JP CESTE FEDERACIJE BIH

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR THE PROJECT OF THE IMPROVEMENTS OF THE TUNNEL ORMANICA

November, 2017

Table of Contents

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

BH - Bosnia and Herzegovina
CFD - Central Feedback Desk
CSOP - Construction Site Organization Plan
EIB - European Investment Bank
EIA - Environmental Impact Assessment
EMP - Environmental Monitoring Program
ESMF - Environmental Social Management Framework
ESMP - Environmental and Social Management Plan
EP - Environmental Permit
FBH - Federation of Bosnia and Herzegovina
FMoET - Federal Ministry of Environment and Tourism
IFI - International Financial Institutions
MP - Main project
MPCA - Management Plan in Case of Accidents
OP - Operational Policy of the World Bank
PAP - Project Affected Person
PPE - Personal Protective Equipment
PC Roads FBH - Public Company Roads of the Federation of Bosnia and Herzegovina
RAP - Resettlement Action Plan
RPF - Resettlement Policy Framework
TD - Tendering Documentation
TMP - Traffic Management Plan
WB - World Bank
WMP - Waste Management Plan

AEHS - Annual Environmental Health and Safety

EXECUTIVE SUMMARY

INTRODUCTION AND OBJECTIVES OF ESMP

This Project of the Improvements of the tunnel "Ormanica" (the Project) for which this ESMP is developed is one of the sub-projects under the FBH Road Sector Modernization Project co-financed by the WB and EIB. *Improvements of the tunnel "Ormanica", on the road M-1.8, section Pelagićevo – Srebrenik,* is screened as a category B project according to the Operational Policies (OP 4.01 on Environmental Assessment) 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 a water permit, an environmental assessment or an environmental permit - whether federal or cantonal. PC Roads FBH will ensure all required local permits for this Project are obtained.

LOCATION AND TRAFFIC DESCRITPTION

The tunnel "Ormanica" is situated on the main traffic direction of Gradačac municipality, on the major road M-1.8, section Pelagićevo – Srebrenik. The nearest relevant traffic count device is located in Ormanica 200m north from the project tunnel and it shows the AADT for 2015 equals 10.685.

PROJECT DESCRIPTION

The project tunnel, tunnel Ormanica, is located on main road M1.8.This particular road takes prominent place in roadway network of Bosnia and Herzegovina, seeing rather heavy traffic. The Designer did not have project documentation pertaining to the construction of the tunnel, or documentation describing any and all interventions undertaken at the tunnel in the course of its exploitation. The total length of the tunnel is 247m while the width equals 8,40m.
The main project does not envisage the widening of the tunnel.

Terms of Reference dictate coming up with apt and optimal solutions, especially considering the following:

- Ensuring the required traffic profile,
- Placement of permanently high-quality roadway,
- Protection of usable surface from underground water,
- Ensuring favorable stability conditions, and
- Overview and proposal of manner and conditions of rehabilitation realization

The final goal being getting the structure in a condition in which all its functions will meet the level of modern tunnel structures constructed at the roads of the same class.

BASELINE OF PARTICULAR INTEREST

The terrain of the Project is mostly flat with an attitude in the range from 100 to 150 meters above sea level. It can be said that this area is under the influence of the moderate continental climate zone, with moderately cold winters and warm summers. There are no data on air quality on this particular location, but based on geographical features and the fact that there are no significant polluters, and the only polluter is the road traffic in the wider area it can be considered that the air quality is good. In the vicinity of the tunnel (300 m) we can find the Tinja River, and Little Tinja (50 m), tributary of Tinja. In close proximity to the Project area, there are mostly facilities for residential purposes (houses) and business purposes (stores). According to the Law on Noise Protection, they fall under the fifth zone, where allowed noise levels are 65 dBA during day and 60 dBA at night. There are no sensitive receptors (hospitals, health resorts etc.) around the area that could be impacted by an increased noise level. The dominant purpose of the surrounding area is agriculture, while a certain part of the land is covered with broad leaf forests *according to the CORINE methodology.* There are neither protected areas nor cultural-historic heritage near the project area.

The project tunnel is located in the municipality of Gradačac in the immediate vicinity to the border of the municipality of Srebrenik. The affected municipalities are located on the northern part of the Tuzla Canton and gravitate toward the cantonal center, the city Tuzla. The tunnel location is sparsely inhabited. It is characterized by few residential ground floor or one storey residential houses on the Srebrenik. On the Gradačac side of the tunnel, 300m from the entrance north down the M1.8. one sawmill, one furniture salon and one gas station. The rest of business activities are located in the municipality center. The importance of the project for local population is immense. Being situated on one of the most important main roads in FBH, the M1.8, the tunnel is the fastest and most adequate way for locals of the settlement Ormanica (as well as settlements gravitating to it) to reach Tuzla the cantonal capital and administrative, educational and health center of the region. The project has huge importance for transit traffic too, being the fastest and most adequate connection of the southern part of the country to the Croatian and European Union Border.

IMPACTS DURING PRECONSTRUCTION

Socio economic impacts: no land acquisition or resettlement is expected on this project.

IMPACTS DURING CONSTRUCTION

Impact on traffic safety and traffic flow: traffic congestion and obstructions on the tunnel - increased traffic load, leading to congestion and obstruction is likely to be experienced on major road M1.8. This is especially expected during delivery of construction material to site

and collection of waste from site. During the construction period full traffic stoppage in envisaged and temporary bypasses will be made available.

The main impacts associated with the construction works include: emissions from the machinery used on site, dust generation from works, potential increases in noise and vibration levels, impact on soil and water from accidental leaks and spills and safety impacts. The contractor is bound by the provisions of this ESMP to conduct a baseline of the biological and natural resources specific to the site, and to adapt the measures of the ESMP and their work performance based on such findings.

Socio-economic impacts: At this time, it is not expected that it will be necessary to temporarily occupy any privately owned land plots for lodging machines and disposal of materials. Machines and materials will be disposed on land owned by the Investor. However, if additional temporary occupation of private land in needed during construction activities, this will be agreed upon with respective land owners and compensation will be paid in accordance with provisions determined in the RPF before the land is accessed.

New business opportunities are expected to be created for local businesses such as transporters, suppliers and other service providers. This impact is considered to be short-term and small

Following adverse impacts on living conditions during construction are expected: noise increase, construction waste disposal, short-term disruptions of utilities.

On November 9th, 2017 social specialist of the Project Implementation Team (PIT) conducted a walkover survey on the location of the Project Tunnel (Tunnel Ormanica). It has been noted that public land plots required for temporarily storage of machines and materials are not being used in any way, neither formal nor informal, and do not require clearance.

MITTIGATION MEASURES

The mitigation measures focus on the major identified impacts during works, such as emissions from the machinery used on site, dust generation from works, potential increases in noise and vibration levels, impact on soil and water from accidental leaks and spills and safety impacts, waste management, impacts on living conditions, temporary occupation and restrictions on land use, impacts on local traffic.

ENVIRONMENTAL MONITORING PROGRAM

The monitoring measures focus on the major identified impacts during works, such as emissions from the machinery used on site, dust generation from works, potential increases in noise and vibration levels, impact on soil and water from accidental leaks and spills and safety impacts, waste management, impacts on living conditions, temporary occupation and restrictions on land use, impacts on local traffic.

IMPLEMENTATION AND REPORTING

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. The Contractor will be responsible for the implementation of the environmental mitigation measures during construction.

PUBLIC DISCUSION AND INFORMATION DISCLOSURE

Public consultation of the subject ESMP was organized in municipality of Gradačac in settlement Ormanica after the WB approved the draft of the ESMP. The results of the public consultation are incorporated into the final ESMP.

ESMP draft was available on the website of PC Roads (www.jpcfbih.ba) and on the website of the World Bank during the process of public consultations.

Grievance Mechanism

PC Roads FBH will ensure and form a special Grievance Redress Mechanism in collaboration and direct involvement of the Gradačac municipality.

Grievance Redress Mechanism designed for this project is the Central Feedback Desk (CFD)

All grievances will be archived in the register and assigned a number, and acknowledged within 3 working days.

The CFD will make all reasonable efforts to address the complaint upon the acknowledgement of grievance. If the CFD is not able to address the issues raised by immediate corrective action, a long-term corrective action will be identified. The complainant will be informed about the proposed corrective action and follow-up of corrective action within 14 working days upon the acknowledgement of grievance.

Requirements for start of works

The Contractor shall establish all required baseline data before the commencement of works (air quality data, surface water quality data, soil quality data, survey of the site for any endangered and endemic species and other environmental issues in zone of corridors of direct and indirect impacts).

The Contractor shall develop a Construction Site Organization Plan (CSOP) that is made up of a Implementation Plan of this ESMP, a detailed Waste Management Plan (WMP)], Study on Safety (includes Elaborate on Safety at Work and Elaborate on Protection From Fire and Explosions) and a Traffic Management Plan (TMP) must be developed, which will be created by the Contractor prior to the beginning of construction works.

1. INTRODUCTION

Based on the guidance and requirements from the Environmental and Social Management Framework (ESMF has been disclosed and available to the public in local language on the website of PC Roads FBH in March 2016., http://jpcfbih.ba/bs/aktivnosti/modernizacija-magistralnih-cesta/38), this site-specific Environmental and Social Management plan (ESMP) has been prepared.

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:

1. This component includes reconstruction of roads:
   - 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 intersections, which are classified as "black spots" on major roads, in total 9;
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.

This Project of the Improvements of the tunnel "Ormanica" (the Project) for which this ESMP is developed is one of the sub-projects included in the first group of sub-projects co-financed by the WB and EIB.

2. METHODOLOGY AND OBJECTIVES OF ESMP

Improvements of the tunnel "Ormanica", on the road M-1.8, section Pelagićevo – Srebrenik, is screened as a category B project according to the Operational Policies (OP 4.01 on Environmental Assessment) 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 in force this project does not require a water permit, an environmental assessment or an environmental permit - neither federal nor cantonal[1]. 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 a satisfying 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.

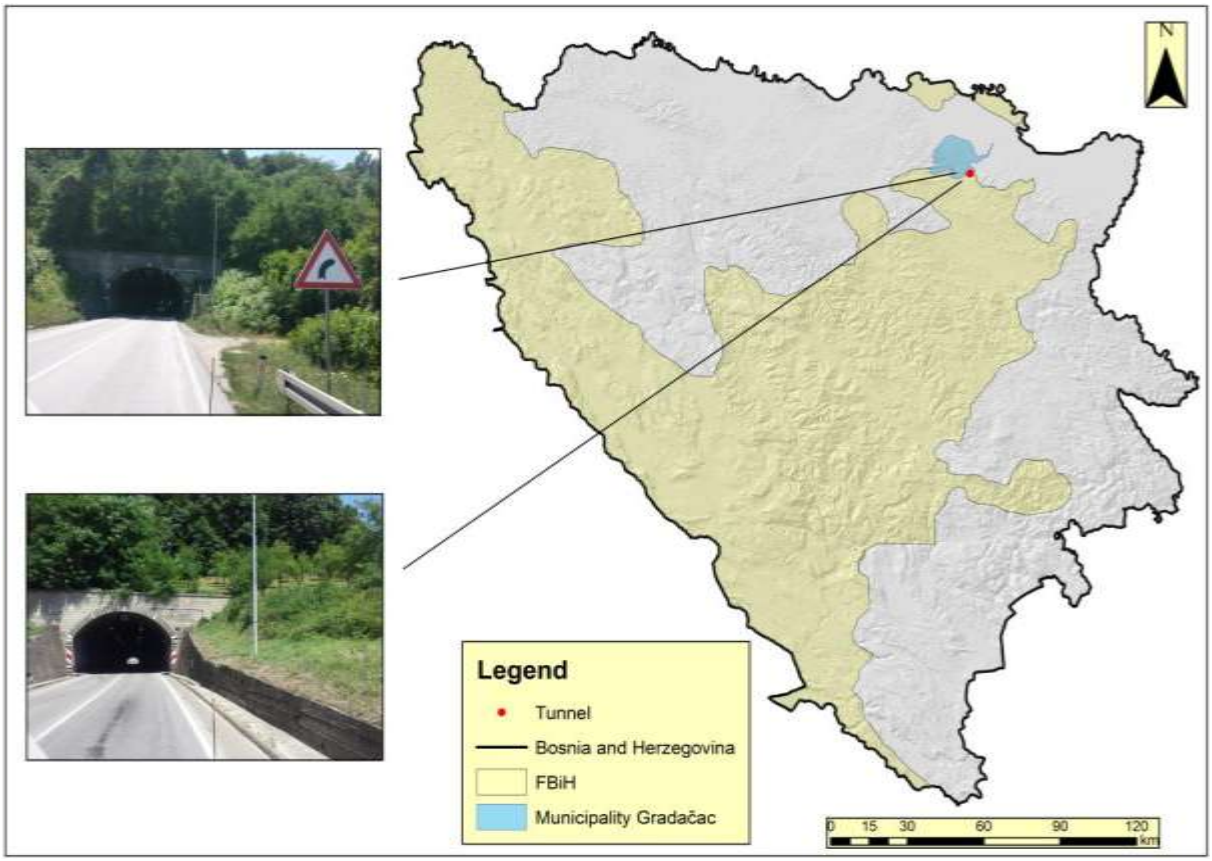
In order to ensure the mitigation measures have been implemented, fully or partially, the ESMP sets forth a monitoring plan to be implemented during the specific stages of project preparation/designing and implementation. Monitoring during project preparation and implementation provides information on the key environmental and social aspects of the project, particularly on the environmental and social aspects of the project and efficiency of mitigation measures. Prior to commencement of works, in accordance with requirements of the ESMP, and a minimum of monitoring requirements, described in this ESMP, without limitation to these requirements, the Contractor shall prepare detailed list of mitigation measures and parameters to be monitored.

[1] *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). Tuzla 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 Tuzla Canton, No. 3/05 and 9/07).*

3. LOCATION DESCRIPTION

The tunnel “Ormanica” is situated on the main traffic direction of Gradačac municipality, on the major road M-1.8, section Pelagićevo – Srebrenik. The reconstruction is positioned nearby and on the important traffic routes for Gradačac, as well as for BH. The major road M-1.8 connects the international border crossing Orašje in the north of the country with Croatia and Tuzla. This major road represents the most important road communication in the northeastern region of Bosnia and Herzegovina, from Orašje to Šićki Brod near Tuzla, which continues to the south as the major road M-18.

Figure 1: The geographical location of the project

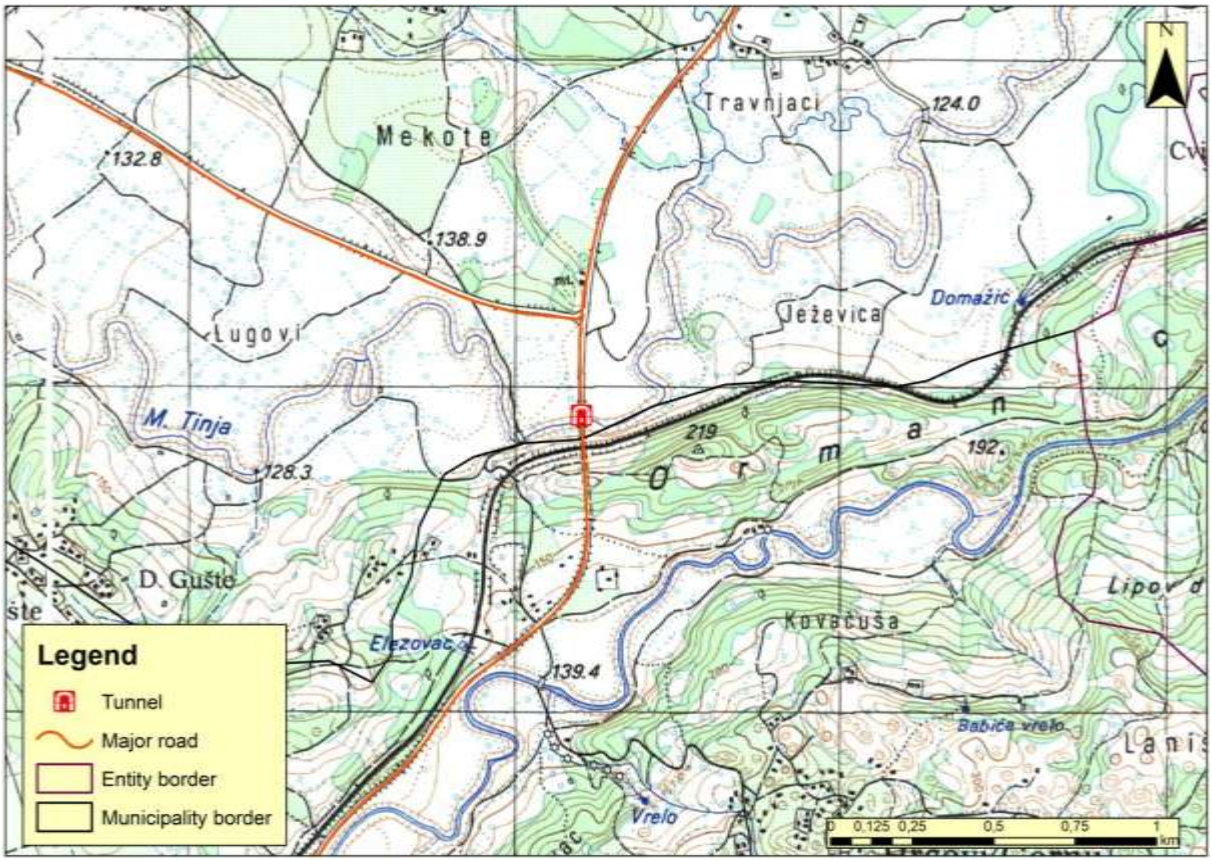


Source: PC Roads Federation of BH (Pictures: July 2017)

There are several residential buildings in the immediate vicinity of the southern entrance to the tunnel, while several commercial facilities are located near the northern entrance. There are no public facilities located near the tunnel. This tunnel is used by the local population from the Tuzla Canton, since this major road connects the border crossing Orašje with Republic of Croatia. In addition, it is also important for transit traffic for this area.

Figure 2 shows the location of the tunnel in a wider surrounding area on a topographical map.

Figure 2: Lookup Map of Wider Area with the Project Location



Source: PC Roads Federation of BH

3.1. Traffic data

PC Roads FBH has installed automatic traffic counting devices along the main traffic network throughout FBH. Automatic traffic counting is done since the 2005 and, last report[2] was published in 2016 with data for the previous year. The nearest relevant traffic count device is in Ormanica, approximately 200m north from the project tunnel, and it shows that, in 2015, 10685 (Average Annual Daily Traffic-AADT) vehicles were passing daily (*Figure 3*).

[2] *"Traffic count on major roads in Federation of BiH in 2015", PC Roads Federation BiH, Sarajevo 2016*

Figure 3: AADT in 2015

Source: PC Roads FBH, 2016

By the request of PC Roads FBH, traffic prognosis for the traffic network was developed by IPSA Institute Sarajevo in 2014[3] for the period 2013 to 2040. Analyze of the traffic flow was made for every year by applying "equilibrium" procedure. For this particular section, the amount of predicted annual average daily number of vehicles is shown in the *Table 1* below.

Table 1: Traffic prognosis for M1.8, section Pelagićevo-Srebrenik

Major road	Section name	AADT									
		2016	2018	2020	2022	2023	2025	2030	2035	2037	2040
M1.8	Pelagićevo-Srebrenik	8743	7759	2569	2727	2876	2763	3060	3373	3355	3385

Source: PC Roads FBH, 2014

[3] *„Justification studstudy for modernization of major roads in FBiH programme",IPSA Institute Sarajevo, 2014*

Table 1 depicts a 76% decrease in the number of vehicles in year 2020. Reasons for such a rapid and sudden change in the AADT prognosis is the planned[4] built of the corridor Vc[5] and other alternative corridors which would lead to a decrease of vehicles on the project section. However the need for the improvement of the project tunnel is due to the very high current AADT which already exceeded the estimates showed in table 1, as well as the importance of the project section and the bad current condition of the tunnel.

4. PROJECT DESCRIPTION

4.1. EXISTING TUNNEL CHARACTERISTICS

The project tunnel, tunnel Ormanica, is located on main road M1.8.This particular road takes prominent place in roadway network of Bosnia and Herzegovina, seeing rather heavy traffic. The Designer did not have project documentation pertaining to the construction of the tunnel, or documentation describing any and all interventions undertaken at the tunnel in the course of its exploitation. The total length of the tunnel is 247m while the width equals 8,40m

For the purpose of temporary protection of the traffic road section from seepage water, calotte part was protected with undulated paneling at sections identified (pointed out) at the drawings. The major part of this paneling is damaged and does not serve its purpose any more. In the course of tunnel inspection, it was not possible to remove this paneling so the lining in calotte part at the tunnel sections in question could not be inspected.

It can be safely concluded that the tunnel tube as it is now exists in unfavorable climate and hydrogeological conditions. Both construction technology and building materials production were at the considerably lower level at the time of the tunnel construction than they are today. At the time of this structure erection, massive tunnel structures of huge dimensions (made of cast concrete) were designed and constructed. Usable tunnel surface was protected by massive arched (horseshoe shaped) structure without hydro insulation. There are many weak spots detected, as well as evidences of deformations. Moreover, the classic concept of tunnel structures design, construction modules, collection and drainage of underground waters were all significantly different than they are today.

Unacceptable existence of seepage waters is a constant presence within this structure. This situation is further exacerbated by unfavorable level line position in exit precut which basically directs surface water towards tunnel opening. Seepage, underground water present along the tunnel and water coming from the exit precut soak and drench the

[4] *according to the motorway in Corridor Vc; Feasibility Study*

[5] *Corridor Vc connects Kiev (Ukraine) with Adriatic Sea through Lvov and Budapest (Hungary). It is consisted out of three parts and Vc is the part that follows European lane from Budapest (Hungary) to Ploče (Croatia), over Osijek (Croatia) and Sarajevo (BH). The longest part of the corridor Vc - 335 km passes through the territory of BH and it is laid on the most populated and most developed territory (over 50% of the BH population lives in 40 km range of the corridor Vc and earns over 60% GDP of the BH).*

roadway which in turn leads to formation of ice surfaces at the roadway itself and icicles at the ceiling and lateral walls of the lining. These extremely unfavorable occurrences represent real danger to the traffic safety. Apart from this, they also cause continual destruction of the concrete which is already severely damaged sporadically.

At the stretch of the road which includes tunnel tube, the route is straight but in exit precut it is located in a curve.

At the entrance part the level line is ascending by 4, 56%, and further on it is located in vertical convex curve of the R=6900 m radius. These indicators/data were gathered from the meticulous analysis of geodetic surveys, since no relevant design nor construction documentation for road and tunnel was ever found.

4.2. NEW DESIGN

Terms of Reference dictate coming up with apt and optimal solutions, especially considering the following:

- Ensuring the required traffic profile,
- Placement of permanently high-quality roadway,
- Protection of usable surface from underground water,
- Ensuring favorable stability conditions, and
- Overview and proposal of manner and conditions of rehabilitation realization

The final goal being getting the structure in a condition in which all its functions will meet the level of modern tunnel structures constructed at the roads of the same class.

Inadequate geometry of the lining, together with asphalt surfacing that happened in the course of exploitation period resulted in the lack of required clear span at certain sections. The fact that the new paneling intended for hydro insulation protection has to be at least 20,0 cm thick causes the level line to be lowered.

The undertaken analysis of the surveyed tunnel sections resulted in defining new level line and road axis of the route. This new level line along the tunnel is resolved by multiple vertical curves, which are caused by irregularities and lack of available height. The geometry of the road is detailed under tunnel longitudinal section.

Road geometry established in this manner is optimally adapted to the existing state of usable space and lining and it requires minimal interventions in the sense of no need to demolish lining structure in order to ensure required traffic profile.

It is designer's opinion that initial works should be directed at necessary measures concerning removal of the existing unstable layers of shotcrete and disintegrated parts of lining base, as well as removal of paneling.

Parallel to aforementioned activities it is possible to prepare drilling wells for contact injecting at parts of the tunnel located under railway and to chisel parts of the primary lining at places where it is necessary to achieve required clear section.

Considering general condition of the tunnel it is estimated that the tunnel "Ormanica" is mainly stable. Cracks formed at the frontal walls are consequence of flimsy frontal wall which is not founded but constructed as a console. With regards to static stability, cracks are not of considerable dimensions. As part of rehabilitation works it is planned for rehabilitation of portal front by RC sheath. Supporting walls at the tunnel precut are in good condition, statically speaking with minor surface damage to the concrete. Rehabilitation plans for their rehabilitation by RC sheaths in order to prevent further destruction of concrete surfaces. The Design plans for portal ring of 50.0 cm thickness to be constructed after rehabilitation, as a part of secondary paneling construction.

Water from piped springs and water «forced» by hydro insulating sheath to collect at the sides is led into lateral drains and from there led to the exhaust reservoir via collector. At the places where springs are concentrated it is necessary to lay pipes and to lead water into lateral drainage pipes. «Dispersed» springs are also to be managed by «making» them concentrated.

In the area where apart from the existing conditions there are larger quantities of water present if profusion of the spring is not considerable in the course of execution of works, drainage pipes are to be deeper placed. At working joints where seepage water is detected it is planned for special detail to be applied for water collection.

In general, proposed drainage system represents modern method of collecting and exhausting water from the tunnels.

Considering the existing spatial conditions and taking into account present deformations, thermal and mechanical protection of the hydro insulation can be achieved by concrete cast into formwork. It is planned for construction of secondary lining made of cast concrete. Average thickness of the lining is 30.0 cm, with minimal thickness being 20.0 cm. In order to achieve minimal thickness required the existing lining will have to be sporadically chiseled. The main project does not envisage the widening of the tunnel.

The foremost condition for successful rehabilitation is achieving required traffic clear spans of 4,50 m. In order to achieve that, the roadway will have to be narrowed. Approved width of the roadway of newly designed tunnel lining is (2x 3,25 +2 x 0,25) =7,0 m. It is planned for unilateral cross gradient of 2,50 % to be achieved, which is in accordance with the designed road axis. Service passages' approved min. width is 0,95 m.

Tunnel fully complies with the traffic profile as prescribed by the Rulebook in force: Essential Requirements That Public Roads, Their Elements and Must Meet From the Aspect of Traffic Safety (Official Gazette FBH No.63 dated September 13th,2007.)

Planned rehabilitation represents complex, comprehensive and costly endeavor. However, once it is realized permanently favorable traffic conditions will be achieved regardless of the season or weather conditions.

In 2008 the illumination of the tunnel was executed. This rehabilitation plans for removal, storing and remounting of the said illumination.

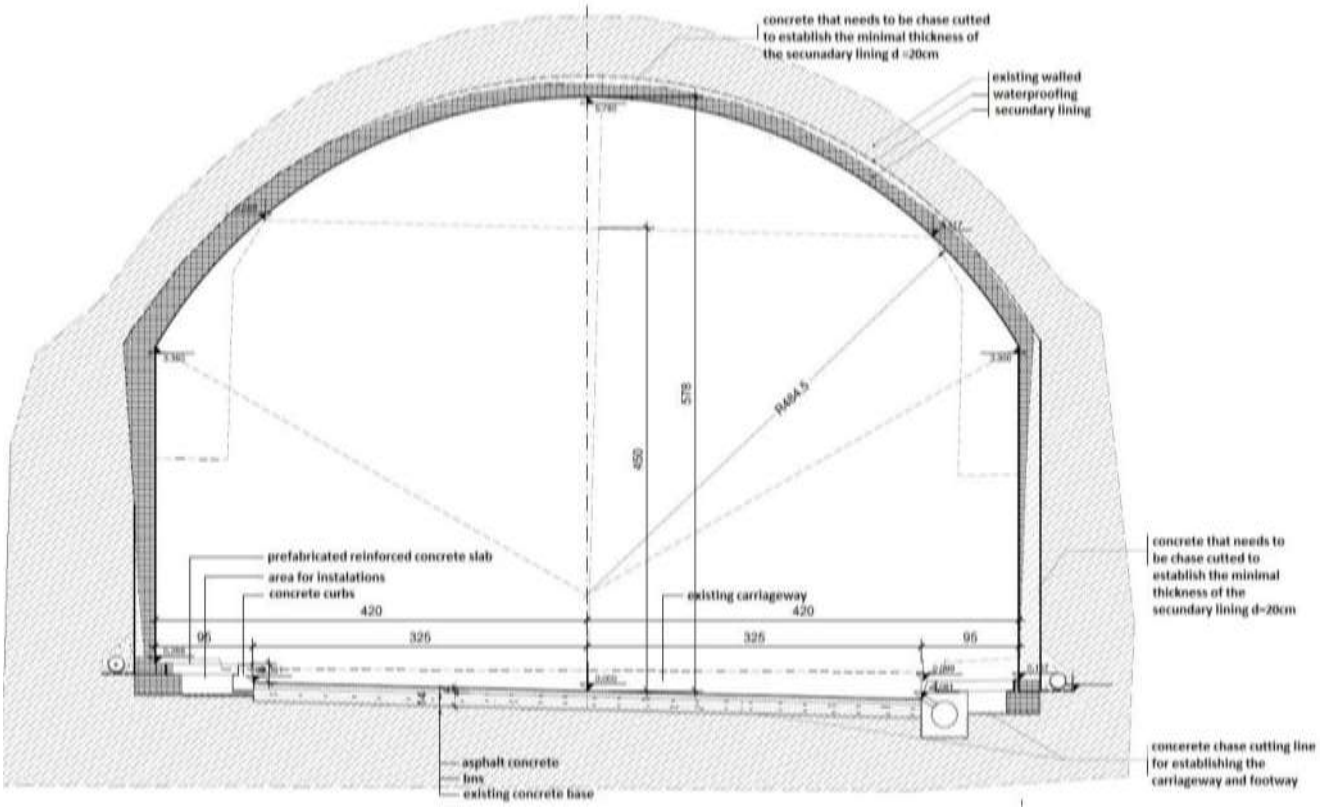
The Main Design shall treat and describe all other drawings and attachments which are relevant for execution of works in quality manner and in compliance with technical regulations and standards in force. Rehabilitation as here designed, includes numerous activities many of which could be executed simultaneously which would in turn accelerate the realization in general.

. It encompasses all work items, with quantities which are realistically calculated and priced.

Once designed construction works are completed and illumination restored, this tunnel will be as convenient and as of high quality as any modern, newly constructed tunnel anywhere.

Realization of this project will provide for normal traffic conditions regardless of the season.

Figure 4: Normal cross section of the reconstructed profile



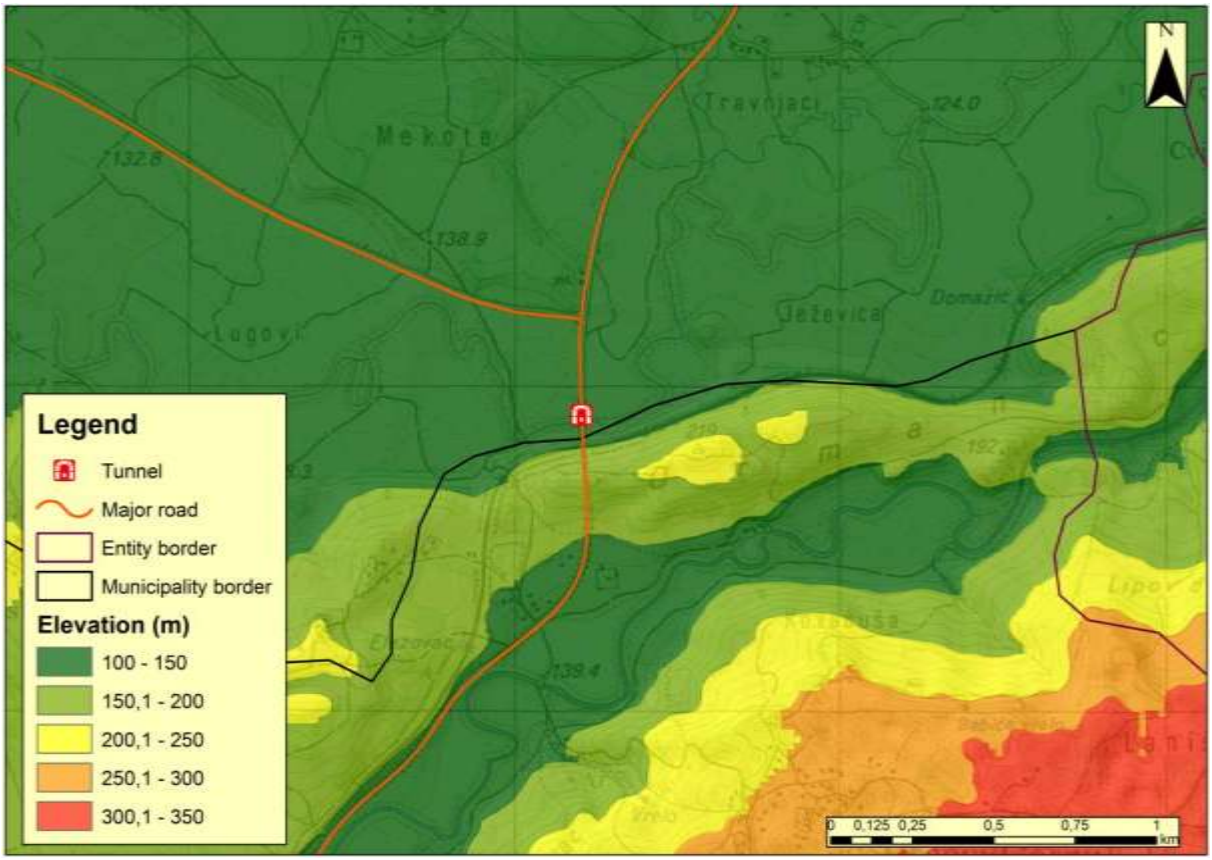
Source: Main design; Divel Ltd; 2015.

5. BASELINE OF PARTICULAR INTEREST

5.1. GEOGRAPHIC CONDITIONS

The terrain of the Project is mostly flat with an attitude in the range from 100 to 150 meters above sea level. In the wider area the altitude goes up to 350 meters above sea level, as indicated in the next Figure. From stratigraphic – petrographical point of view this area is composed from stable and well permeable rocks, and from structural geomorphological point of view this type of relief belongs to the fluvial – accumulation type of morphostructure. Aquifers are mainly of intergranular porosity.

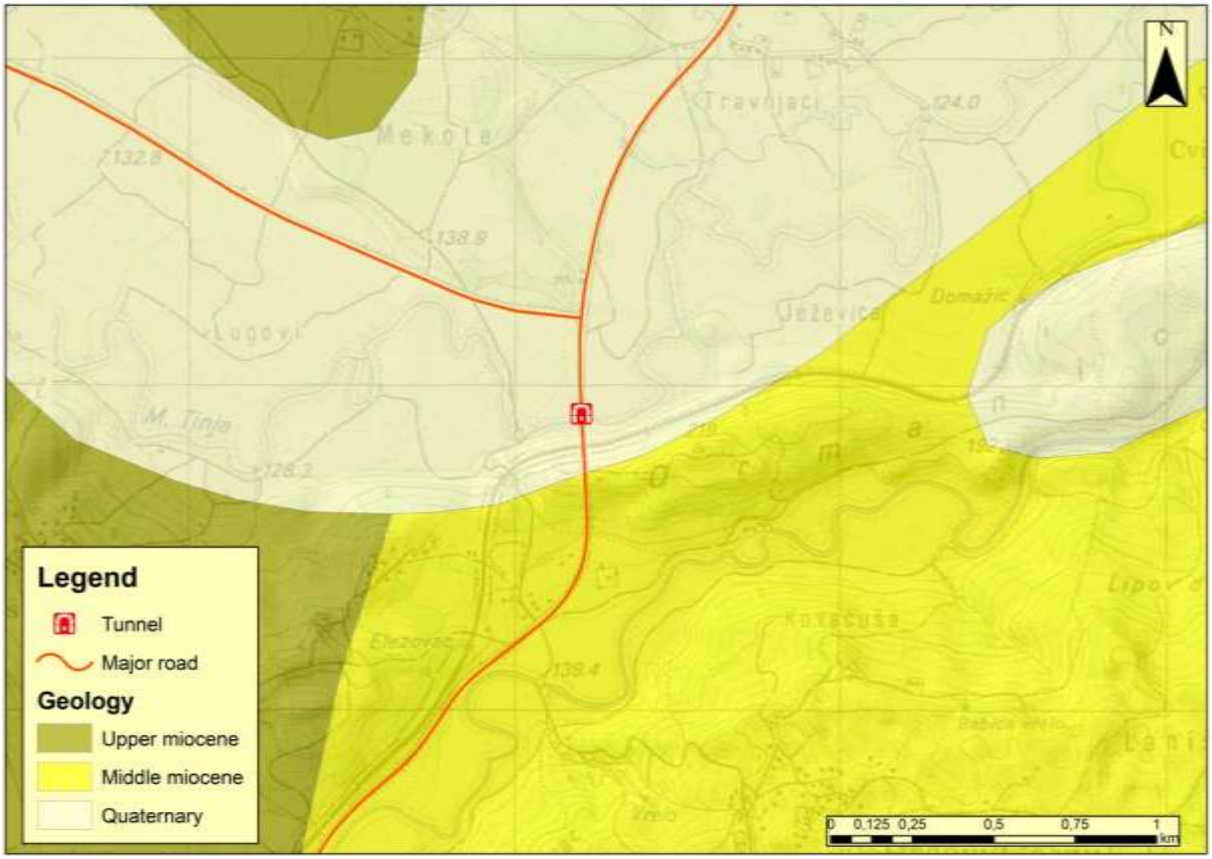
Figure 5: Geographical Map of Wider Area with the Project Location



Source: Draft of Spatial plan of FBiH 2008.-2028.

The geological structure of the area of reconstruction is characterized by middle quaternary sediments. The quaternary sediments are composed from gravel, sand and clay.

Figure 6: Geologic Map of the wider area of the Project



Source: Draft of Spatial plan of FBiH 2008.-2028.

5.2. CLIMATE FEATURES

Climatic features of subject area are determined by the thermal and pluviometric regime, and therefore it is necessary to define its basic parameters, using climatological monitoring and a detailed analysis of the same.

It can be said that this area is under the influence of the moderate continental climate zone, with moderately cold winters and warm summers.

5.3. AIR QUALITY

No particular monitoring of air quality for this location was performed, neither for the area. Judging by the location of the tunnel, it can be concluded that the highest and the only air pollution refers to traffic of the major road, while there are no other major air polluters near the tunnel. As well in the wider area, there are no significant air polluters.

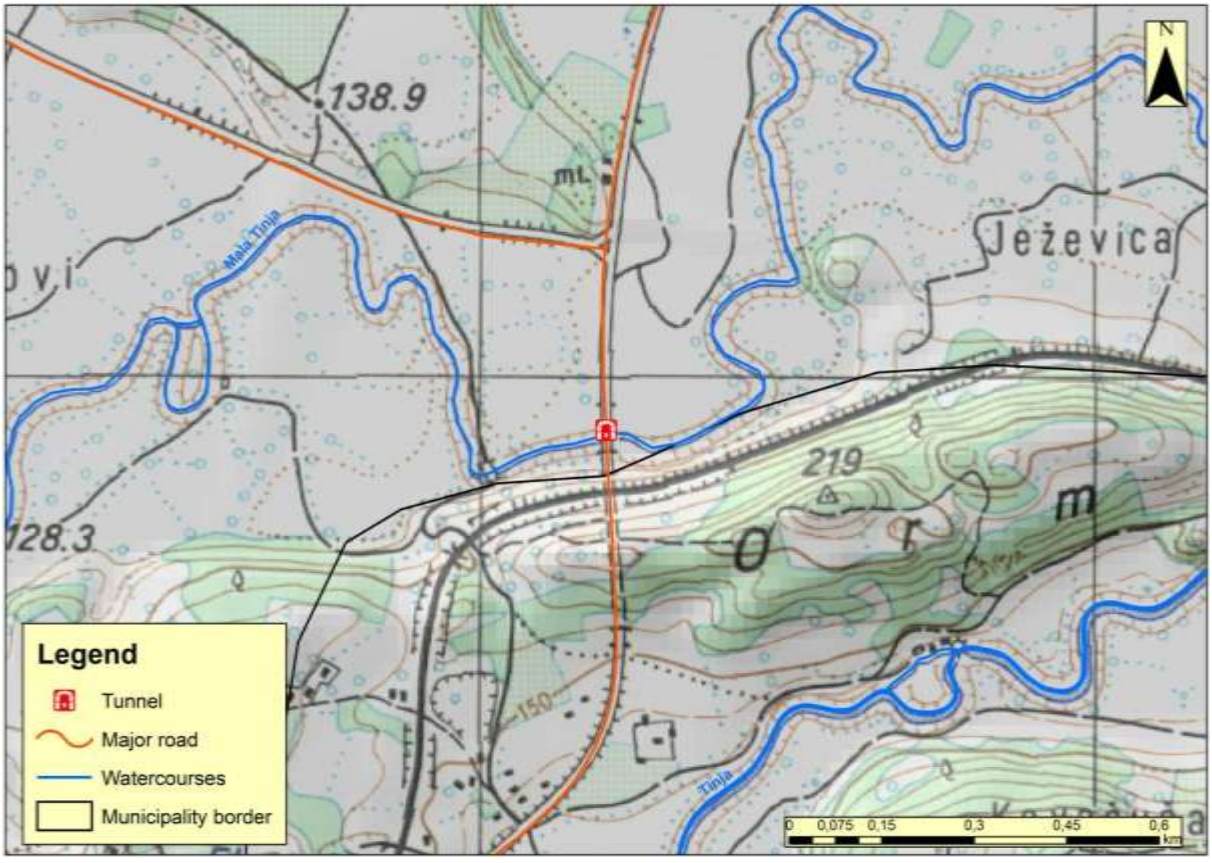
There are no data on air quality on this particular location, but based on geographical features and the fact that there are no significant polluters, and the only polluter is the road traffic in the wider area it can be considered that the air quality is good. The Contractor shall conduct a baseline measurement for air quality monitoring prior to the start of works.

5.4. WATER AND WATER QUALITY

In the vicinity of the tunnel (300 m) we can find the Tinja River, and Little Tinja (50 m), tributary of Tinja. River Tinja is the right tributary of the Sava River. It springs on the Majevica Mountain in the village Gornja Obodnica in the municipality of Tuzla, at 560 meters above sea level, and flows into Sava River near Brčko at an altitude of 88 meters. The total length of the river is 69 kilometers, with an area of the basin of 610 km^2.

According to data from the nearest water meter station in Srebrenik, the biological minimum of flow is $Q_{5\%}$=0,191 m^3/s, while the average water flow is Q_{avrg}= 2,1 m^3/s. Tinja river has a very torrential character, and based on the water regime, Tinja can be classified in the continental variant of the pluvial regime, with the highest water levels in February, March, April and November, and the lowest in August and September.

Figure 7: Hydrographic Map of the wider area of the Project



Source: PC Roads Federation of BH

Tinja River is threatened by human activities such as transport, agriculture, non-sanitary waste disposal and discharging untreated wastewaters from the housing facilities in the vicinity.

The Contractor shall conduct a baseline measurement for water quality monitoring prior to the start of works.

5.5. NOISE LEVELS

There was no monitoring of noise levels near the Project area; therefore there is no available baseline data of the impact of the noise on the environment. The largest source of noise, in general, is traffic.

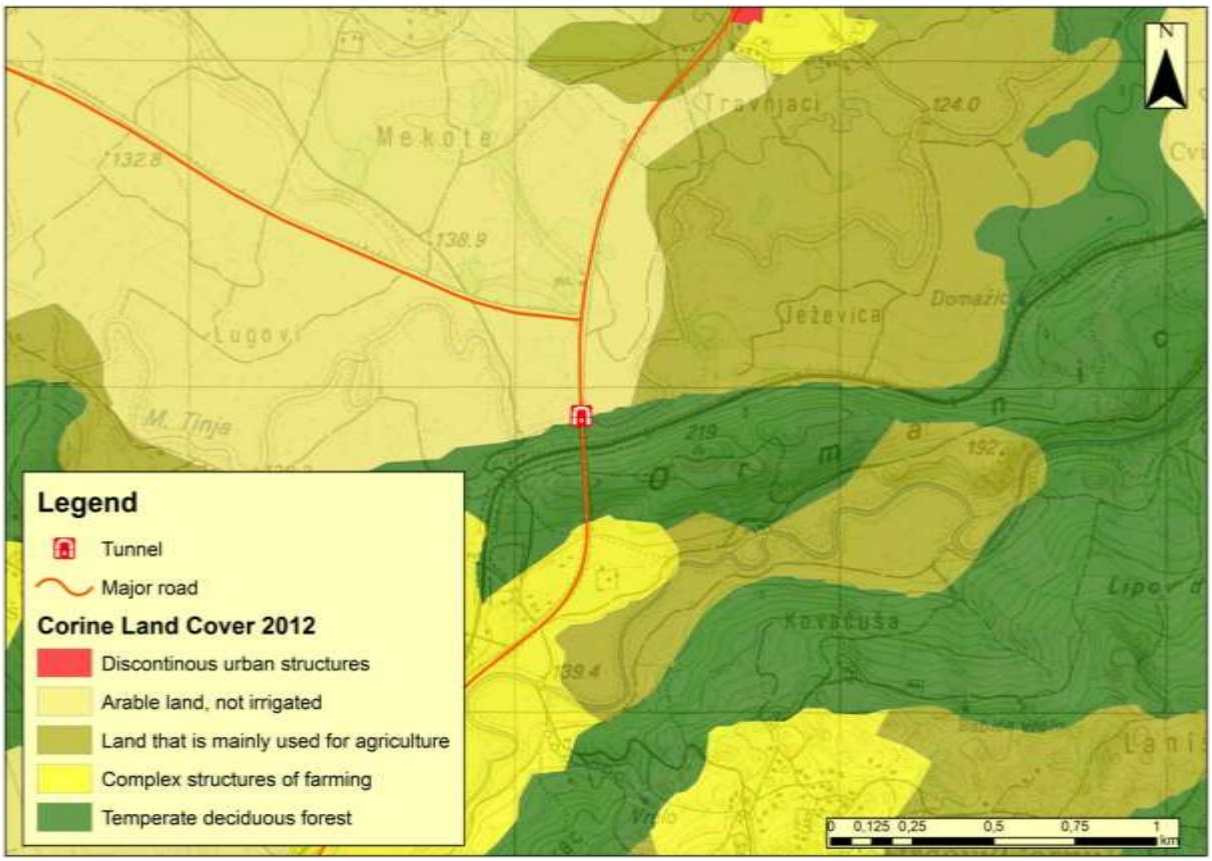
In close proximity to the Project area, there are mostly facilities for residential purposes (houses) and business purposes (stores). According to the Law on Noise Protection, they fall under the fifth zone, where allowed noise levels are 65 dBA during day and 60 dBA at night. There are no sensitive receptors (hospitals, health resorts etc.) around the area that could be impacted by an increased noise level.

5.6. LAND AND LAND USE

The dominant purpose of the surrounding area is agriculture, while a certain part of the land is covered with broad leaf forests *according to the CORINE methodology*[6]. No land of high importance is located in close vicinity of the site.

[6] Coordination of information of the Environment - European Environment Agency

Figure 8: Land use in the wider area of the project according to CORINE model



Source: Coordination of information of the Environment, European Environment Agency

5.7. FLORA AND FAUNA

There is no exact data on the flora and fauna for the particular location of the Project, but based on the fact that this is an existing tunnel, and that almost all activities will be carried out within the existing footprint, the risk to the flora and fauna is minimal. However, the Contractor shall hire a biologist to conduct a review of the site for the baseline that needs to be prepared for monitoring prior to the start of works.

5.8. PROTECTED AREAS

The location of the Project is not located within a protected area according to Spatial plan of FBH and Proposal of the Spatial plan of Municipality Gradačac. There are also no recorded archaeological findings in the observed area.

5.9. POPULATION AND SETTLEMENTS

The project tunnel is located in the municipality of Gradačac in the immediate vicinity to the border of the municipality of Srebrenik.

The affected municipalities are located on the northern part of the Tuzla Canton and gravitate toward the cantonal center, the city Tuzla.

The municipality of Gradačac has an o population of 39340 people who live in the area of 218 km^2. The population density equals 180,5 people per km^2, making it one of the densest populated municipalities in FBH.

The municipality has 7 primary schools with 16 branch village schools and 2 high schools. The nearest school to the project location in the municipality Gradačac is in the settlement Srnice Donje.

The health care system in the municipality provides primary health care in the Health Center Gračanica. The health center has 5 local branch health practices, the nearest to the project tunnel is located in the settlement Srnice Donje approximately 3,5 km down the regional road R460.

The municipality of Srebrenik has a population of 39678 people who populate the area of 248 km^2. The population density is 160 people per km^2. Srebrenik has 7 primary schools with 18 branch village schools, the nearest to the project tunnel of which is the school in the settlement Špionica, approximately 3,5km south down the main road M1.8.

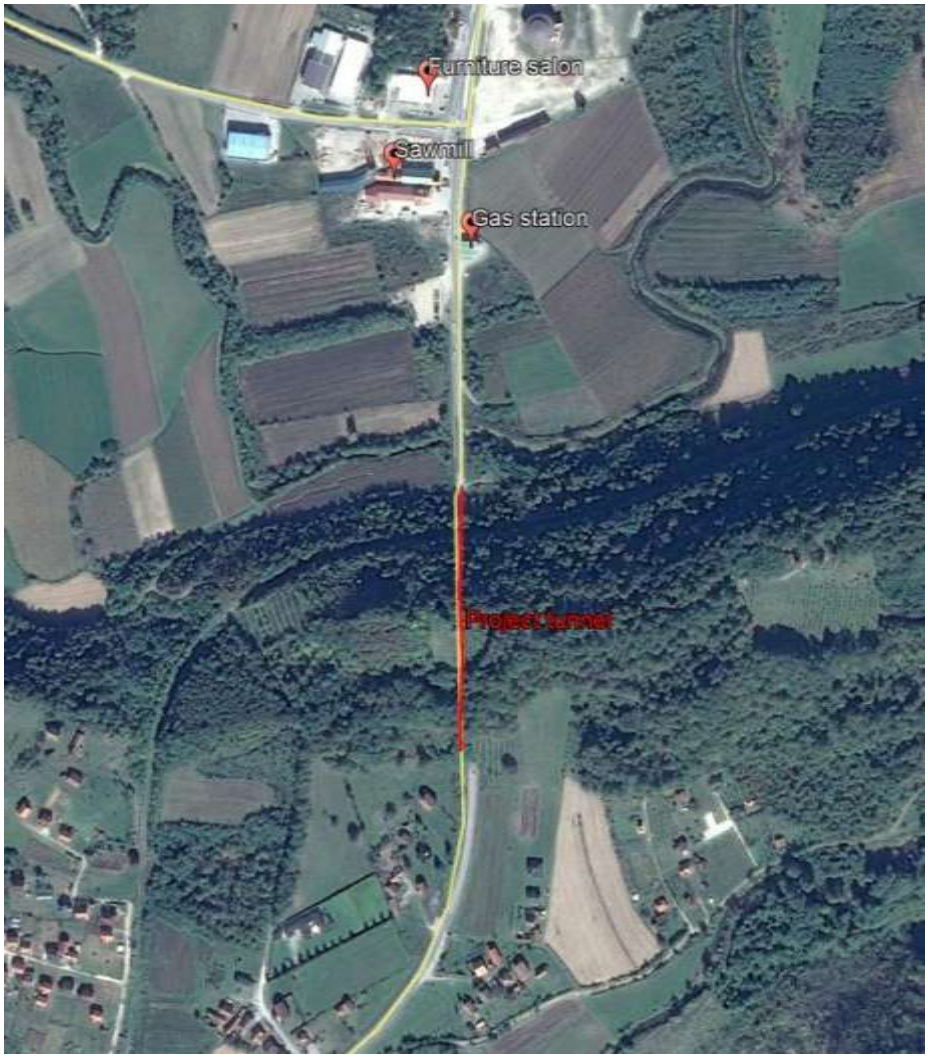
The health care system consists of Health Center Srebrenik which provides primary health care and has 6 branch ambulances. The nearest one to the project tunnel is in Špionica.

The tunnel location is sparsely inhabited. It is characterized by few residential ground floor or one storey residential houses on the Srebrenik. On the Gradačac side of the tunnel, 300m from the entrance north down the M1.8. one sawmill, one furniture salon and one gas station. The rest of business activities are located in the municipality center.

Figure 9: location of the project tunnel in reference with affected municipalities and the cantonal center

Source: PC Roads Federation of BH

Figure 10: location of the project tunnel in reference to business activities in project vicinity.



Source: PC Roads Federation of BH

Based on the above said the importance of the project for local population is immense. Being situated on one of the most important main roads in FBH, the M1.8, the tunnel is the fastest and most adequate way for locals of the settlement Ormanica (as well as settlements gravitating to it) to reach Tuzla the cantonal capital and administrative, educational and health center of the region..

The project has huge importance for transit traffic too, being the fastest and most adequate connection of the southern part of the country to the Croatian and European Union Border.

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

6.1. IMPACTS DURING PRE-CONSTRUCTION

Socio-economic impacts

Land acquisition and resettlement: No permanent land acquisition or resettlement will occur in this project. The tunnel has a clearly defined existing footprint which will not be exceeded with the planned improvement project.

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 tunnel will lead to an increased emission of such gasses as SO_2, CO_2, CO, NO_X and Pb. Increased emissions of exhaust gases in tunnel especially because of the one lane traffic during reconstruction works. Increased emissions of exhaust gases in tunnel especially because of the traffic of construction machines during reconstruction works.

Dust generation- where the most important polluters are solid particles (PM10 and PM2,5). Possible sources of dust generation include demolition works (chiseling of the existing concrete at the tunnel base and milling of the roadway structure), site preparation activities, handling of building materials such as 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: site preparation activities such as chiseling of the existing concrete at the tunnel base and milling of the roadway structure, 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 Water Quality

Possible contamination of water – Possible sources of water pollution are: demolition works, handling with 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 Biological and Natural Resources

- Pollution of Little Tinja and consequently the Tinja River and soil with hazardous substances (fuel and oils in case of spills) can harm animals living in the surrounding area.

Impact on the Protected Areas

The observed project is not situated in any of the existing 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 the tunnel - increased traffic load, leading to congestion and obstruction is likely to be experienced on local roads and on major road M1.8. This is especially expected during delivery of construction material to site and collection of waste from site.

During the entire period of construction works full traffic stoppage will be in place and alternative routes will be made available.

Worker health and safety impacts

Impacts on the health and safety of workers working in closed spaces with air emissions, risks of accidents and damages from the construction vehicles.

Population safety impacts

According to local practice, no working camps will be set up for the purpose of accommodation of workers. All workers will commute daily to the construction site. Thus the impact of worker's presence on local community is minor.

Socio-Economic Impacts

Temporary land acquisition and damage to private property: It is not expected that it will be necessary to temporarily occupy any privately owned land plots for lodging machines and disposal of materials. Machines and materials will be disposed on land owned by the Investor alongside the main road M1.8 on the entrance and exit of the tunnel. However, if additional temporary occupation of private land is needed during construction activities, this will be agreed upon with respective land owners and compensation will be paid in accordance with provisions determined in the RPF before the land is accessed.

In case alternative traffic routes which need civil interventions would be used during construction period, the civil work would not extend the existing footprint of the existing roads. All construction works would be done on land owned by the Investor.

In case a new bypass would be built or the interventions on existing road would extend on to private land, weather temporarily or permanently, the impact on land would have to be reassessed and a separate ESMP would have to be developed by the contractor.

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 during road construction. This impact is considered to be short-term and small.

Impact on living conditions of local communities

The area in the vicinity of the project construction site is sparsely populated, thus, small impact on local communities is identified. Still, following adverse impacts during construction are possible:

- 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.
- Local businesses can be affected in means of late delivery of goods and products. The impact is short termed and low due to the existence of an alternative route.

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 limited access.

Land screening: On November 9th , 2017 social specials of the Project Implementation Team (PIT) conducted a walkover survey on the location of the Project Tunnel (Tunnel Ormanica). It has been noted that public land plots required for project activities, such as temporary storage of machines and material, are not being used in any way, neither formal nor informal, and do not require clearance.

Figure 11 (a-b): Photographs made during the walkover survey on November 9th , 2017

a) the project tunnel

b) public land at the north entrance to the tunnel

Source: PC Roads of FBH

6.3. IMPACTS DURING OPERATION AND MAINTENANCE

Since this tunnel is an already existing object no new negative environmental impacts, nor deterioration of existing negative impacts, during operation and maintenance are expected.

Socio-Economic Impacts

Impacts on traffic: Increase in speed of vehicles is expected due to the rehabilitation of the tunnel during which all technical problems, that were causing the lowering of speed of vehicles below allowed speed limit, will be resolved.

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:

- Tunnel improvement in the sense of constructive stability;
- Improvement of the hydro insulation;
- Lowered pressures on the Little Tinja and Tinja river and its environment due to drainage water treatment (installation of grease and oil separator);
- Safer traffic conditions for drivers by improving construction elements of the pavement structure
- Increased pedestrian safety by reconstructing the pedestrian pavement on both sides of the tunnel;

- Less damages to vehicles,
- Better traffic flow.

6.5. Enhancement measures

Table 2: Enhancement measures

Impact	Improvements to be achieved	Cost Assessment (US$)		Institutional Responsibility	
		Operative	Implementation	Operative	Implementation
▪ Traffic	▪ Improved road and travel safety by improving construction elements of the pavement structure ▪ Better traffic flow; ▪ Increase of pedestrian safety by reconstructing the pedestrian pavement on both sides of the tunnel	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Socio-economic	▪ New job and business opportunities for local construction workers and firms; ▪ Improvement of connections of the municipality of Gradačac with the Cantonal Center Tuzla;	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Water	▪ Improvement of the protection of the Little Tinja and Tinja river with implementing a treatment of drainage (installation of grease and oil separator) water and regular maintenance of it;	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Visual aesthetic and landscape	▪ Improving visual aspects of the tunnel and surrounding area.	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 3*. This chapter includes also the general provisions and mitigation measures that the contractor hired for reconstruction 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. The development of such documents will allow for adjustments of the ESMP measures based on the potential new findings on the site, as a result of the public consultations or developing the project specific baseline.

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[7]:

(i) Description of the preparation works and description of location organization during and after the construction (design of access roads, internal roads, manipulative and parking spaces, layout of installations, design and organization of temporary construction site facilities, terrain rehabilitation upon completion of works). This part of CSOP needs to contain technical description, calculation and graphical appendices, and BoQ.

(ii) Technological scheme (location and operation of the storage and disposal sites of the materials, location of the mechanization maintenance, disposal sites for special types of waste, storage of dangerous and harmful substances). This part of CSOP needs to contain technical description, calculation and graphical appendices, and BoQ.

(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) Practical plan of the implementation of this ESMP and among other a detailed Waste Management Plan (WMP)].

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

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). The TMP shall also include management of traffic according to the season, notably trying to minimize impacts during the summer months where the traffic in this area is exceptionally high.

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. In this sub-project no land acquisition is expected.

7.1. MITIGATION MEASURES IN PRE-CONSTRUCTION PHASE

7.1.1. 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 though contract clauses. Therefore, the Contractor will plan, coordinate, control and monitor the undertaken activities to effectively minimize the risks presented during their work.

The ESMP is an integrated part of the TD and the Contract for Execution of Works. It is the Contractor's obligation to include 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, including the relevant Operational Policies, this ESMP, framework ESMF and the Environment, Health and Safety guidelines, where applicable.

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 immediately upon receiving any complaints or grievances, as well as immediately upon identifying and implementing of any corrective actions. The Contractor shall inform the complainant of the Grievance redress mechanism. All grievances will be registered with the Central Feedback Desk (CFD) and logged in the Central Grievance Log. Contractor will fill out the grievance registration template provided in Appendix 2 of this ESMP on aregular basis and will make it a part of the monthly reports to the contractor.

The Contractor shall provide monthly 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, , including the World Bank Group EHS guidelines and be held responsible if compliance is not met;
- Be responsible for all activities undertaken by his subcontractors;
- Maintain regular effective two-way communication with all workers, sharing information and assisting in dealing with any unforeseen problems promptly.
- 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.

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.

Within the tendering documentation PC roads will provide a proposal of the Traffic Management Plan (TMP) which is to regulate traffic during the construction period. Within the TMP an alternative route will be layed out for the purpose of minimizing the impact on traffic during construction period.

During the construction phase, Contractors will be required to allocate the responsibility of overseeing day-to-day compliance with the SS ESMP to a senior member of staff. Contractors will be responsible for the implementation of all

measures included in the SS ESMP for all activities undertaken in terms of the construction contract (including work undertaken by subcontractors). Compliance of Contractors with these measures will be assessed by the Construction Supervisor appointed by the PC Roads FBH, in line with the Decree on Construction Site Organization, Mandatory Documentation on Construction Site and Construction Work Participants.

7.2. MITIGATION MEASURES IN CONSTRUCTION PHASE

7.2.1. 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 (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, or the Supervisor, as soon as possible, within 24 hours form the time of occurrence, where PC Roads FBH shall react to the occurrence a.s.a.p. and impose corrective measures with a deadline for undertaking them.

All mitigation measures are specified in the Table 3. Environmental and Social Impacts Management Plan.

7.2.2. Health and Safety

Works on the rehabilitation of the tunnel may pose health and safety risks for construction workers and visitors to the construction site. Road users and construction workers will be exposed to the risk 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 of heavy machinery during the construction period.

Therefore, the Contractor is obliged to:

- Ensure that only properly trained/licensed people operate heavy machinery;
- Implement suitable safety standards for all workers and site visitors, which should not be less than those laid down in the international standards[8] in addition to complying with the national standards the FBH,
- Make sure basic safety features for visitors are in place, such as construction warning signs for protecting unsafe areas from being accessed or the obligation for every visitor to wear a helmet before entering the construction site
- 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.

Furthermore, the contractor is required to develop a Study on Construction Site and Occupational Safety Measures During Construction in line with provisions of Labor protection Law (Official Gazette of SRBH 22/90) and Regulations on Occupational Safety in Construction (Official Gazette of SRBH 42/68).

7.2.2.1. 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).

[8] *- Occupational Safety and Health Convention, 1981 (No. 155)*
- Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)
- The Safety and Health at Work Directive 89/391/EEC
-World Bank Occupational Health and Safety Guidelines (April 30, 2007.)
- and other Recommendations and EU directives

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.

Specific measures for works in tunnels are provided in the Labor protection Law (Official Gazette of SRBH 22/90) and Regulations on Occupational Safety in Construction (Official Gazette of SRBH 42/68).

The Contractor is obliged to secure the construction site in accordance with the Regulations on Occupational Safety and to provide adequate equipment.

In case compliance is not met the contractor will be held responsible in accordance with Labor Protection Law.

The contractor is also obliged to:

- 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.

7.2.2.2. 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;
- 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.

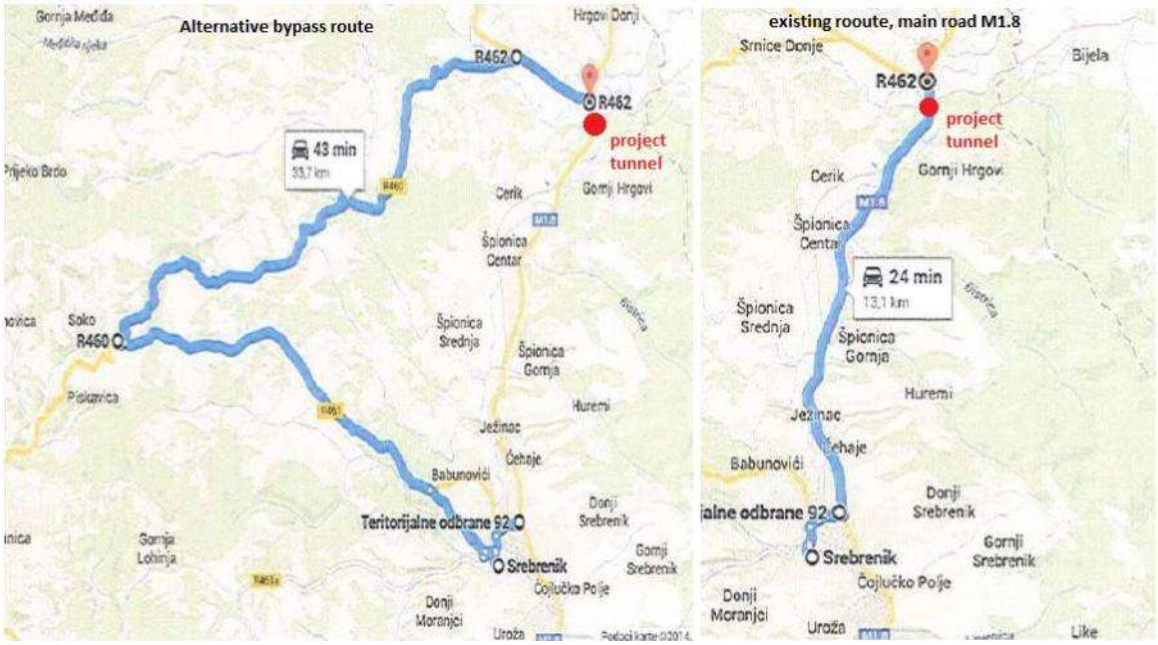
7.2.3. Traffic and Road Safety

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

The TMP should be developed based on the TMP proposed in the Tendering documentation. The proposed TMP will include a possible alternative route, suggested to minimize impact on traffic during the construction period (figure 12).

The alternative bypass route will be put into drivable state before and after the project activities.

Figure 12: comparison of the alternative bypass route to the existing route



Source: PC Roads Federation of BH

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.

According to the Law on Roads FBH, article 77. For every construction on public road, for works on regular maintenance or any other works under traffic, appropriate temporary signage has to be set up. Respectively traffic has to be regulated in a way that will guarantee safety of traffic and contractor with minimum traffic flow disruptions.

The appropriate signage will be determined based on the Regulations on Traffic Signs (Regulations on Traffic Signs and Signage on Roads, Ways of Marking Works and Obstacles on Roads and Signs that an Authorized Person Can Give to Participants in Traffic ("Official Gazette of BiH", No. 16/07)) and in line with the Guidelines for Design, Construction, Maintenance and Control on Roads (Sarajevo/Banja Luka 2005).

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. Road safety measures envisaged during construction include vertical and horizontal signage based on Regulations on Traffic Signs (Regulations on Traffic Signs and Signage on Roads, Ways of Marking Works and Obstacles on Roads and Signs that an Authorized Person Can Give to Participants in Traffic ("Official Gazette of BiH", No. 16/07)) as shown in figure 12.

Vertical signage includes: warning sign signaling construction works, warning sign signaling a traffic light, sign for prohibition of overrun, speed limitations to 40 km/h, traffic light.

In addition, the contractor shall provide, in the joint names of the employer and the Contractor insurance cover from the Start Date to the end of the Defects Liability Period I the amounts and deductibles stated in the Particular Conditions of Contract (PCC) for the following events, amongst others, which are due to the Contractor's risks:

a) Loss of or damage to property in connection with the contract

b) Personal injury or death

Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

7.2.4. 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. MITIGATION MEASURES IN OPERATIONAL PHASE

It is required from PC Roads FBH to undertake the instructions given in the Table 3. Environmental and Social Impacts Management Plan in operational phase.

7.4. SUMMARY OF MITIGATION MEASURES

Table 3: Environmental and Social Impacts Management Plan

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
PRE-CONSTRUCTION PHASE						
▪ Impacts on living conditions	▪ Informing the local communities on the extent of works and duration prior to the commencement of construction works. via local newspapers, the municipality's notice board and website and via PC Roads' website as soon as the contract is signed ▪ informing road users via the construction site information board, and an information leaflet at the construction site	Internal resources	Internal resources	PC Roads FBH	PC Roads FBH	▪ Impacts on living conditions ▪ Road users are orderly informed about constructi on works on roads via radio news and auto-moto club's press releases.
▪ Compliance with national legislation	▪ Obtaining all necessary permits for Project implementation.	Internal resources	Internal resources	PC Roads FBH + Project designer	Pc Roads FBH	▪ Complianc e with national legislation

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Restrictions on land use and damages on private property	▪ Avoid private properties where possible; ▪ The Contractor will organize the construction site in collaboration and agreement with Gradačac and Srebrenik municipality; ▪ In case occasional land occupation cannot be avoided, compensation will be provided to affected owners/users (application of RPF), 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	If occasional land use cannot be avoided, it will be agreed upon with respective owner and compensation will be paid before the land is accessed
▪ 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 via local newspapers, the municipality's notice board and website and via PC Roads' website as soon as the contract is signed ▪ Informing business owners in advance about the construction works, in order to be able to plan the necessary road use accordingly (via local newspapers, the municipality's notice board and website and via PC Roads' website as soon as the contract is signed)	Internal resources	Internal resources	Contractor + PC Roads FBH	Contractor + PC Roads FBH	
CONSTRUCTION PHASE						

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Impacts on living conditions of local community	▪ Providing timely information to the citizens on any type of disruption and inconvenience; via an information leaflet on the construction site, local newspapers, the municipality's notice board and website and via PC Roads' website, as soon as the type and duration of the disruption and inconvenience is known. ▪ Implementation of TMP; ▪ Implementation of CSOP; ▪ Implementation of ESMP provisions.	Included in construction works	Included in supervision	PC Roads FBH (providing informations to the citizens) + Contractor(following the provisions of the TMP, CSOP, ESMP	Supervisory body*	
▪ Temporary occupation of publicly or privately owned land plots in case of unforeseen circumstances	▪ Avoidance of temporary occupation of privately owned plots; ▪ In case avoidance is not possible, minimise size of the area used and impacts on the vegetation and implementation of RPF on temporary occupation.	Internal resources	Internal resources	PC Roads FBH+ Contractor	PC Roads FBH*	
▪ Impacts on local traffic (increase of local traffic, including heavy machinery and trucks).	▪ Implementation of TMP; ▪ Introduction of appropriate signalization and warning signs; ▪ Timely information to public on traffic disruptions.	Included in construction works	Included in supervision	Contractor	Supervisory body*	In collaboration with the Cantonal Ministry of the Interior Relations and BHAMK

* *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	
▪ Air emissions: - exhaust gasses; - dust generation - Increased emissions of exhaust gases in the tunnel	▪ 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 reconstruction 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; ▪ Sand and gravel materials need to be transported in covered trucks. ▪ In case of complaints by workers, the traffic of construction machinery inside the tunnel needs to be minimized	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Increased level of noise and vibration: - noise emission and noise disturbance; - vibration	▪ 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 reconstruction 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 Road FBH according to Federal Legislation.*

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.					
▪ Emissions into water: - possible contamination of surface water	▪ 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; ▪ Oil and fuel collection systems to be fitted to prevent leakage; ▪ Vehicles and machines need to be regularly maintained to prevent leakage.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Soil degradation and emissions to soil: - soil contamination by oils, fuels and other hazardous substances	▪ Proper waste disposal; separation of hazardous waste; engagement of authorized companies for final waste disposal; track of the final disposal sites especially for removed asphalt; note/record of the waste amounts; ▪ Oil and fuel collection systems to be fitted to prevent leakage	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Degradation of biological and ecological resources by oil, fuel and chemical spillages	▪ Prevent and control oil, fuel, and chemical spillages that can find their way to the soil, watercourses;	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, and primarily reuse /	Included in construction	Included in supervision	Contractor	Supervisory body*	

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	recycling. ▪ No clandestine waste disposal will be allowed on site, including open burning of wastes. ▪ The waste should be stored for a short period of time and should be removed as soon as possible. ▪ The waste should be primarily recycled or reused where possible and then finally disposed ▪ No open burning of wastes is allowed on site ▪ Waste that cannot be reused should be handed over to a licensed company or agent (amounts are to be recorded as well as types of handling actions). ▪ Disposal sites of construction material are determined by the municipality and should be handled in the most appropriate environmental manner.	works				
▪ Inadequate workers safety	▪ Implementation of work safety measures: - Provide workers with a safe and healthy work environment, as defined in the Occupational Health and Safety Management Plan (OHSMP) ,developed as a part of the Construction Site Organization Plan (CSOP) that will be developed for the Project - Provide personal protective equipment, - Respect safety procedures, - Provide portable toilets, - Provide drinking water - Implementation of provisions determined in the Study of Applied Measures for Insurance of Occupational Safety in the Main Project	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 Environmental Management Plan which includes: - Spill Response Plan, - Emergency Preparedness and Response Plan. ▪ Implementation of Management Plan of 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	Included in construction works	Included in supervision	Contractor	Supervisory body*[*]	
CHANCE-FIND PROCEDURES DURING CONSTRUCTION PHASE						
▪ Impacts on cultural heritage	▪ If archaeological findings or other chance finds 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						

[*] *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	
▪ Problems due to lack of maintenance	▪ Regular road/tunnel maintenance works	Included in maintenance works	Internal resources	Contractor for maintenance works	PC Roads FBH	
▪ Contamination of Little Tinja and Tinja river	▪ Installation of oil separators in accordance with EN ISO 858-1 and 858-2 ▪ Regular maintenance of the oil water separator	Included in maintenance works	Internal resources	Contractor for maintenance works	PC Roads FBH	
▪ Decrease in road safety due to the increase of traffic and speed	▪ Regular maintenance of road safety equipment and signage	Incl. in maintenance works	Internal resources	Contractor for maintenanc e works	PC Roads FBH	

8. ENVIRONMENTAL MONITORING PROGRAM

The table below presents monitoring plan necessary for construction site – developed in connection of mitigation measures to avoid or reduce negative impact.

Prior to commencement of works, in accordance with requirements of the ESMP, and a minimum of monitoring requirements, described in table below, without limitation to these requirements, the Contractor shall prepare detailed list of mitigation measures and parameters to be monitored and prepare the site-specific baseline data as foreseen in the monitoring program below.

The monitoring plan on construction site 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 4: Environmental and Social 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
▪ 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 provisions	Construction site	Reports from contractor	Prior to construction and during construction when necessary	Included in construction contract	Included in construction contract	Contractor	Contractor
CONSTRUCTION PHASE								
▪ Access restrictions	▪ TMP in place, ▪ Implementation of RPF, provisions on compensation procedures for businesses affected by access restrictions	Construction site	Visual inspection	Random checks at least once a week during the construction	Included in supervision	Included in supervision	Supervisory body + PC Roads FBH	Supervisory body + PC Roads FBH
▪ Restrictions on land use and damage to the private property (agricultural plots, horizontal infrastructure,	▪ CSOP in place, ▪ Implementation of RPF provisions on compensation procedures in case occasional land use cannot be avoided,	Construction site	Visual inspection	Prior to construction and random checks at least once a week during the	Included in supervision	Included in supervision	Supervisory body + PC Roads	Supervisory body + PC Roads

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
fences and railings) due to disposal of construction waste, work camps and parks of heavy machinery	compensation will be provided to affected owners/users			construction			FBH	FBH
▪ Impacts on local traffic (increase of local traffic, including heavy machinery and trucks,)	▪ 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 - Increased emissions of exhaust gases in the tunnel	▪ 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	As a baseline and during construction when needed and upon complaints by the citizens and workers	-	500 USD/measuring	Contractor + Supervision	Authorized laboratory
▪ Increased level of noise and vibration: - noise levels - 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 river Tinja and Little Tinja	▪ Analysis of parameters of surface water quality: - Chemical analysis (PH, turbidity, conductivity, temperature, suspended particles, COD, BOD, ingredients with nitrogen) - Standard bacteriological	In watercourses near construction downstream	Standard laboratory equipment and methods of water quality monitoring	As a baseline and 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
	analyses							
▪ Pollution of surface watercourses	▪ Presence of oil film in surface watercourses	In watercourses 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
Soil pollution	▪ Soil quality, including, PH, heavy metals, phosphorus, nitrogen, Na, Ca, salts, PAHs hydrocarbons	On representative plots of land near construction sites	Taking samples and standard laboratory analyses	As a baseline and upon order by supervisory organ or upon complaints by the citizens	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory
▪ Emissions into water and soil due to improper waste handling	▪ CSOP in place, ▪ WMP in place	Construction site	Visual inspection, disposal records or receipts from landfills	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Degradation of biological and ecological resources	▪ Survey of the site for any endemic or endangered	In the zone of corridors of	Field recordings	As a baseline	-	-	Contractor	Authorized institution

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
	species	direct and indirect impacts	and incorporation of the findings in the ESMP					
▪ 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.) ▪ Implementation of World Bank Occupational Health and Safety Guidelines	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
OPERATION PHASE								
▪ Water emissions	▪ Analysis of the water quality parameters: ▪ Chemical analysis (PH, turbidity, conductivity, temperature, suspended particles, COD, BOD, ingredients with nitrogen, total fats and oils, mineral oils);	At the treated water outlet	Sampling	Once a year	Internal resources	1000 USD/sample	PC Roads FBH	Licensed laboratory

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 will be responsible for the implementation and compliance of the project in line with ESMP.

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

The application of all identified environmental and social mitigation measures and the environmental monitoring program will be ensured. The Contractor will be responsible for the implementation of the environmental mitigation measures during construction. The supervisor will employ environmental experts to supervise the implementation of Contractor's responsibilities, and will be in communication with the investor. PC Roads FBH will constitute a Grievances Commitee 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). Furthermore, the Project Implementation Unit of PC Roads FBH includes an environmental and a social expert. 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 design 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.

In case of 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: https://jpcfbih.ba/bs/kontakt.

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.

9.2.3. PC Roads FBH to 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 World Bank for review.

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

10.PUBLIC DISCUSSION AND INFORMATION DISCLOSURE

10.1. PUBLIC CONSULTATION

Public consultation of the subject ESMP was organized in municipality of Gradačac in settlement Ormanica after the WB approved the draft of the ESMP.

The document was published and available to the public in a local language on the website of PC Roads FBH and on the website of Gradačac Municipality on 05.04.2018 ie 10.04.2018. Public consultations were announced on the website PC Roads FBH on 05.04.2018. and on 10.04.2018. in local newspapers (Dnevni Avaz) and website of Gradačac Municipality. The public consultations were held on 25.04.2018. in Ormanica in the conference room of Hotel Orion, and the Minutes of the Public Discussion on ESMP is an Appendix 3 of this document. Public consultations were attended by 9 interested parties.

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 is disclosed again on the website of PC Roads of FBH.

10.2. INFORMATION DISCLOSURE

ESMP draft was 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 got 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 announced 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).

10.2.1. 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, in this case with the Gradačac 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 (Appendix 1) as print out shall be available at municipal administration, at the construction site and in the offices of PC Roads FBH and shall be available for download on the website of JP Roads FBH (www.jpcfbih.ba) and the municipality's website.

The grievance can be logged in writing with the Contractor, at the construction site as well as in the contractor's offices. The contractor is obliged to hand out the Grievance Registration Sheet, explain the grievance mechanism to the concerned citizen and forward the filled in Grievance Form to the central Feedback Desk in PC Roads FBH. The grievance can also be filled in within PC Roads FBH, 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.

An information leaflet concerning the grievance mechanism will be available at the construction site at all times, weather the construction site is closed or open. The information leaflet will be plasticized and hung on the construction site information board to be available to road users at all times

All grievances will be archived in the register and assigned a number, and acknowledged within 3 working days.

The CFD will make all reasonable efforts to address the complaint upon the acknowledgement of grievance. If the CFD is not able to address the issues raised by immediate corrective action, a long-term corrective action will be identified. The complainant will be informed about the proposed corrective action and follow-up of corrective action within 14 working days upon the acknowledgement of grievance.

If the particular issue raised through the grievance mechanism cannot be addressed or if action is not required, a detailed explanation/ justification will be provided to the complainant on why the issue was not addressed. The response will also contain an explanation on how the person/ organization that raised the complaint can proceed with the grievance in case the outcome is not satisfactory. At all times, complainants may seek other legal remedies in accordance with the legal framework of FBiH.

11. Requirements for start of works

The Contractor shall establish all required baseline data before the commencement of works. The Baseline – Monitoring data shall include air quality data, surface water quality data, soil quality data, survey of the site for any endangered and endemic species and other environmental issues in zone of corridors of direct and indirect impacts. The Contractor is also obliged to ensure these measurements during and after completion of the construction works. The Contractor will ensure that the measurements are conducted by authorized agencies and that they are based on the findings and recommendations of a qualified expert.

The Contractor shall develop:

A Construction Site Organization Plan (CSOP) that is made up of:

a. Implementation Plan of this ESMP,
b. a detailed Waste Management Plan (WMP)]
c. Study on Safety (includes Elaborate on Safety at Work and Elaborate on Protection From Fire and Explosions),
d. Traffic Management Plan (TMP) must be developed, which will be created by the Contractor prior to the beginning of construction works.

These studies are to be developed in accordance with federal acts[9], before starting the execution of works, while the Contractor's legal obligations defined in the Bidding Documents and Contract shall be based on the a provisions of this ESMP . The Contractor shall submit these studies to the PC Roads FBH supervisory engineer, Environmental and Social Specialists, before beginning of works, and the Company has to accept and approve them prior to start of works. Due to the time constraints related to the issuance of the bidding documents, the public consultations are to be held prior to the start of works but once the bidding documents have been issued; therefore the ESMP included in the bidding documents may need to be subsequently updated after the consultations. The contractor will be obliged to follow the updated ESMP.

In case that existing bypasses are selected where the Contractor is required to provide interventions on existing roads or in the event a new bypass is to be constructed, the Contractor is obliged for a timely ESMP preparation separate from this one, but satisfactory to PC Roads of FBiH and the World Bank.

[9] 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

APPENDICES

APPENDIX 1. 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	
ADDRESS			
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 2. GRIEVANCE REGISTRATION TEMPLATE TABLE

No.	Date of receipt	Type of grievance	Description of grievance	Complainant		Date of acknowlgement of receipt	Description of actions undertaken	Date of solvation of grievance
				Status	Sex			

APPENDIX 3. REPORT ON PUBLIC DISCUSSION

JP CESTE FEDERACIJE BIH

JP Ceste Federacije BiH d.o.o. Sarajevo poziva sve zainteresirane subjekte, nevladine organizacije i stanovnike općine Gradačac i naselja koja gravitiraju području namjeravane rehabilitacije tunela Ormanica, da uzmu učešće u

JAVNOJ RASPRAVI

o nacrtu **Plana upravljanja okolišem i društvenim aspektima za projekat rehabilitacije tunela Ormanica**

koja će se održati u mjestu Ormanica, **u maloj konferencijskoj sali hotela Orion 25.04.2018. godine u 13.00 sati**, s ciljem davanja prijedloga i sugestija javnosti i uključivanja relevantnih pitanja u finalnu verziju dokumenta. Dokument je izrađen za potrebu Programa modernizacije magistralnih cesta u FBiH prema politikama kreditora. Nacrt dokumenta može se pronaći na službenoj stranici JP Ceste FBiH na sljedećem linku: http://jpcfbih.ba/bs/aktivnosti/modernizacija-magistralnih-cesta/38 i na web stranici općine Gradačac.

Svi zainteresirani subjekti koji nisu u mogućnosti da prisustvuju javnoj raspravi mogu svoje sugestije i komentare dostaviti do 25.04.2018. putem e-mail adrese: pimt@jpcfbih.ba.

Dnevni red:

1. Prezentacija Plana upravljanja okolišem i društvenim aspektima za projekat rehabilitacije tunela Ormanica
2. Pitanja, diskusija, odgovori i objašnjenja

Announcement of Public discussion in the Local Newspaper „Dnevni Avaz“ (10.04.2018.)

oglasi

JP CESTE FEDERACIJE BIH

JAVNOJ RASPRAVI

JP CESTE FEDERACIJE BIH

JAVNOJ RASPRAVI

Javno preduzeće/ poduzeće Regionalni vodovod „ Plava Voda“ d.o.o. Travnik

JAVNI OGLAS

BOSNA I HERCEGOVINA
FEDERACIJA BOSNE I HERCEGOVINE
KANTON SARAJEVO
OPĆINSKI SUD U SARAJEVU
Broj: 65 0 I 648523 17 I
Sarajevo, 14. 05. 2018. godine

RJEŠENJE O IZVRŠENJU
Broj 65 0 I 648523 17 I od 21. 11. 2017. godine

BOSNA I HERCEGOVINA
FEDERACIJA BOSNE I HERCEGOVINE
KANTON SARAJEVO
OPĆINSKI SUD U SARAJEVU

OBJAVLJUJE
RJEŠENJE O IZVRŠENJU

POUKA:

JP CESTE FEDERACIJE BIH

JP Ceste Federacije BiH d.o.o. Sarajevo poziva sve zainteresirane subjekte, nevladine organizacije i stanovnike općine Gradačac i naselja koja gravitiraju području namjeravane rehabilitacije tunela Ormanica, da uzmu učešće u

JAVNOJ RASPRAVI

o nacrtu **Plana upravljanja okolišem i društvenim aspektima za projekat rehabilitacije tunela Ormanica**

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Svi zainteresirani subjekti koji nisu u mogućnosti da prisustvuju javnoj raspravi mogu svoje sugestije i komentare dostaviti do 25.04.2018. putem e-mail adrese: pirel@jpcfbih.ba.

Dnevni red:

1. Prezentacija Plana upravljanja okolišem i društvenim aspektima za projekat rehabilitacije tunela Ormanica
2. Pitanja, diskusija, odgovori i objašnjenja

Web addresses containing the document and the Announcement of Public discussion with screenshots of the websites:

1. PC Roads of FBH website (published on April 5, 2018)

https://jpcfbih.ba/bs/novosti/javna-rasprava-o-nacrtu-plana-upravljanja-okolisem-i-drustvenim-aspektima-za-projekat-rehabilitacije-tunela-ormanica/40 - Announcement of the Public discussion (B/H/S language)

http://jpcfbih.ba/bs/aktivnosti/modernizacija-magistralnih-cesta/38 - Document (B/H/S language)

https://jpcfbih.ba/en/news/public-consultations-on-draft-environmental-and-social-management-plan-for-the-project-of-the-improvements-of-the-tunnel-ormanica/40 - Announcement of the Public discussion (English language)

http://jpcfbih.ba/en/activities/modernization-of-main-roads/38 - Document (English language)

2. Municipality of Gradačac website (published on April 10, 2018)

http://gradacac.ba/naslovna/index.php/aktuelnosti/novosti/1373-javna-rasprava-na-nacrt-plana-upravljanja-okolisem-i-drustvenim-aspektima-za-projekat-rehabilitacije-tunela-ormanica

http://www.gradacac.ba/naslovna/images/PDF/Rehabilitacija_tunela.pdf


Javna rasprava na nacrt Plana upravljanja okolišem i društvenim aspektima za projekat rehabilitacije tunela Ormanica

MINUTES of Public Consultation Meeting on the draft Environmental and Social Management Plan for the Project of Improvements to Tunnel Ormanica

Public consultation meeting on the draft Environmental and Social Management Plan for the Project of Improvements to Tunnel Ormanica was held on April 25, 2018 at 1 pm in conference room of Hotel Orion in Ormanica.

On behalf of the PC Roads of the Federation of Bosnia and Herzegovina, public consultation meeting was attended by:

- **Senad Smajlović** – Civil engineer,
- **Selma Ljubijankić** – PIT Member in charge of social aspects of the Roads Modernization Program,
- **Haris Zejnić** – PIT Assistant for EIA Monitoring under the Roads Modernization Program.

A list of all attendees is enclosed to these minutes.

Selma Ljubijankić welcomed the attendees, presented the representatives of the PC Roads of the FBiH and provided an overview of the Roads Modernization Program and the above document. She introduced the attendees to the draft Environmental and Social Management Plan for the Project of Improvements to Tunnel Ormanica, including goals of its provision, mitigation measures of all potential identified environmental and social impacts, monitoring plan, information disclosure, grievance mechanism, requirements regarding work commencement and other relevant information.

It was pointed out that this is a draft document and that all relevant comments from this public consultation meeting will be incorporated into its final version. It was further clarified that the document was revised by the World Bank's team, and upon its approval, it will become a binding document for the contracting parties in the project implementation itself.

Senad Smajlović presented an overview of the Project of Improvements to Tunnel Ormanica, describing the scope of the project, its goals and implementation. He explained the present condition of the tunnel and phases of its improvement. He pointed out that the unstable layers of the calotte will first be removed, as well as the part of the lining in order to get the necessary traffic profile. This will be followed by reinforcement of the entry and exit constructions of the portal, construction of a new separate drainage system, waterproofing, drainage niches, complete secondary tunnel lining in order to bring the tunnel into the designed condition, new pavement leveling, asphalt layers, service lane etc.

Enes Mustafić, president of the local community of Srnica Donja emphasized the issue of alternative road through the surrounding villages during the work and to the large number of vehicles. He assumed that most people will use local roads.

Given that local roads are not designed and do not meet the requirements, **Senad Smajlović** explained that only the regional roads will be used as alternative routes. All alternatives were considered, but it was not possible to secure safe traffic through the tunnel during the works execution. Works on the rehabilitation of alternative road directions are foreseen before and after completion of works.

Damir Kurjaković suggested banning freight transportation on local roads, to what the representatives of PC Roads of the FBiH agreed.

It was further explained that Municipality of Gradačac planned funds for asphalt works on one part (500 m) of the mentioned local road while the remaining 1.5 km would need to be brought into an adequate condition. He suggested urging the competent ministry to provide certain funds for these purposes. The section corresponds to the alignment of an old regional road with good elements and, in case of all types of accidents and disasters this one could be used as an alternative direction too, provided that it was brought to an adequate condition. The attendees were shown the location of the alignment on the satellite image.

Senad Smajlović stated that the above suggested will be further discussed with the Management Board of the company and the project manager and that PC Roads of the FBiH will do everything in its power. Furthermore, he proposed sending a written request, with precise information, in order to enable adequate response to the same, to what **Damir Kurjaković** agreed.

Damir Kurjaković inquired about the road profile and whether the one will be reduced.

Senad Smajlović pointed out that the adopted profile is a standard road profile 7 meters in width with additional 30 centimeters wide service lanes on either side.

The public consultation meeting ended at 1.50 pm.

Photographs of participants in the Public Consultations in Ormanica (conference room of Hotel Orion)


Nacrt Plana upravljanja okolišem i društvenim aspektima za projekat rehabilitacije tunela Ormanica

JP CESTE FEDERACIJE BIH

Javna rasprava o Planu upravljanja okolišem i društvenim aspektima za projekat rehabilitacije tunela Ormanica, Ormanica, 25. april 2018.g.

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