013	February 25, 2016.
17.	Department for Geodetic, Property - Legal Affairs; Kalesija	Fax: 035 631 286	February 25, 2016.
18.	Mayor Office, MUNICIPALITY OF KISELJAK	Fax: 030 871 708	February 25, 2016.
19.	MUNICIPALITY OF KLADANJ	Fax: 035 621 150	February 25, 2016.
20.	Department of Economics, Construction, Urban Development and Utility Affairs; Kupres	Fax: 034 276 333	25.2.2016.
21.	MUNICIPALITY OF LIVNO	Fax: 034 200 315	February 25, 2016.
22.	MUNICIPALITY OF MOSTAR	Fax: 036 447 445	February 25, 2016.
23.	MUNICIPALITY OF OLOVO	Fax: 032 829 568	February 25, 2016.
24.	MUNICIPALITY OF POSUŠJE	Fax: 039 681 041	February 25, 2016.
25.	MUNICIPALITY OF SREBRENIK	Fax: 035 369 163	February 25, 2016.
26.	MUNICIPALITY OF STOLAC	Fax: 035 369 163	February 25, 2016.
27.	MUNICIPALITY OF ZENICA	Fax: 032 241 614	February 25, 2016.
28.	OSCE (Organization for Security and Co-operation in Europe, Mission to B&H) (NGO)	Fax: 033 442 479	February 25, 2016.
29.	Environmental and Rural Research Development Organization (NGO)	Online, www.jpcfbih.ba	February 25, 2016.
30.	MUNICIPALITY OF TUZLA: Department of Physical Planning and Environment; Department of Urban Planning	 Fax: 035/307-451 Fax: 035/251-575	 29.2.2016. 25.2.2016.
31.	CCI (Center of Civil Initiatives) Tuzla Mostar	 Fax: 035 278 232 Fax: 036 554 511	 25.2.2016. 29.2.2016.
32.	Aarhus B&H (NGO)	E-mail: koordiantor@aarhus.ba	February 29, 2016.
33.	Žene BiH Mostar*(Women BH-NGO)*	Tel: + 387 36 550 339	February 29, 2016.
34.	Human Rights Office Tuzla (NGO)	E-mail: biroy@bih.net.ba	February 29, 2016.

35.	Centre for Ecology and Natural Resources (NGO)	Fax: 033 649 196	February 29, 2016.
36.	EKO-LINE Mostar (NGO)-Association for improving and developing and promotion of ecology and tourism	Facebook	February 29, 2016.
37.	EKOPOT TUZLA (NGO)-Association for development, improving I promotion of eco-agriculture, tourism and environmental protection)	E-mail: ekopot@yahoo.com	February 29, 2016.
38.	Department of Physical Planning, Surveying and property rights; D.Vakuf	Fax: 030 509 615	February 29, 2016.
39.	MUNICIPALITY OF KONJIC	Fax: 036 729 813	February 29, 2016.
40.	Department of Physical Planning, Housing and Utilities, property and legal issues; Ključ	Fax: 037 661 104	February 29, 2016.
41.	MUNICIPALITY OF NEUM	Fax: 036 880 214	February 29, 2016.
42.	Mayor Office, MUNICIPALITY OF ŠIROKI BRIJEG	Fax: 039 705 915	February 29, 2016.
43.	MUNICIPALITY OF TRAVNIK	Fax: 030 511 277	February 29, 2016.
44.	Center for Education and Research	E-mail: info@nahla.ba	March 2, 2016.
45.	Center for education and research - CIN(NGO)	E-mail: info@cin.ba	March 2, 2016.
46.	Center for Environmentally Sustainable Development-COOR(NGO)	E-mail: coorsa@bih.net.ba	March 2, 2016.
47.	Iniciative civil action-ICVA(NGO)	E-mail: icva@bih.net.org	March 2, 2016.
48.	(NGO) Horizont- Association for ecology and tourism promotion	E-mail: info@nvohorizont.ba	March 2, 2016.
49.	"Žene ženama"(Association Women to women-NGO)	Tel: + 387 33 219 640	March 2, 2016.
50.	Ekotim UG(NGO) - Association for environmental, nature and health development	E-mail: ekotim@nih.net.ba	March 2, 2016.
51.	The Ministry of Urban Planning, Physical Planning and Environmental Protection, BPC	fax: 038 224 257	March 2, 2016.
52.	The Ministry of Social Affairs, Health, Displaced Persons and Refugees, BPC	fax: 038 221 224	March 2, 2016.
53.	Ministry of Agriculture, Forestry and Water Management, *Herzegovina-Neretva Canton (HNC)*	Fax: 036/445-901	March 2, 2016.
54.	The Ministry of Transport and Communications, HNC	Fax: 036/552-806	March 2, 2016.

55.	The Ministry of Trade, Tourism and Environmental Protection, *Herzegovina-Neretva Canton (HNC)*	Fax: 036/514-810	March 2, 2016.
56.	The Ministry of Physical Planning, Construction and Environmental Protection, *West Herzegovina Canton (ZHC)*	Fax: 039 682 160	March 2, 2016.
57.	Ministry of Agriculture, Forestry and Water Management, *West Hezcegovina Canton (ZHC)*	Fax: 032 460 752	March 2, 2016.
58.	Ministry of Physical Planning, Transport and Communications and Environmental Protection, *West Hezcegovina Canton (ZHC)*	Fax: 032 460 702	March 2, 2016.
59.	The Ministry of Physical Planning, Construction and Environmental Protection, *Una-Sana Canton(USC)*	E-mail: gradjenje@vladausk.ba	March 2, 2016.
60.	Ministry of Agriculture, Forestry and Water Management, *Una-Sana Canton(USC)*	E-mail: poljoprivreda@vladausk.ba	March 2, 2016.
61.	Ministry of Construction, Reconstruction, Physical Planning and Environment, *Canton 10 (HBC)*	E-mail: mgopuzo@vladahbz.com	March 2, 2016.
62.	Ministry of Agriculture, Forestry and Water Management, *Canton 10 (HBC)*	Fax: 034 200 364	March 2, 2016.
63.	The Ministry of Physical Planning, Construction and Environmental Protection, *Kanton Sarajevo(CS)*	Fax: 033 562-031	March 2, 2016.
64.	The Ministry of Transport, *Kanton Sarajevo(CS)*	Fax: 033 562-059	March 2, 2016.
65.	The Ministry of Urbanism, *Midbosnian Canton(SBC)*	E-mail: tr_urb_1@bih.net.ba	March 2, 2016.
66.	Ministry of Physical Planning and Environmental Protection, *Canton Tuzla (TC)*	Fax: 035 369 428	March 2, 2016.
67.	Federal Ministry of Transport and Communications	Fax: 036 550 024	March 2, 2016.

JP Ceste Federacije BiH d.o.o. Sarajevo i konsultant Ecoplan d.o.o. Mostar pozivaju sve zainteresirane subjekte, nevladine organizacije i stanovnike općina i naselja koja gravitiraju područjima predmetnih dionica iz Programa modernizacije magistralnih cesta, da uzmu učešće na

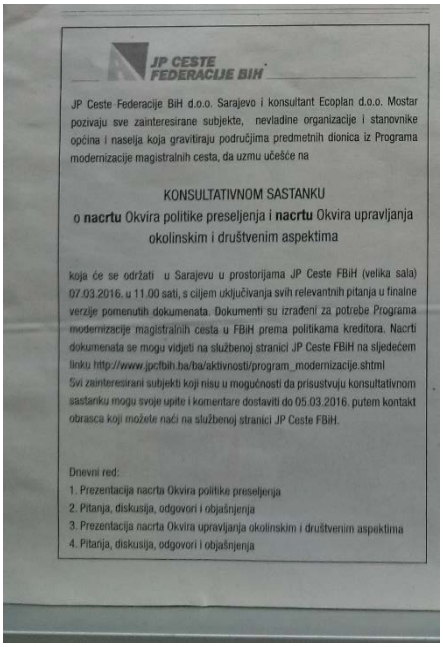
KONSULTATIVNOM SASTANKU
o **nacrtu** Okvira politike preseljenja i **nacrtu** Okvira upravljanja okolinskim i društvenim aspektima

koja će se održati u Sarajevu, prostorijama JP Ceste FBiH (velika sala) 07.03.2016. u 11.00 sati, s ciljem uključivanja svih relevantnih pitanja u finalne verzije pomenutih dokumenata. Dokumenti su izrađeni za potrebe Programa modernizacije magistralnih cesta u FBiH prema politikama kreditora. Nacrti dokumenata se mogu vidjeti na službenoj stranici JP Ceste FBiH na sljedećem linku http://www.jpcfbih.ba/ba/aktivnosti/program_modernizacije.shtml
Svi zainteresirani subjekti koji nisu u mogućnosti da prisustvuju konsultativnom sastanku mogu svoje upite i komentare dostaviti do 05.03.2016. putem kontakt obrasca koji možete naći na službenoj stranici JP Ceste FBiH.

Dnevni red:
1. Prezentacija nacrta Okvira politike preseljenja
2. Pitanja, diskusija, odgovori i objašnjenja
3. Prezentacija nacrta Okvira upravljanja okolinskim i društvenim aspektima
4. Pitanja, diskusija, odgovori i objašnjenja

Sarajevo, 25.02.2016.

Javno preduzeće Ceste Federacije BiH društvo sa ograničenom odgovornošću, Sarajevo • ul. Terezija 54, 71000 Sarajevo, Bosna i Hercegovina • **Tel.** +387(33)250-370 • **Faks** +387(33)250-400 • **Reg. br.** 065-0-Reg-11-000713 od 29.3.11., Općinski sud u Sarajevu • **JIB** 4200339240004 • **Računi** 1610000028440120 - Raiffeisen Bank d.d. BiH, 1540012000213884 - Intesa Sanpaolo Banka d.d. BiH



JP CESTE FEDERACIJE BIH

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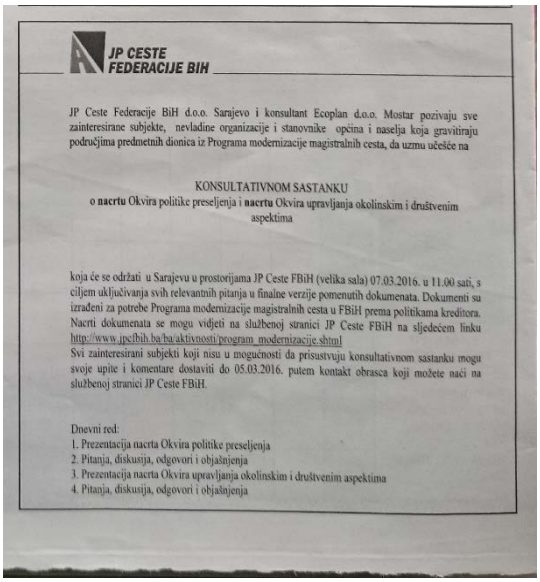
4. Pitanja, diskusija, odgovori i objašnjenja

Announcement on Consultative Meeting in the Local Newspaper *"Vecernji list "*



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4. Pitanja, diskusija, odgovori i objašnjenja

Announcement on Consultative Meeting in the Local Newspaper *"Dnevni Avaz"*

Minutes

Of the Public Discussion on Draft of Resettlement policy framework and Environmental and Social Management framework for the FBH road sector modernization project

held on March 7th 2016 in Sarajevo at 11:00

Public discussion on draft of Resettlement policy framework and Environmental and social management framework, which was ordered by Public Company Roads of the Federation BH and developed by Ecoplan Ltd. Mostar, was held with aim to introduce the participants with the draft of these documents.

Public discussion was organized by the creator of the documents, the company Ecoplan Ltd. Mostar and the team members who participated are: Monika Kordić, Sanja Bekavac and Anđelka Vojvodić.

The investor, Public Company Roads of Federation of BH was represented by: Ivana Božić Krezić, Aida Landžo-Handžić and Selma Ljubijankić.

The list of present persons has been attached to the Minutes.

Presentations and discussions:

Item 1. Ivana Božić Krezić greeted the present persons, as the representative of Investor, PC Roads of FBH and inform them about the topic of the discussion. She made short presentation of overall road modernization project, reminded present persons that the documents are in draft version and that relevant comments from this discussion will be reviewed and included in the final document. She also remarked that documents were reviewed by the expert team from the World Bank and after it's approval, it will become obligatory document for the contracting parties during the project implementation.

Item 2. Ecoplan team member, Monika Kordić, made short presentation of Draft of the Resettlement policy framework, introducing objectives of the Framework, key principles for land acquisition and compensation, entitlement matrix and grievance mechanisms.

Item 3. After the presentation, public discussion followed, during which present persons gave comments on Resettlement policy framework, with the accent on grievance mechanisms and administration of grievances:

- Zlatko Hujic from Bosansko Petrovo Municipality asked about exact tasks that municipalities will have regarding Beneficiary feedback commissions.
- Ružica Krešić from Neum Municipality asked about exact definition of grievances. Will the commission be in charge for grievances of property rights? She pointed out from her experiences that it's very difficult to determine persons who are really below the poverty line. It shouldn't happen that answer given by commission is opposite of those

given by municipality. It's important to pay attention to deadline given to commission of 15 days, when municipality acts within 8 days.

Reply from PC Roads: Commission will receive all grievances related to project activities, including land acquisition grievences, construction site works (noise, dust etc.). Commission will record the data in the Central Grievance Log, implement monitoring and prepare reports. Commission will not interfere in municipality scope of work or work of competent authorities that deal with grievences under the national legislation. Additional guidelines for the commission will be prepared and it will be coordinated with municipalities.

- Mato Jozak from Travnik Municipality gave his opinion that commission is there to solve all grievances peacefully.
- Ružica Krešić made conclusion about directives for the commission where it should be clearly separated authority of commission and those of municipalities.
- Pero Raič from Neum Municipality informed present persons that on the area of road Neum-Stolac all project affected people are elder.
- Aida Landžo – Handžić from PC Roads of FBH made comment about how important is to specify kind of grievance that commission can answer. E.g. grievance considering noise and dust in the air, opposite those considering expropriation.
- Rasim Hamzić from Ministry of Agriculture Forestry and Water Management HNC made comment that national Law on expropriation is detailed enough. But problems occur on the site: e.g. more than one owner of the land, elder owner etc.
- Aida Brlek from PC Roads of FBH comments that national Law on expropriation is good enough and in her opinion Beneficiary feedback commissions for grievances is just an extension of already established procedure. National legislation already has instruments for vulnerable groups and for defining the term fair compensation. She pointed out one good local example from her experience where over 90% of cases for expropriation were solved during the road construction in city of Sarajevo. Commission should not deny proffesion and has to collect good local experiences.

Item 4. Sanja Bekavac, as Ecoplan team member, gave presentation of Environmental and Social Management Framework.

Item 5. Public discussion on Environmental and social management framework followed:

- Marinko Pranjić from Ministry of Agriculture Forestry and Water Management HNC referred to the public discussion in Hutovo regarding reconstruction of section Neum-Stolac held in Hutovo in Neum Municipality and asked about intersection of road and water supply system.

Item 6. PC Roads of FBH at the end of the discussion concluded that guidelines for the commission will be prepared and they will be agreed with municipalities.

Developer of the Assessment thank everyone for their participation in the public discussion.

Public discussion was closed at 12:30 PM.

Minutes created by Anđelka Vojvodić in Mostar on March 7th 2016.

Photographs of Attendents of the Meeting in Sarajevo

Sarajevo 7.3.2016. Javna rasprava

Projekt modernizacije cestovnog sektora FBiH

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List of Attendents at the Meeting in Sarajevo