

**ENVIRONMENTAL AND SOCIAL  
MANAGEMENT PLAN FOR THE  
PROJECT OF THE REHABILITATION  
OF THE BRIDGE OVER THE VRBAS  
RIVER**

September, 2017

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## LIST OF ABBREVIATIONS

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

## EXECUTIVE SUMMARY

### INTRODUCTION AND OBJECTIVES OF THE ESMP

*This Project of the Rehabilitation of the Bridge over the Vrbas River (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. *Rehabilitation of the Bridge Over the Vrbas River, on the road M-16.4, section Bugojno – Nević polje*, is screened as a category B project according to the triggered Operational Policy 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<sup>1</sup>. PC Roads FBH will ensure all required local permits for this Project are obtained.

### LOCATION AND TRAFFIC DESCRIPTION

The bridge over the Vrbas River is situated on the main traffic direction of Bugojno municipality, on the major road M-16.4, section Bugojno – Nević polje. The nearest relevant traffic count device is in Bugojno on main road M16.2, and it shows that, in 2015, 2802 vehicles were passing daily.

### PROJECT DESCRIPTION

The bridge over river Vrbas in Bugojno – M 16.4-1-06 – is located at the road M 16.4-2, section Nević Polje - Bugojno, milepost km 35+180. The bridge has not been reconstructed, and no works except of regular maintenance has been done since 1998. The width of the road at the bridge 5.0 m which is lesser than prescribed width for bridge roadway at main roads. Footpaths are 0.8 m wide and have no required safety zone of 0.5 m. This causes discontinuity of vehicular traffic at the bridge making two-way traffic to become one-way traffic. Pedestrian traffic over the bridge, which is rather intense, is also compromised. Considering the mentioned it was decided for existing bridge to be completely demolished and for new bridge to be built.

Prior to demolition of the bridge, traffic over the bridge shall be redirected to lead over provisory/temporary route over the river Vrbas. In order to ensure uninterrupted river flow, embankment made of ten concrete pipes of 150cm diameter shall be placed. The envisaged new width of the new bridge will be 9,30m.

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<sup>1</sup> In FBH investments requiring EIA are identified by the Regulation on Plants and Facilities Subject to Obligatory Environmental Impact Assessment, and Facilities Which May be Constructed and Commissioned Only if Granted Environmental Permit (Official Gazette of FBH No. 19/04). In Central Bosnia 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 CBC, No. 5/06).

## **BASELINE OF PARTICULAR INTEREST**

The terrain of the Project is mostly hilly with an attitude in the range from 500 to 600 meters above sea level. Meteorological station in Bugojno reports following data: the average multi-annual temperature is 8.8 °C, the warmest month is July, with an average perennial air temperature of 18.2 °C and the coldest month is January when the average perennial temperature is -1.9 °C. The average rainfall measured at the same meteorological station, during multi-year period is 814 mm per year. The bridge, as already mentioned, stretches over the Vrbas River, which is the right confluent to the Sava River. The average perennial flow  $Q_{av}$  is 114m<sup>3</sup>/s, while the ecological flow is 26.3 m<sup>3</sup>/s. 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 Project the dominant land use is for commercial and residential facilities of individual housing.

Population and settlements: The municipality of Bugojno has a population of 31.470 people. It spreads on the area of 361 km<sup>2</sup>, and has a population density of 87,17 people/km<sup>2</sup>. It consists of 78 settlements organized in 27 local communities. Being located at the east entrance to the town, the project bridge represents a necessary connection point to all the services the town center is providing, such as, health, education, jobs.

## **IMPACTS DURING PRECONSTRUCTION**

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

## **IMPACTS DURING CONSTRUCTION**

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 groundwater 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.

**Impact on traffic safety and traffic flow:** Traffic congestion and obstructions on the bridge - increased traffic load, leading to congestion and obstruction is likely to be experienced on local roads and on major road (M-16.4). The impact is minimized by the construction of an alternative route over the river Vrbas

**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 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. For the

purpose establishing an alternative route over Vrbas River during bridge reconstruction, it will be necessary to temporarily occupy a small part (1%) of one private land plot. Parts of another 7 public land plots owned by the municipality of Bugojno will have to be temporarily occupied for the purpose of the construction of the alternative route across the river.

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. The local population might experience safety impacts in terms of an inadequately insured construction site.

**Land screening:** On August 18<sup>th</sup>, 2017 land screening and walkover survey was conducted. It has been noted that public land plots owned by the Investor and required for project activities are not being used in any way, neither formal nor informal, and do not require clearance.

### **POSITIVE IMPACTS**

Project implementation will contribute to better conditions (specified in chapter 6.4) and will have positive impacts on the quality of transport on road M5.

### **MITIGATION 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 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 groundwater 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 DISCUSSION AND INFORMATION DISCLOSURE**

Public consultation of the subject ESMP will be organized in Bugojno after the WB and PC Roads FBH approve the draft of the ESMP.

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.

The ESMP has been disclosed on PC Roads FBH webpage on 07.02.2018. and public consultations were held on 26.02.2018..

### **Grievance Mechanism**

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 Travnik municipality.

### **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 shall develop:

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

- 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),
- Traffic Management Plan (TMP) must be developed, which will be created by the Contractor prior to the beginning of construction works.

### **Social aspects:**

-Agree upon temporary occupation with respective owners (for private and public land plots)

-Pay compensations in accordance with the provisions made in the RPF before the land is accessed.

## 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://www.jpfbih.ba/ba/aktivnosti/program\\_modernizacije.shtml](http://www.jpfbih.ba/ba/aktivnosti/program_modernizacije.shtml)), 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. Reconstruction of roads, this component includes:
  - Construction works for completion of the construction of major road M17.3 Neum–Stolac (in total 32,9 km);
  - Construction of third lanes for slow vehicles (in total 40 km on 8 sections of major roads);
  - Reconstruction of roadway, correction of axes (in total 18 km on 5 sections of major roads, where a correction of axes is to be done on one section only in the length of 1 km),
  - Reconstruction of 3 tunnels (with a total length of 1,86 km);
  - Reconstruction of 7 bridges (with a total length of 0,55 km).
2. Interventions on improving road safety: The reconstruction of 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 Rehabilitation of the Bridge over the Vrbas River (the Project)* for which this ESMP is developed, is one of the sub-projects included in the group of sub-projects co-financed by the WB and EIB.

## **2. METHODOLOGY AND OBJECTIVES OF ESMP**

*Rehabilitation of the Bridge Over the Vrbas River, on the road M-16.4, section Bugojno – Nević polje*, is screened as a category B project according to the triggered Operational Policy 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<sup>2</sup>. PC Roads FBH will ensure all required local permits for this Project are obtained.

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

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

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

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<sup>2</sup> In FBH investments requiring EIA are identified by the Regulation on Plants and Facilities Subject to Obligatory Environmental Impact Assessment, and Facilities Which May be Constructed and Commissioned Only if Granted Environmental Permit (Official Gazette of FBH No. 19/04). In Central Bosnia 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 CBC, No. 5/06).

Contractor shall prepare detailed list of mitigation measures and parameters to be monitored.

### 3. LOCAL DESCRIPTION

The bridge over the Vrbas River is situated on the main traffic direction of Bugojno municipality, on the major road M-16.4, section Bugojno – Nević polje. The major road M-16.4 connects Bugojno and Travnik, through Novi Travnik. This section connects two important cities in Central Bosnia Canton, Bugojno with the cantonal centre in Travnik. The subject bridge is located on the starting station at km 2+202, and the final station 2+268 on the above mentioned section of the major road M-16.4.

*Figure 1: The geographical location of the project*

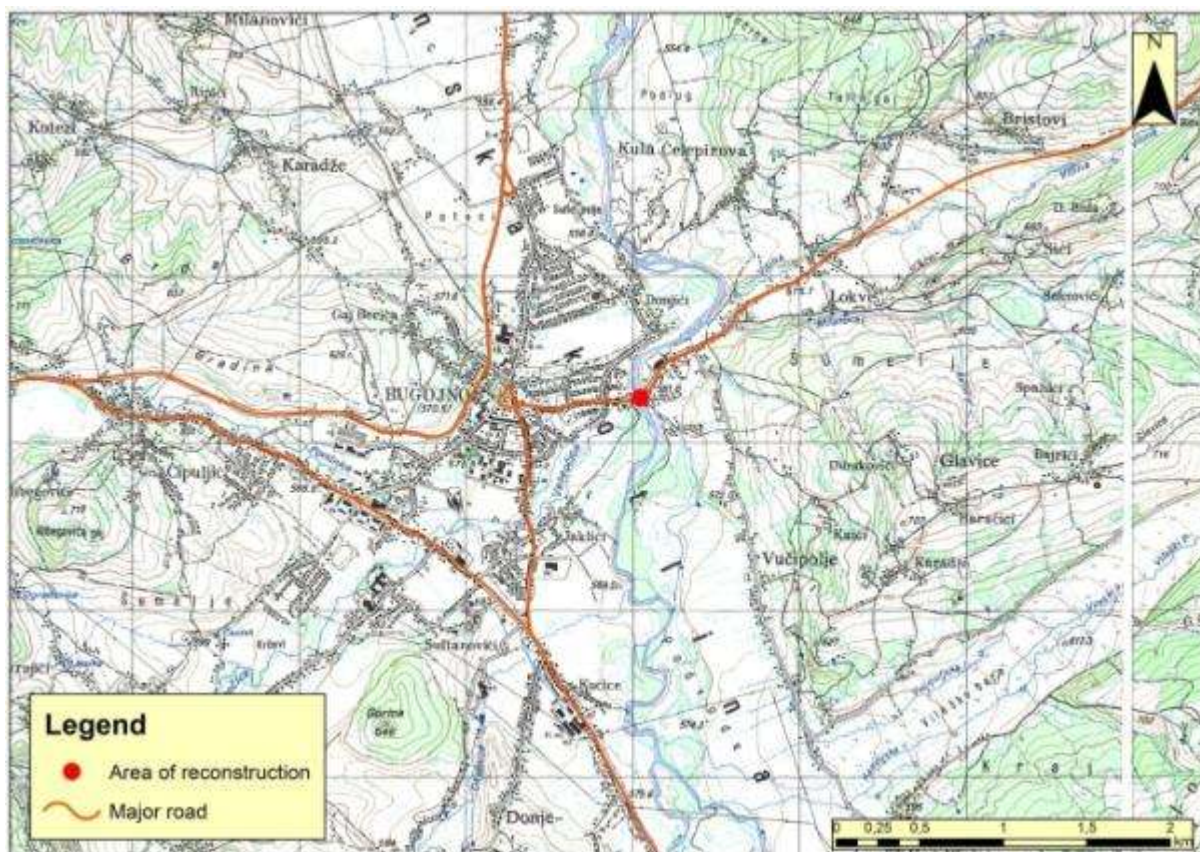


*Source: PC Roads Federation of BH*

This bridge is the main access point of the city Bugojno from the direction of Sarajevo, Zenica and Travnik, and it is very important for the local population because it represents the most convenient way to the city center of Bugojno. The bridge is also very important for the transit traffic.

The area of reconstruction is located within the urban area of Bugojno, and the facilities situated near the project site are mostly residential and business oriented (cattle market). The neighboring residential zones consist mainly of ground floor, one-story and two-story private houses. Majority of the residential and business facilities are located along the major road M-16.4. Given that the bridge is situated near the city center, it can be said that many important public building are located in the vicinity.

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<sup>3</sup> was published in 2016 with data for the previous year. Since the nearest relevant traffic count device on main road M16.4 is located in Nević Polje more than 20 km east from the project bridge, it is presumed that the nearest relevant traffic device is that in Bugojno on main road M16.2. The data from that traffic count device shows that, in 2015, 3802 vehicles were passing daily over the bridge (Figure 3).

<sup>3</sup> "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<sup>4</sup> for the period 2013 to 2040. Analysis 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 M16.4, section bypass Bugojno 2 – Nević Polje

Major road	Section name	AADT									
		2016	2018	2020	2022	2023	2025	2030	2035	2037	2040
M 5	Rogolji-Jajce zapad	3231	3261	2879	3661	3774	1019	1169	1318	1376	1456

Source: PC Roads FBH, 2014

It can be noticed that the number of vehicles is anticipated to be reduced by more than 50% in the year 2025 when comparing with the prognosis for the year 2023. That is because of the construction of the corridor Vc<sup>5</sup> and other alternative corridors which would lead to a decrease of vehicles on the project section. The decreasing number of vehicles can be prescribed to the planned construction of the town’s bypass in 2018.

<sup>4</sup> „Justification studstudy for modernization of major roads in FBiH programme“, IPSA Institute Sarajevo, 2014

<sup>5</sup> Corridor Vc connects Kiev (Ukraine) with Adriatic sea through Lvov and Budapest (Hungary). It consists 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).

## 4. PROJECT DESCRIPTION

### 4.1. Existing bridge characteristics

The bridge over river Vrbas in Bugojno – M 16.4-1-06 – is located at the road M 16.4-2, section Nević Polje - Bugojno, milepost km 35+180.

Database of bridges which was compiled in 1998 classified this bridge into category of significantly damaged structures with high rehabilitation urgency i.e. «to be rehabilitated within 2 years». Loadbearing capacity of the bridge as compared to standardized load of PTP No.5 is  $K=0.98 < 1.0$ .

Database of bridges which was compiled in 2007 classified this bridge into category of significantly damaged structures. Spanning structure is in extremely poor condition with substantial penetration of water and with major corrosion of both reinforcement and concrete. Bridge equipment is also extremely damaged.

The bridge has not been reconstructed, and no works except of regular maintenance has been done since 1998.

Apart from that, width of the road at the bridge is barely 5.0 m which is lesser than prescribed width for bridge roadway at main roads. Footpaths are 0.8 m wide and have no required safety zone of 0.5 m. This causes discontinuity of vehicular traffic at the bridge making two-way traffic to become one-way traffic. Pedestrian traffic over the bridge, which is rather intense, is also compromised.

Considering the deteriorated state of the bridge, degree of damage it sustained, lessened bearing capability and traffic discontinuity it was decided for existing bridge to be completely demolished and for new RC bridge to be built at the same location pursuant to regulations and standards in force and in full compliance with “Guidelines for Road Design, Construction, Maintenance and Supervision”.

### 4.2. NEW DESIGN

#### Disposition elements of the bridge

- Structure axis and grade line axis is basically straight.
- Length of the bridge is  $L= 66.44$  m,
- total width of structure  $B=9,30$ m,
- total surface of structure:  $A_{obj}=617,90$  m<sup>2</sup>.
- Bridge grade line lies in vertical curve of  $R=10000$ m radius and is of tangential gradients of  $i=0,27\%$  and  $3,15\%$ .
- roadway cross gradient is bilateral  $2*2,5\%$ .

### Characteristic cross section of the structure:

- Outside RC cornice        0.20 m
- Footpath                    0.80 m
- Protective strip (footpath)    0.50 m
- Traffic lane                    2.75 m
- Marginal line                0.20 m
- Curb lane                    0.20 m
- Total usable/clear width of the bridge:  $130 + 2*315 + 130 \text{ cm} = 890 \text{ cm}$
- Curbs height                18 cm.

### Construction technology

Prior to demolition of the bridge, traffic over the bridge shall be redirected to lead over provisory/temporary route over the river Vrbas. In order to ensure uninterrupted river flow, embankment made of ten concrete pipes of 150cm diameter shall be placed.

Construction technology of certain work items shall be adapted by the selected Contractor to his capabilities and mechanization at his disposal, all the while closely observing design solutions and all the requirements related to work quality and safety.

### Support walls of junction (access) roads

At abutment No. 1 (right riverbank of the river Vrbas), apart from the existing wings, support walls are constructed in order to allow for roadway broadening at the stretch where existing road continues onto rehabilitated road at the bridge.

At the right side of the road (bridge downstream side) the length of the support wall is 12.02 m. Height of the wall varies depending on tunnel liner and is either 200 cm, 250 cm, or 355 cm.

At the left side of the road (bridge upstream side) length of the support wall is 802 cm. This wall is at an angle of  $27.4^\circ$  to the road axis. The wall is constructed in two 400 cm long liners with 2cm expansion joints in-between liners. Height of liners is 300 cm and 350 cm respectively.

Suspended wings of the abutment No. 4 continue onto new support walls. At the right side of abutment No. 4 two types of walls are constructed. First type being slanted wall of average height of 409 cm through which two conduits are constructed: first conduit for roadway drainage, second conduit for drainage system of existing support walls which were constructed parallel to road axis behind the bridge. This wall, which is located along right standing wing, an 11.14 m long and 350 cm high wall is continued which follows the road level line. Apparently, these existing walls contain their own drainage system which is clogged. Also there is a risk of the waste water from nearby residential buildings being connected to this drainage system. The new design of the bridge envisages a closed drainage system of the bridge. . In the event that the domestic sewage is being released into the

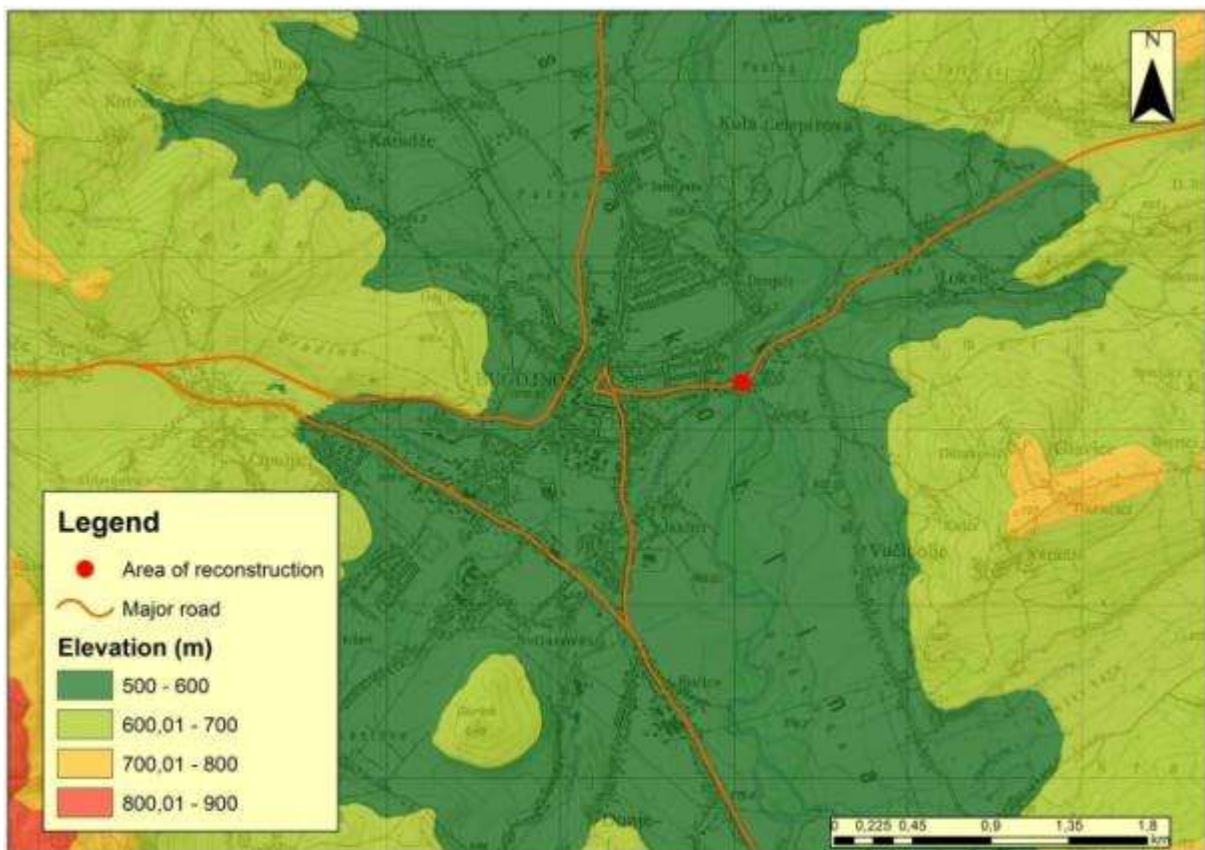
drainage system the competent authorities will be informed of this issue, since the responsibility over the wastewater collection system remains with the municipality.

## 5. BASELINE OF PARTICULAR INTEREST

### 5.1. GEOGRAPHIC CONDITIONS

The terrain of the Project is mostly hilly with an attitude in the range from 500 to 600 meters above sea level. In the wider area the altitude goes up to 900 meters above sea level, as indicated in Figure 4. 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.

Figure 4: Geographical Map of Wider Area with the Project Location

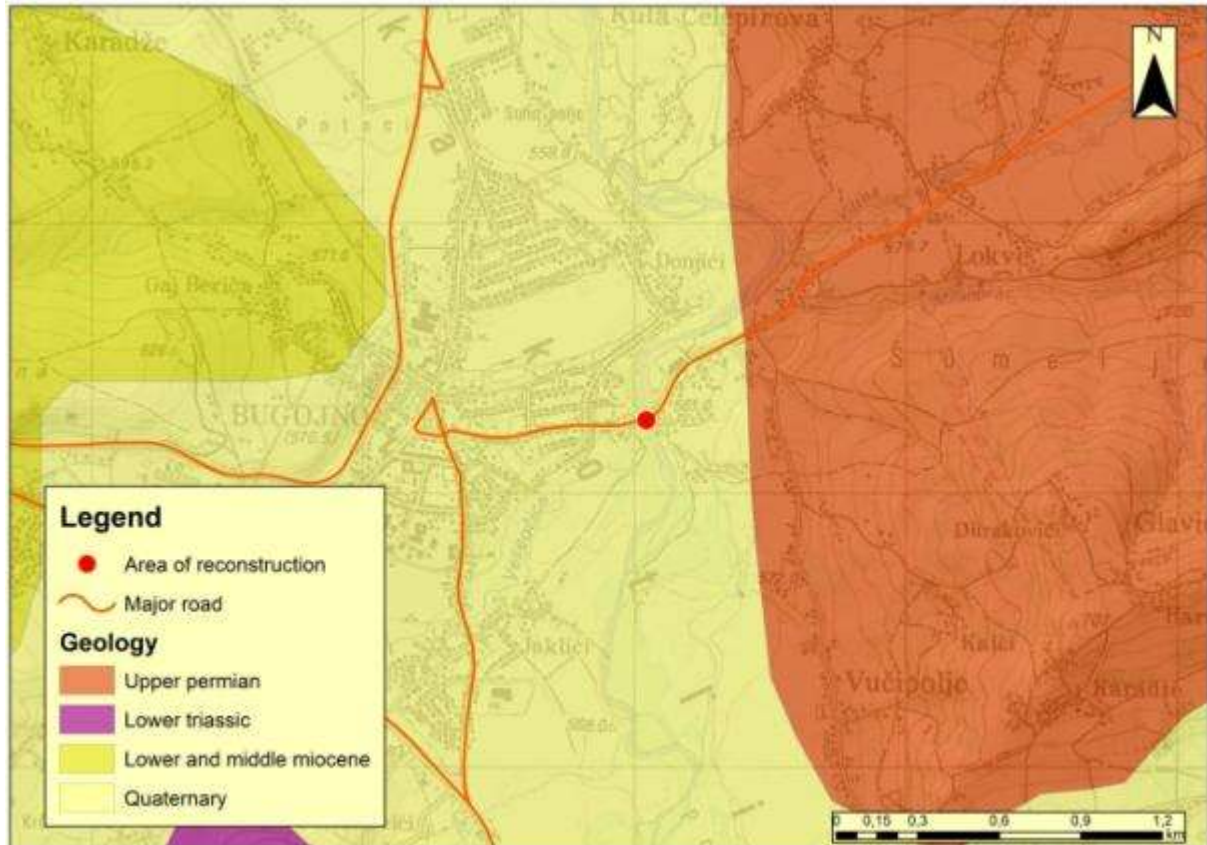


Source: Draft of Spatial plan of FBiH 2008.-2028.

The geological structure of the area of reconstruction is characterized by quaternary formations that are built mostly of fragments and boulders of heterogeneous composition.

They are represented mostly through gravel terraced sediments. In addition, in the wider area Miocene and upper Permian sediments are present.

Figure 5: 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 the entire area is under the influence of the moderate continental climate or moderately warm and humid climate type (Cfb climate according to Köppen climate classification) which can be concluded from the analysis of thermal and pluviometric regime.

Meteorological station in Bugojno, closest to the site of reconstruction, reports following data: the average multi-annual temperature is 8.8 °C, the warmest month is July, with an average perennial air temperature of 18.2 °C and the coldest month is January when the average perennial temperature is -1.9 °C.

*Table 2. Average temperature and precipitation for the multi-year period*

Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Average
Temperature (°C)	-1,9	-0,1	3,8	9,2	13,1	16,3	18,2	18	14,3	9,4	5,4	0,5	8,8
Precipitation (mm)	54	59	57	60	71	78	53	54	57	66	109	96	814

*Source: Federal Hydrometeorological Institute, Sarajevo*

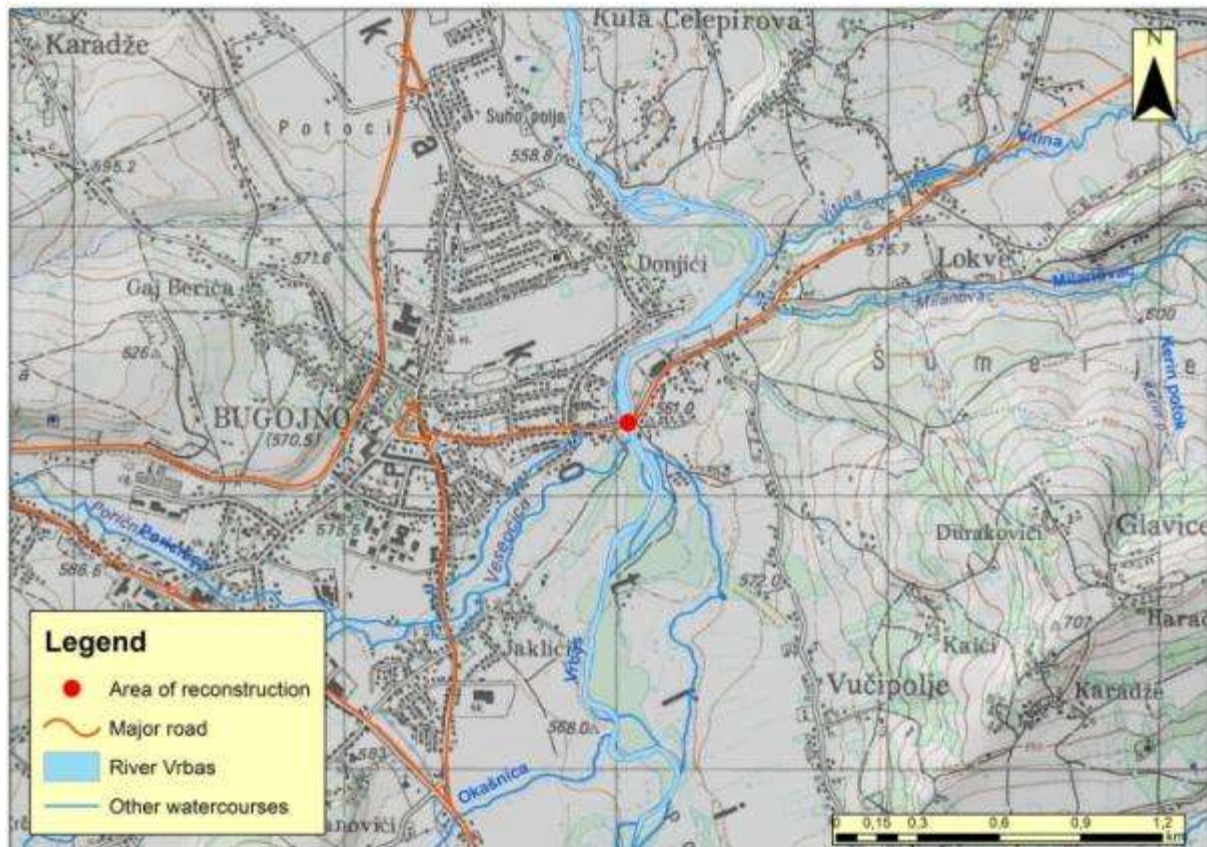
The average rainfall measured at the same meteorological station, during multi-year period is 814 mm per year. The rainiest month is November, when the average precipitation is 109 mm. The least precipitation occurs in July, only 53 mm on average.

### 5.3. WATER AND WATER QUALITY

The bridge, as already mentioned, stretches over the Vrbas River, which is the right confluent to the Sava River. Vrbas springs below the mountain Zec near Fojnica at about 1.715 meters above sea level, and after 250 km of flow, Vrbas flows into the Sava River near Srbac, at 96 meters above sea level. The main left tributaries are Pliva, Crna River and Krupa River, while the main right tributaries are Bistrić, Ugar, Svrakava, Banja Turjanica and Povelčić.

Vrbas River Basin has a prolate shape with a length of 150 km and an average width of 70 km, and the total area of the basin is 6.386 km<sup>2</sup>. The average altitude is 690 meters above sea level and the highest point in the basin is about 2.100 meters above sea level. Average annual precipitation ranges from 800 l/m<sup>2</sup> at the mouth of the Vrbas and Sava to about 1500 l/m<sup>2</sup> in the southern part of the basin. The average perennial flow  $Q_{av}$  is 114m<sup>3</sup>/s, while the ecological flow is 26.3 m<sup>3</sup>/s.

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



Source: PC Roads Federation of BH

The Vrbas 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.

According to the Vulnerability study of the Federation of BH, river Vrbas is classified into Class II according to its quality. Class II includes waters that can be used for drinking after a certain purification treatment, and in a natural state for swimming, water sports, and for the growth and development of certain fish species. The Contractor shall conduct a baseline measurement for water quality monitoring prior to the start of works.

The following table gives an overview of the water quality status of the Vrbas River, shown through the percentages of the prescribed class satisfaction.

*Table 3. Water quality of the Vrbas River, for the period 2005-2007.*

Table 3. Water quality of the Vrbas River, for the period 2005-2007 Vrbas river	MPC	Prescribed class satisfaction
		2005 – 2007 year
<b>BIOLOGICAL PARAMETERS</b>		
Saprobity Index	1,5 – 2,5	100
<b>MICROBIOLOGICAL PARAMETERS</b>		
Total number of coliform Bacteria at 37 ° C (N/100mL)	Average	14.977
<b>PHYSICAL-CHEMICAL PARAMETERS</b>		
<b>Suspended substances</b>		
Evaporative residue (mg/L)	<30	50
<b>Alkalinity - Acidity</b>		
pH	6,8 – 8,5	100
<b>Oxygen regime</b>		
Dissolved oxygen (mgO <sub>2</sub> /L)	>6	100
Oxygen saturation (% O <sub>2</sub> )	90 – 70	100
BOD (mgO <sub>2</sub> /L)	<4	100
COD (mgO <sub>2</sub> /L)	<12	100
<b>Content of nutrients</b>		
Ammonium ion (mg/L)	<0,25	100
Nitrites (mgNO <sub>2</sub> /L)	<0,05	100
Nitrates (mgNO <sub>3</sub> /L)	<10	100
Phosphates (mgPO <sub>4</sub> /L)	<0,25	100

Source: Water Management Strategy of the Federation of Bosnia and Herzegovina 2010 – 2022., Institute for Water Management d.d. Sarajevo - Institute for Water Management d.d. Mostar, 2012

#### 5.4. AIR QUALITY

No particular monitoring of air quality for this location was performed, neither for the area of Bugojno. Judging by the location of the Project, it can be concluded that the highest air pollution refers to the traffic of the major road. Also, during the winter time, the air is loaded with the pollution that comes from individual furnaces and boiler units, from facilities that are located nearby the Project, while there are no other major air polluters such as industrial facilities near the site.

Based on geographical features and the fact that there are no significant polluters, it considers that the air quality is good. The Contractor shall conduct a baseline measurement for air 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, we can find mostly facilities for residential purposes (houses) and business purposes (stores), which are exposed to the traffic noise and 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. So we can say that 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**

In the vicinity of the Project the dominant land use is for commercial and residential facilities of individual housing. Individual housing facilities mostly represent buildings which are mainly ground floor, one-story and two-story houses. Given that the bridge is situated near the city center, it can be said that many important public building are located in the vicinity.

In the wider area we can also find agricultural land of the first category, which includes high level soil quality (I and IV category of soil quality).

*Figure 7: Land use in the wider area of the project*

Source: PC Roads Federation of BH

## 5.7. FLORA AND FAUNA

The area of Central Bosnia Canton where the municipality of Bugojno is located, with geographic features of the terrain and large variety of ecosystem, it is considered that in the wider area reside over 4000 species of vascular plants many of which are endemic and relict, and more than 200 species of birds and other elements of the biodiversity.

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 bridge, and that almost all activities will be carried out within the existing footprint, the risk to the flora and fauna is minimal. However, considering that the works will be done within the watercourse, 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..

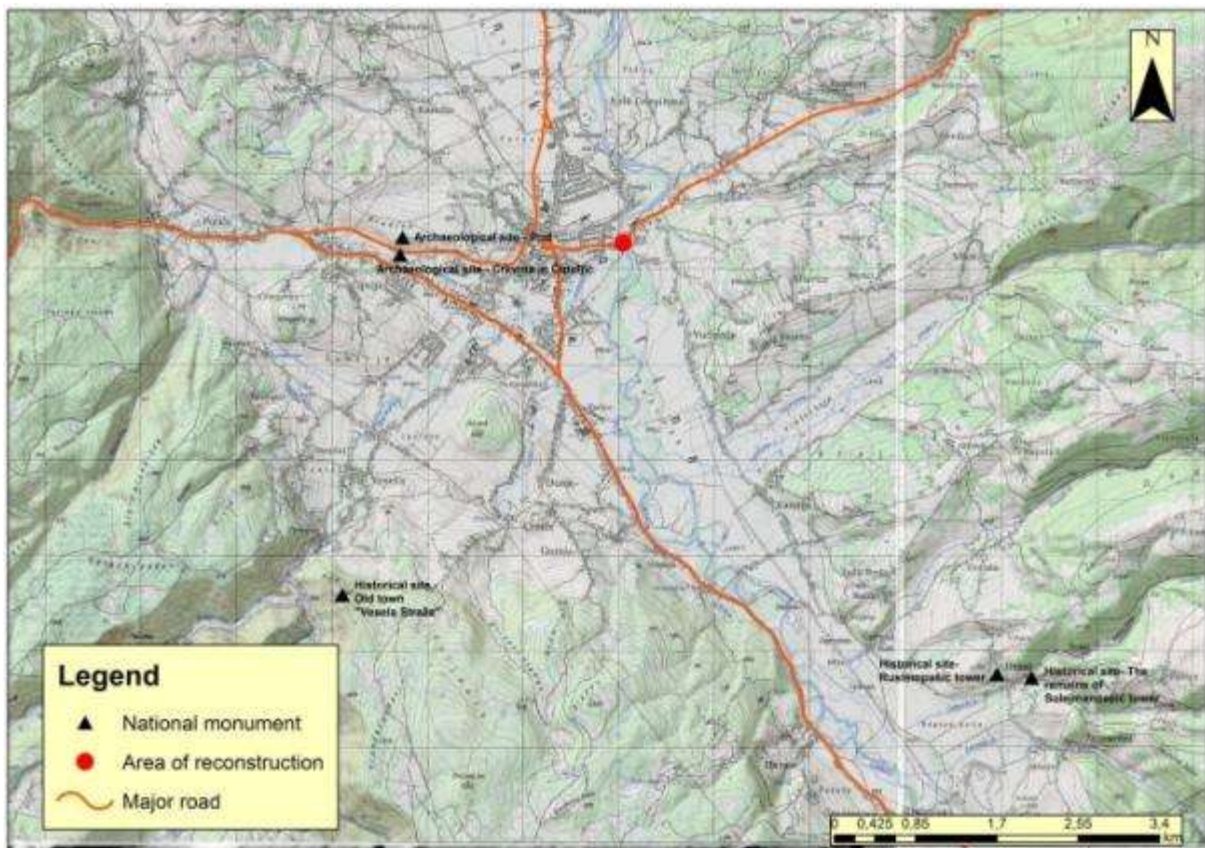
## 5.8. PROTECTED AREAS

The location of the Project is not located within a protected area. There are also no recorded archeological findings in the observed area.

Nearby there are several cultural – historical monuments. The nearest to the project site is a national monument „Archaeological site – Pod“, which is a prehistoric hillfort settlement with portable archaeological artifacts, and the national monument „Archaeological site - Crkvina in Čipuljić“. These monuments are located at a distance of about 2 kilometers from the location of the bridge.

Besides them, in the vicinity there are several national monuments: „Old fort of Vesela straža, the historic site“, „Rustempašić tower in Odžak, the historic building“ and Sulejmanpašić tower in Odžak, the site and remains of the historic building.

Figure 8: Cultural – historical heritage in the wider area of the Project



Source: Commission to Preserve National Monuments BiH

## **5.9. POPULATION**

The municipality of Bugojno has a population of 31.470 people, of which 15.635 women and 15835 men. It spreads on the area of 361 km<sup>2</sup>, and has a population density of 87,17 people/km<sup>2</sup>. It consists of 78 settlements organized in 27 local communities.

In comparison with FBH Bugojno is a low developed municipality with the GDP per person in 2009 being 3.460 KM, thus making it 24% smaller than the GDP in Central Bosnia Canton. The unemployment rate is 54%.

The town of Bugojno has primary as well as secondary health care. It also has 7 primary schools and 3 high schools. The project bridge represents the entrance to the urban area of the municipality thus making it an important path for the local community.

During the field screening and interviews with the local population it has been concluded that the bridge is of immense importance to the people inhabiting the close area around the envisaged project area. The majority of the population works and goes to school to the center of Bugojno and uses the bridge for everyday necessities.

The bridge represents a necessary connection point to all the services the town center is providing, such as, health, education, jobs.

## 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 bridge, although it is being demolished and rebuilt, has a clearly defined existing footprint. Although the width of the bridge is being expanded from 6,60 m to 9,30 m, no additional land is required to align the new bridge width with the existing road because the existing roads already aligned with standards and is of sufficient width.

### 6.2. IMPACTS DURING CONSTRUCTION

#### Impact on Air Quality

**Exhaust gases** - The machinery which is used during the construction and delays, i.e. traffic standstills on the road due to works on reconstruction of crossroads will lead to an increased emission of such gasses as SO<sub>2</sub>, CO<sub>2</sub>, CO, NO<sub>x</sub> and Pb.

**Dust generation**- where the most important pollutants are solid particles (PM<sub>10</sub> and PM<sub>2,5</sub>). Possible sources of dust generation include demolition works, site preparation activities, especially excavation and leveling, handling of building materials such as excavated earth/ substrate, gravel, sand, asphalt, cement and the construction itself.

#### Impact on Noise Level and Vibrations

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

#### Impact on Surface Water Quality

**Possible contamination of water**– Possible sources of water pollution are: demolition works and malpractice including inappropriate extraction of resource material, 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), painting of the fences, paving of the bridge etc. Negative impacts may occur due to accidental or careless deposition of toxic substances from the asphalt or toxic paints into watercourses.

#### Impact on Biological and Natural Resources

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

#### Impact on the Protected Areas

The observed project is not situated in any of the planned protected areas. The closest national monuments are the "Archaeological site – Pod", and the national monument "Archaeological site – Crkvina in Čipuljić". These monuments are located at a distance of about 2 kilometers from the location of the bridge. Considering the distance of the bridge from the national monument it is considered that the reconstruction of the bridge will not have any direct environmental impact on it.

#### Impact on Fish Habitat and Water Quality

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

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

#### 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 bridge - increased traffic load, leading to congestion and obstruction is likely to be experienced on local roads and on major road (M-16.4). This is especially expected during delivery of construction material to site and collection of waste from site. This is also an important issue in the summer months where the volume of traffic on this road substantially increases.

The impact is minimized by the construction of an alternative route over the river Vrbas as shown on figure 9.

Figure 9: Alternative route during construction period



Source: PC Roads FBH

### Population safety impacts

The local population might experience safety impacts in terms of an inadequately insured construction site.

### Temporary land occupation and damage to private property

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. It is expected that land alongside road owned by the investor will be used for this purpose.

For the purpose establishing an alternative route over Vrbas river during bridge reconstruction, it will be necessary to temporarily occupy a small part of one private land plot (land plot number 951/1, see table 3: Results of land screening process). The total area of the land plot is 3598 m<sup>2</sup>, while the area that has to be temporarily occupied equals 36m<sup>2</sup> (1 % of total land plot).

Temporary occupation will be agreed upon with respective owner and compensation will be paid in accordance with the provisions made in the RPF before the land is accessed. Before the beginning of construction works the owner will be notified about the need for temporary occupation, the extent of the temporary impact and his/her compensation rights in line with provisions in the RPF. Furthermore, the owner will be consulted about duration of the temporary occupation and possible temporary impacts. Compensation policy provisions defined in the RPF and applicable in the case of temporary impact include:

- Market price of lease for duration of the lease
- The land must be returned to original condition

- Improved quality of the land due to top soiling work should not be removed, except if agreed upon differently with project affected person
- Replacement cost in accordance with RPF entitlement matrix for affected crops, orchards, nurseries etc
- Compensation for any damages to the property

Additionally, according to the RPF, the Contractor is obliged to monitor and report any changes with respect to temporary land occupation carried out after construction commencement.

Parts (see table 3: Results of land screening process) of another 7 public land plots owned by the municipality of Bugojno will have to be temporarily occupied for the purpose of the construction of the alternative route across the river.

A walkover survey has been conducted on the 18<sup>th</sup> of August 2017 and it has been concluded that the public land necessary for the respective project activities is not used in any way, neither formally nor informally (see field pictures below, figure 10). Consultations with the municipality have been conducted the same day. The municipality agrees to the temporary occupation for the purpose of the reconstruction of the project bridge and agrees to cooperate during all of the project activities.

*Figure 10 (a-f): Photographs made during the walkover survey on the 18<sup>th</sup> of August, 2017*



*a) public land that will be used for the temporary route across the river*



*b) future connection point of the temporary route across the river and the existing main road*



*c) river Vrbas*



*d) existing bridge, poor pedestrian safety conditions*



*e) land that will be used for the temporary route*



*f) future connection point of the temporary bypass and the existing main road*

*Source: PC Roads of FBH*

Table 4: Land screening results

No.	Location (section)	Land plot no.	Type of impact	Category	Private / public (owner)	Total area of plot (m <sup>2</sup> )	% affected	Other assets (natural objects)	Other assets (auxiliary structures)	Economic / physical displacement
1	Bugojno (Bridge across Vrbas)	951/1	Temporary occupation of a part of land	Land plot	private	3598	1%	grass	no	no
2		946/1	Temporary occupation of a part of land	Land plot (road)	Public (Bugojno municipality)	1819	9%	n/a	n/a	n/a
3		948	Temporary occupation of a part of land	Land plot	public (Bugojno municipality)	866	10%	n/a	n/a	n/a
4		1851/12	Temporary occupation of a part of land	Land plot (River Vrbas)	Public (Agency for the Sava River Basin)	5833	3%	n/a	n/a	n/a
5		2532/2	Temporary occupation of a part of land	Land plot (River Vrbas)	Public (Agency for the Sava River Basin)	46016	1%	n/a	n/a	n/a
6		746	Temporary occupation of a part of land	Land plot	Public (Bugojno municipality)	1088	18%	n/a	n/a	n/a
7		316	Temporary occupation of a part of land	Land plot	Public (Bugojno municipality)	245	43%	n/a	n/a	n/a
8		315	Temporary occupation of a part of land	Land plot (Road)	Public (Bugojno Municipality)	1160	14%	n/a	n/a	n/a

**Access restrictions:** No access restrictions to nearby residential building or any other facilities is expected.

**Impact on cultural-historical heritage:** difficult access to the Archaeological site – Pod Archaeological site - Crkvina in Čipuljić; Old fort of Vesela straža, the historic site; Rustempašić tower in Odžak, the historic building, can be expected during construction because of increased traffic. Because of the existence of an alternative route it will be possible in all times, during construction, to access these cultural-historical sites.

**Impact on living conditions of local communities**

Following adverse impacts during construction are expected:

- Noise increase,
- Inappropriate disposal of construction waste (Detailed provisions for management of construction waste from the old bridge material should be provided in the WMP),
- 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 low due to the existence of an alternative route.

**Impacts on local traffic:** Local traffic will be increased (including heavy machinery and trucks) but an alternative route will be provided during the construction of the bridge, as seen on figure 9, thus decreasing the possibility of congestions, delays and restricted access.

### **6.3. IMPACTS DURING OPERATION AND MAINTENANCE**

Since this bridge 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:** According to the Table 1: Traffic prognosis for the main road M16, section obilaznica Bugojno 2- Nević Polje Traffic prognosis, an increase to the number of vehicles is expected during the first period of operational phase. Nevertheless, by the year 2040, the number of vehicles will be decreased by cca 50% in reference to the number of vehicles in 2015 (the latest AADT measurement data) , mainly due to the fact that Corridor Vc as well as the town's bypass will be constructed by that time.

Furthermore, an increase in speed of vehicles is expected due to the rehabilitation of the bridge during which all technical problems that were cause to lower speed of vehicles 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:

- Bridge improvement in the sense of constructive stability;
- Reduction of erosion (improvement of drainage);
- Improvement of transport system and accessibility of the local community to important institutions health, education, jobs etc.

- Improved access for vehicles, pedestrian and cyclist to national monuments in the vicinity;
- Safer traffic conditions for drivers by improving construction elements of the pavement structure and safety fence.
- Increase of pedestrian safety by reconstructing the pedestrian pavement on both sides of the bridge
- Less damages to vehicles,
- Better traffic flow.

## 6.5. ENHANCEMENT MEASURES

Table 5: Enhancement measures

Impact	Enhancement Measures	Cost Assessment (US\$)		Institutional Responsibility	
		Operative	Implementation	Operative	Implementation
▪ Traffic	<ul style="list-style-type: none"> <li>▪ Improved road and travel safety</li> <li>▪ Better traffic flow;</li> <li>▪ Increase of pedestrian safety</li> </ul>	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Socio-economic	<ul style="list-style-type: none"> <li>▪ New job and business opportunities for local construction workers and firms;</li> <li>▪ Better access for local community to necessary services such as jobs, education, health</li> </ul>	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Water	<ul style="list-style-type: none"> <li>▪ Improvement of the protection of the Vrbas River with improved and renewed hydro-isolation</li> </ul>	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Visual aesthetic and landscape	<ul style="list-style-type: none"> <li>▪ Improving visual aspects of the bridge and surrounding area.</li> </ul>	Included in construction works	Included in supervision	Contractor	PC Roads FBH

## 7. MITIGATION MEASURES

The purpose of this ESMP is to set forth mitigation measures associated with the environmental impacts identified for this given project activity. The mitigation measures are included in this section and summarized in *Table 5*. This chapter includes also the general provisions and mitigation measures that the contractor hired for this task will need to obey and/or perform. The requirements that the Contractor needs to follow, beyond the provisions of the ESMP, will be outlined in a number of planning documents (plans) that will be developed by the contractor prior to any start of works. 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<sup>6</sup>:

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

Additional request for the Contractor, as stipulated by ESMF and this ESMP, is to design and submit a detailed Traffic Management Plan (TMP) 30 days prior to commencement of

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<sup>6</sup> Ordinance on Construction Site Organization, Mandatory Documents on Site and Participants in Construction (Official Gazette of the FBH No. 48/09)

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, including principles for managing temporary occupation of land or access restrictions during construction. The RPF also serves as a guide for preparation of site-specific Resettlement Action Plans (RAPs), which are needed when resettlement or land acquisition is planned on a project. In this sub-project no land acquisition is expected, and therefore no RAP is needed.

## **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. 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 calculate the implementation of environmental and social mitigation measures into the overall cost.

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

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

## **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 from 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 Table 6. Environmental and Social Impacts Management Plan.

### **7.2.2. Health and Safety**

Works on the rehabilitation of the bridge may pose health and safety risks for construction workers and visitors to the construction site. Population near the construction site 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.

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<sup>7</sup> 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.

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<sup>7</sup> - *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*

- *and other Recommendations and EU directives*

- Appoint an environment, health and safety manager to look after the health and safety of the workers.

#### **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).

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.

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 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 construction of the bridge, include in TMP the following parts: detailed drawings of traffic solutions by showing all bypasses, temporary roads, temporary turns, necessary barricades, signalization/lighting, traffic signs etc.
- Ensure signs in strategic parts of traffic roads.
- Install and maintain a sign on each important crossroads, on roads which will be used during reconstruction works, which will clearly indicate the following data in a local language:
  - Location: station label and settlement name,

- Duration of construction,
- Period of the proposed bypass/alternative road,
- Map of the proposed bypass,
- Name and contact address/telephone number of responsible personnel,
- Name and contact address/telephone number of contractor,
- Sincere apology for the caused inconvenience.

TMP should include details about the following:

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

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

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

#### **7.2.4. 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.

#### **7.2.5. Land Acquisition, Involuntary Resettlement and Economic Displacement**

At this moment it is not expected that any private land will have to be occupied during construction for lodging machines and disposal of materials. However, if temporary occupation of private land is needed during construction, this will be handled in accordance with provisions determined in the RPF.

The contractor is responsible for keeping the works within the right of way. Construction activities may cause damage to land plots, fences and railings due to disposal of construction waste and heavy machinery parks. Before such activities occur, the land use has to be agreed upon with respective land owners and compensation has to be provided in accordance with provisions determined in the RPF.

### **7.3. MITIGATION MEASURES IN OPERATIONAL PHASE**

It is required from PC Roads FBH to undertake the instructions given in the Table 6. Environmental and Social Impacts Management Plan in operational phase.

### 7.4. SUMMARY OF MITIGATION MEASURES

Table 6: Environmental and Social Impacts Management Plan

Impact/Problem	Mitigation Measures	Cost Assessment (US\$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
<b>PRE-CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>Impacts on living conditions</li> </ul>	<ul style="list-style-type: none"> <li>Informing the local communities on the extent of works and duration prior to the commencement of construction work via local newspapers, the municipality’s notice board and website and via PC Roads’ website as soon as the contract is signed.</li> <li>informing road users via the construction site information board, and an information leaflet at the construction site</li> </ul>	Internal resources	Internal resources	PC Roads FBH	PC Roads FBH	<ul style="list-style-type: none"> <li>Impacts on living conditions</li> <li>Road users are regularly informed about construction works on roads via radio news and auto-moto club’s press releases.</li> </ul>
<ul style="list-style-type: none"> <li>Compliance with national legislation</li> </ul>	<ul style="list-style-type: none"> <li>Obtaining all necessary permits for Project implementation.</li> </ul>	Internal resources	Internal resources	PC Roads FBH + Project designer	Competent body for issuing the permit	<ul style="list-style-type: none"> <li>Compliance with national legislation</li> </ul>

Impact/Problem	Mitigation Measures	Cost Assessment (US\$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
<ul style="list-style-type: none"> <li>Restrictions on land use and damages on private property</li> </ul>	<ul style="list-style-type: none"> <li>Avoid private properties where possible;</li> <li>The Contractor will organization the construction site in collaboration and agreement with Bugojno municipality;</li> <li>In case occasional restriction on land occupation cannot be avoided, compensation will be provided to affected owners/users (application of RPF and RAP), as well as compensation for loss of the possibility to continue to use land as intended.</li> </ul>	Internal resources	Internal resources	Contractor + PC Roads FBH	PC Roads FBH	If occasional restrictions on land use cannot be avoided, it will be agreed upon with respective owner and compensation will be paid before the land is accessed
<ul style="list-style-type: none"> <li>Job creation and impacts on local business</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Informing business owners in advance about the construction works, in order to be able to plan the necessary road use, such as potential delays, accordingly (via local newspapers, the municipality's notice board and website and via PC Roads' website as soon as the contract is signed)</li> </ul>	Internal resources	Internal resources	Contractor + PC Roads FBH	Contractor + PC Roads FBH	Applicable if the Contractor needs new workforce.

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Impact/Problem	Mitigation Measures	Cost Assessment (US\$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
<b>CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Access restriction</li> </ul>	<ul style="list-style-type: none"> <li>▪ Implementation of the provisions on providing timely information to citizens through the media about upcoming construction works, expected duration of the works, alternative routes, etc 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 contract is signed</li> <li>▪ If access restriction cannot be avoided, the owner will be timely notified. The duration of the restriction will be agreed upon with respective owners. All applicable compensations will be paid according to the provisions in the RPF.</li> <li>▪ Implementation of TMP.</li> <li>▪ Clear signs posted. Notifications made through media or other road safety clubs on road closure.</li> <li>▪ Area where materials and equipment are stored are clearly marked and closed off to unauthorized access.</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	
<ul style="list-style-type: none"> <li>▪ Impacts on living conditions of local community;</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Implementation of TMP;</li> <li>▪ Implementation of CSOP;</li> </ul>	Included in construction works	Included in supervision	PC Roads FBH (providing information to the citizens) + Contractor(following the	Supervisory body*	

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

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Impact/Problem	Mitigation Measures	Cost Assessment (US\$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	<ul style="list-style-type: none"> <li>▪ Implementation of ESMP provisions.</li> </ul>			provisions of the TMP, CSOP, ESMP)		
<ul style="list-style-type: none"> <li>▪ Impact on the Vrbas River</li> </ul>	<ul style="list-style-type: none"> <li>▪ Infill must be controlled in order not to endanger the flow profile of the Vrbas River control</li> <li>▪ Ensure that the sandblasting of the bridge construction and demolition works are carried out with protective covers, so waste cannot reach the river; and that the dripping of paint is caught in tarps.</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	
<ul style="list-style-type: none"> <li>▪ Impact on fish habitat and water quality</li> </ul>	<ul style="list-style-type: none"> <li>▪ In order to avoid negative impacts the following mitigation measures can be used:                             <ul style="list-style-type: none"> <li>- Limit the execution of works outside the spawning fish season;</li> <li>- Ensure that concrete works are isolated from watercourses;</li> <li>- Ensure that dirty water from machines, during the rehabilitation works, is collected and disposed properly</li> <li>- Ensure that equipment is not washed near the watercourse.</li> <li>- Ensure that the sandblasting of the bridge construction and demolition works are carried out with protective covers, so waste cannot reach the river; and that the dripping of paint is caught in tarps.</li> <li>- Ensure no changes to the flow of the river are caused by diversions during works on foundations</li> <li>- Respect all protection provisions in line with the local regulations that call for protection of the Vrbas river</li> </ul> </li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	

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Impact/Problem	Mitigation Measures	Cost Assessment (US\$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	and riverbanks					
<ul style="list-style-type: none"> <li>▪ Impacts on local traffic (increase of local traffic, including heavy machinery and trucks), operation of roads with only one lane causing traffic delays and limited access</li> </ul>	<ul style="list-style-type: none"> <li>▪ Implementation of TMP;</li> <li>▪ Introduction of appropriate signalization and warning signs;</li> <li>▪ Timely information to public on traffic disruptions.</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	In collaboration with the local Ministry of the Interior Relations and BHAMK
<ul style="list-style-type: none"> <li>▪ Temporary occupation of privately owned land plots for the purpose of placement of staff, machines and material</li> </ul>	<ul style="list-style-type: none"> <li>▪ Avoidance of the use of private lands;</li> <li>▪ In case avoidance is not possible, implementation of RPF provisions on temporary occupation.</li> </ul>	Internal resources	Internal resources	PC Roads FBH	PC Roads FBH	
<ul style="list-style-type: none"> <li>▪ Air emissions:</li> <li>- exhaust gasses;</li> <li>- dust generation</li> </ul>	<ul style="list-style-type: none"> <li>▪ High quality fossil fuels (with low percentage of sulphur and lead) need to be used for construction machinery and equipment;</li> <li>▪ All machines and vehicles to be used in construction/ reconstruction/ rehabilitation activities must have use permit;</li> <li>▪ Vehicles need to be regularly maintained ;</li> <li>▪ Equipment with installed filters to reduce soot emission</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	

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

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Impact/Problem	Mitigation Measures	Cost Assessment (US\$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	needs to be used; <ul style="list-style-type: none"> <li>▪ When not in use the equipment and machinery need to be shut down;</li> <li>▪ Maximum speed of the vehicle on unpaved roads should be restricted to 20 km/h;</li> <li>▪ Moistening/ wetting the site to prevent dust occurrence (in areas with dry soils or where activities generate dust);</li> <li>▪ Sand and gravel materials need to be transported in covered trucks.</li> </ul>					
<ul style="list-style-type: none"> <li>▪ Increased level of noise and vibration:</li> <li>- noise emission and noise disturbance;</li> <li>- vibration</li> </ul>	<ul style="list-style-type: none"> <li>▪ Restriction of works to period of day only (period of day: 06:00 to 22:00, period of night: 22:00-06:00; or agreed with the local community)</li> <li>▪ In the case of noise complaints by local residents, simultaneous use of machines that generate noise over 70 dB needs to be limited;</li> <li>▪ In the case of noise complaints by local residents, number of trucks per day visiting the site needs to be reduced;</li> <li>▪ All machines and vehicles to be used in construction/ reconstruction/ rehabilitation activities must have use permit;</li> <li>▪ When not in use the equipment and machinery need to be shut down;</li> <li>▪ Maximum speed of the vehicle on unpaved roads should be restricted to 20 km/h.</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	
<ul style="list-style-type: none"> <li>▪ Emissions into water:</li> <li>- possible</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ensure there is an emergency plan to contain all leaks and spills that result from an accident.</li> <li>▪ Prevent any repairs, handling of machinery, fuels or</li> </ul>	Included in construction	Included in supervision	Contractor	Supervisory body*	

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Impact/Problem	Mitigation Measures	Cost Assessment (US\$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
contamination of surface water	lubricants in areas that are not designated for such use. <ul style="list-style-type: none"> <li>▪ Proper waste disposal and separation of hazardous waste is required, as well as the engagement of authorized companies for final waste disposal;</li> <li>▪ Oil and fuel collection systems to be fitted to prevent leakage;</li> <li>▪ Vehicles and machines need to be regularly maintained to prevent leakage.</li> </ul>	works				
<ul style="list-style-type: none"> <li>▪ Soil degradation and emissions to soil:</li> <li>- soil erosion;</li> <li>- soil contamination by oils, fuels and other hazardous substances</li> </ul>	<ul style="list-style-type: none"> <li>▪ Installation of drainage structures for proper drainage of water from construction site is required;</li> <li>▪ Proper waste disposal; separation of hazardous waste; engagement of authorized companies for final waste disposal;</li> <li>▪ Oil and fuel collection systems to be fitted to prevent leakage</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	
<ul style="list-style-type: none"> <li>▪ Degradation of biological and ecological resources:</li> <li>- destruction of aquatic habitat due to changes in water flow and quality in terms of sediment load</li> <li>▪ removal of vegetative cover</li> </ul>	<ul style="list-style-type: none"> <li>▪ Prevent and control oil, fuel, and chemical spillages that can find their way to the streams;</li> <li>▪ Works in the riverbed must be minimized and restricted;</li> <li>▪ Topsoil must be must be returned and re-vegetation must be performed after construction/ reconstruction/ rehabilitation activities are done;</li> <li>▪ The land determined for use by the Project can only be used for the construction activities and no other land is available for i.e. storage of building material, parking of the heavy machinery etc. in terms of soil disruption.</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	

Impact/Problem	Mitigation Measures	Cost Assessment (US\$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
<ul style="list-style-type: none"> <li>▪ Inadequate waste handling</li> </ul>	<ul style="list-style-type: none"> <li>▪ Implementation of WMP that shall ensure environmentally sound collection of waste, its storage, transport and final disposal, or reuse / recycling.</li> <li>▪ Construction waste management from the old bridge material should be done according to provisions given in WMP;</li> <li>▪ No hidden waste disposal will be allowed on site, including open burning of wastes.</li> <li>▪ The waste should be stored for a short period of time and should be removed as soon as possible.</li> <li>▪ The waste should be primarily recycled or reused where possible and then finally disposed</li> <li>▪ No open burning of wastes is allowed on site</li> <li>▪ All waste should be handed over to a licensed company or agent.</li> <li>▪ Disposal sites of construction material are determined by the municipality and should be handled in the most appropriate environmental manner.</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	+ local waste management operator
<ul style="list-style-type: none"> <li>▪ Inadequate workers safety</li> </ul>	<ul style="list-style-type: none"> <li>▪ Implementation of work safety measures:                             <ul style="list-style-type: none"> <li>- 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</li> <li>- Provide personal protective equipment,</li> <li>- Respect safety procedures,</li> <li>- Provide portable toilets,</li> <li>- Provide drinking water</li> </ul> </li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	

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Impact/Problem	Mitigation Measures	Cost Assessment (US\$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
<ul style="list-style-type: none"> <li>▪ Accidental situations i.e. spills, leakage of oils, fats, fuels and similar hazardous materials</li> </ul>	<ul style="list-style-type: none"> <li>▪ Implementation of Environmental Management Plan which includes:                             <ul style="list-style-type: none"> <li>- Spill Response Plan,</li> <li>- Emergency Preparedness and Response Plan.</li> </ul> </li> <li>▪ Implementation of Management Plan of Fire and Explosion</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	
<ul style="list-style-type: none"> <li>▪ Materials supply and transport</li> </ul>	<ul style="list-style-type: none"> <li>▪ Implementation of CSOP to ensure materials are transported in covered vehicles to reduce impacts on environment</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body**	
<ul style="list-style-type: none"> <li>▪ Paving of the bridges and painting fences on bridges</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ensure that the asphalt is not deposited on purpose or accidentally into watercourses;</li> <li>▪ Ensure that the sandblasting of the bridge construction is carried out with protective covers and the dripping of paint is caught in tarps.</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	
<ul style="list-style-type: none"> <li>▪ Impact to the flow profile of river Vrbas</li> </ul>	<ul style="list-style-type: none"> <li>▪ Works should be carried out in the period of low water;</li> <li>▪ Strictly control work of excavation around foundations;</li> <li>▪ Restrict the movement of vehicles in the river bed;</li> <li>▪ Excavated material cannot be disposed in the riverbed or on riverbanks.</li> <li>▪ No waste disposal in river.</li> <li>▪ No cutting off of flow of the river in entirety</li> <li>▪ Maintain high standard of protection of the riverbanks and river profile during works.</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	

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

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Impact/Problem	Mitigation Measures	Cost Assessment (US\$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
<b>CHANCE-FIND PROCEDURES DURING CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>Impacts on cultural heritage and/or UXO</li> </ul>	<ul style="list-style-type: none"> <li>If archaeological findings or other chance finds appear on or near construction site immediate work suspension and local authorities notification is required;</li> </ul>	Included in construction works	Included in supervision	Contractor	Supervisory body*	In case of finding cultural heritage, supervision is implemented by the competent institution
<b>OPERATION PHASE</b>						
<ul style="list-style-type: none"> <li>Problems due to lack of maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Regular road/bridge maintenance works</li> </ul>	Included in maintenance works	Internal resources	Contractor for maintenance works	PC Roads FBH	
<ul style="list-style-type: none"> <li>Contamination of river Vrbas</li> </ul>	<ul style="list-style-type: none"> <li>Installation of oil separators in accordance with EN ISO 858-1 and 858-2</li> <li>Regular maintenance of the water treatment system in accordance with Maintenance Department of PC Roads FBIH</li> </ul>					
<ul style="list-style-type: none"> <li>Decrease in road safety due to the increase of traffic</li> </ul>	<ul style="list-style-type: none"> <li>Regular maintenance of road safety equipment and signage</li> </ul>	Incl. in maintenance works	Internal resources	Contractor for maintenanc	PC Roads FBH	

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Impact/Problem	Mitigation Measures	Cost Assessment (US\$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
and speed				e works		

## **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 plan bellow.

The list for monitoring 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 7: 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
<b>PRE-CONSTRUCTION PHASE</b>								
▪ Job creation and impacts on local businesses	<ul style="list-style-type: none"> <li>▪ Number of employed persons from local communities</li> <li>▪ Timely informing the local communities</li> </ul>	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	<ul style="list-style-type: none"> <li>▪ Implementation of RPF provisions</li> </ul>	Construction site	Reports from contractor	Prior to construction and during construction when necessary	Included in construction contract	Included in construction contract	Contractor	Contractor
<b>CONSTRUCTION PHASE</b>								
▪ Access restrictions	<ul style="list-style-type: none"> <li>▪ Provided alternative access,</li> <li>▪ TMP in place,</li> <li>▪ Implementation of RPF, provisions on compensation procedures for businesses affected by access restrictions and livelihood restoration.</li> </ul>	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	<ul style="list-style-type: none"> <li>▪ CSOP in place,</li> <li>▪ Implementation of RPF provisions on compensation</li> </ul>	Construction site	Visual inspection +central	Prior to construction and random checks at	Included in supervision	Included in supervision	Supervisory body +	Supervisory body +

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US\$)		Responsibility	
					Implementation	Operative	Implementation	Operative
(agricultural plots, horizontal infrastructure, fences and railings) due to disposal of construction waste, work camps and parks of heavy machinery	procedures in case occasional land use cannot be avoided, compensation will be provided to affected owners/users ▪ grievances		grievance log	least once a week during the construction			PC Roads FBH	PC Roads FBH
▪ Impacts on local traffic (increase of local traffic, including heavy machinery and trucks, operation of roads with only one lane causing traffic delays and limited access)	▪ TMP in place ▪ Traffic patterns, ▪ Timely information to the citizens	On construction site and nearby	Visual inspection and inspection	random checks during the week	Included in supervision	Included in supervision	Supervisory body	Supervisory body
▪ Air emissions: - exhaust gasses; - dust generation	▪ Level of dust (amount of particles of sediment and floating particles) ▪ Emissions of exhaust gases from vehicles and equipment ▪ (SO <sub>2</sub> , NO <sub>2</sub> , dim and PM <sub>10</sub> )	Construction site	Measuring devices	As a baseline, during construction when needed and upon complaints by the citizens	-	500 USD/measuring	Contractor + Supervision	Authorized laboratory
▪ Increased level of noise and vibration: - noise emission - vibration	▪ Level of noise	In populated places near the construction site	Measuring devices	Upon order by supervisory organ or upon complaints by the citizens	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory
▪ Emissions into water: - possible contamination of	▪ Analysis of parameters of surface water quality: - Chemical analysis (PH, turbidity,	In watercourse near	Standard laboratory equipment	As a baseline and upon order by supervisory organ	-	1000 USD /measuring	Contractor +	Authorized laboratory

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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
surface water	conductivity, temperature, suspended particles, COD, BOD, ingredients with nitrogen) - Standard bacteriological analyses	construction site (Vrbas River) downstream	and methods of water quality monitoring	or upon complaints by the citizens			Supervision	
▪ Pollution of surface watercourses	▪ Presence of oil film in surface watercourses	In watercourse near construction site (Vrbas River) downstream	Visual inspection + Standard laboratory equipment and methods of water quality monitoring	Upon order by supervisory organ or upon complaints by the citizens	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory
Soil pollution	▪ Soil quality, including, PH, heavy metals, phosphorus, nitrogen, Na, Ca, salts	On representative plots of land near construction sites	Taking samples and standard laboratory analyses	As a baseline, 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 ▪ Placing protective covers during demolition works and sandblasting works	Construction site	Visual inspection, disposal records or receipts	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor

September 2017

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
			from landfills					
<ul style="list-style-type: none"> <li>Degradation of biological and ecological resources</li> </ul>	<ul style="list-style-type: none"> <li>Survey of the site for any endemic or endangered species</li> </ul>	In the zone of corridors of direct and indirect impacts	Field recordings and incorporation of the findings in the ESMP	As a baseline	-	-	Contractor	Authorized institution
<ul style="list-style-type: none"> <li>Waste management</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of WMP</li> </ul>	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

September 2017

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
▪ Accidental situations i.e. spills, leakage	<ul style="list-style-type: none"> <li>▪ Implementation of EMP which includes:                             <ul style="list-style-type: none"> <li>- Spill Response Plan,</li> <li>- Emergency Preparedness and Response Plan</li> </ul> </li> </ul>	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Materials supply	<ul style="list-style-type: none"> <li>▪ Implementation of CSOP (the origin of material, material approvals etc.)</li> </ul>	Construction site	Reports	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Material transport	<ul style="list-style-type: none"> <li>▪ Implementation of CSOP (the origin of material, licenses etc.)</li> </ul>	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Workers safety	<ul style="list-style-type: none"> <li>▪ Implementation of work safety measures (protection equipment, toilets, drinkable water etc.)</li> </ul>	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ River bed and river flow	<ul style="list-style-type: none"> <li>▪ Changes in the river flow, including flooding, water retention or complete cutting off of river flow during works.</li> <li>▪ Changes to the river banks</li> <li>▪ Disposal of wastes or materials on river banks or in river</li> <li>▪ Unauthorized activities being conducted within the river bed</li> </ul>	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor

September 2017

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
<b>OPERATION PHASE</b>								
<ul style="list-style-type: none"> <li>Water emissions</li> </ul>	<ul style="list-style-type: none"> <li>Analysis of the water quality parameters:</li> <li>Chemical analysis (PH, turbidity, conductivity, temperature, suspended particles, COD, BOD, ingredients with nitrogen, total fats and oils, mineral oils);</li> </ul>	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 Committee which will receive all grievances during Project implementation in accordance with grievance mechanisms as prescribed in the Environmental Management Plan and Environmental and Social Management Framework for the Program of Modernization of Major roads of the FBH (ESMF). 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 structures' management and maintenance. Regular and timely payment will be carried out in accordance with monitoring plan.

### **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: <http://www.ipcfbih.ba/ba/kontakti/kontakti.shtml>.

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

**9.2.2. Supervision Engineer to PC Roads FBH**

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

**9.2.3. 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 Bugojno after the WB and PC Roads FBH 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 on 07.02.2018. Public consultations were announced on the website PC Roads FBH and on the website of Bugojno Municipality on 07.02.2018. and on 09.02.2018. in local newspapers (Dnevni Avaz). The public consultations were held on 26.02.2018. in Bugojno, and the Minutes of the Public Discussion on ESMP is an Appendix 3 of this document. Public consultations were attended by 22 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.jpafbih.ba](http://www.jpafbih.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 reported two weeks prior to the beginning of works on the website of PC Roads FBH and in local newspapers, radio and television stations for disclosure. The schedules will provide information on the beginning and end of works, which can impact the affected groups (such as changes to traffic/water/ regime of electric energy supply and access, noise and dust due to construction works).

#### **10.2.1. 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 Bugojno 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.jpfbih.ba](http://www.jpfbih.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](mailto: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 recorded 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**

### **11.1. Environmental aspects**

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.

In the event that the domestic sewage is being released into the drainage system the competent authorities will be informed of this issue, since the responsibility over the wastewater collection system remains with the municipality. The Contractor will check these allegation prior of the start of works.

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<sup>8</sup>, 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.

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<sup>8</sup> 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

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 EMP included in the bidding documents may need to be subsequently updated after the consultations. The contractor will be obliged to follow the updated ESMP.

### **11.2. Social aspects**

- Agree upon temporary occupation with respective owners (for private and public land plots)
- Pay compensations in accordance with the provisions made in the RPF before the land is accessed.

**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?		
<ul style="list-style-type: none"> <li>• One-time incident/grievance – Date: _____</li> <li>• Happened more than once (How many times?) _____</li> <li>• On-going (currently experiencing problem)</li> </ul>		
What would you like to see happen?		
DATE:	SIGNATURE:	
RETURN THIS FORM TO:	<p style="text-align: center;"><i>CENTRAL FEEDBACK DESK</i></p> <p style="text-align: center;"><i>PC ROADS OF THE FBH</i></p> <p style="text-align: center;"><i>Terezija 54,</i></p> <p style="text-align: center;"><i>71000 Sarajevo</i></p> <p style="text-align: center;"><i>Note: All copies are returned to PIU</i></p>	

**APPENDIX 2. GRIEVANCE REGISTRATION TEMPLATE TABLE**

No.	Date of receipt	Type of grievance (concerning expropriation, construction work or other)	Description of grievance	Complainant		Date of acknowledgment of receipt	Description of actions undertaken	Date of solvation of grievance
				Status	Sex			

**APPENDIX 3. REPORT ON PUBLIC DISCUSSION**

JP Ceste Federacije BiH d.o.o. Sarajevo poziva sve zainteresirane subjekte, nevladine organizacije i stanovnike općine Bugojno i naselja koja gravitiraju području namjeravane rehabilitacije mosta preko rijeke Vrbas, da uzmu učešće u

**JAVNOJ RASPRAVI**

o nacrtu **Plana upravljanja okolišem i društvenim aspektima za projekat rehabilitacije mosta preko rijeke Vrbas**

koja će se održati u Bugojnu, u prostorijama općine Bugojno 26.02.2018. godine u 12.00 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 Bugojno.

Svi zainteresirani subjekti koji nisu u mogućnosti da prisustvuju javnoj raspravi mogu svoje sugestije i komentare dostaviti do 26.02.2018. putem e-mail adrese: [pimt@jpcfbih.ba](mailto:pimt@jpcfbih.ba).

**Dnevni red:**

1. Prezentacija Plana upravljanja okolišem i društvenim aspektima za projekat rehabilitacije mosta preko rijeke Vrbas
2. Pitanja, diskusija, odgovori i objašnjenja

**07.02.2018.**

Announcement of Public discussion in the Local Newspaper „Dnevni Avaz“ (09.02.2018.)

**sarajevski kanton** Dnevni avaz, petak, 2. februar/večera 2018. **13**

**NAHOREVSKA BRDA** Konačno imaju osnovne uvjete za život

# Mještani dobili vodu nakon tri decenije suhih slavina

Uvijek smo se patili, rekla Krežak • Vodom opskrbljeno 220 domaćinstava  
• Izgrađeno 6.000 metara vodovoda s izvora Klanice do rezervoara u naselju

**Nahorevska Brda: Ne mogu više dočekati da imamo vodu.** Pitka voda, nakon 30 godina čekanja, jače je potekla iz česme u kući Mirzade Pandžić. U Nahorevskim Brdima, naselju u općini Centar, njeko domaćinstvo sačeka je od 220 kuća sa još od dobila vodu.

- Ne mogu vjerovati da smo nakon toliko godina dočekali da imamo vodu. Nešto se više patiti - kazala je Pandžić.

**Prvi put imaju vodu za piti!**

**Vode nema još 105 kuća**

Kako se kazalo u Općini, u ovaj projekat uloženo je više od 2.000.000 KM. Načelnik Nedžad Aladžić istakao je da će ove godine voda doći do još 105 domaćinstava.

**Suze i nevjerica**

U suzama i nevjerici bila je Fata Krežak, koja u ovom naselju živi od rođenja. Za njenog života nikad nije imala vodu u kući osim ako je došla u grad.

Izgradnja vodovoda u Nahorevskim Brdima traje je posljednjih godina bitnija za stanovnike. A samo zahvaljujući oporosti mještana, s njihovim predstavnicima Filizeta Golića na čelu, i načelnika u Općini, ovaj projekat je završen. Izgrađeno je 6.000 metara vodovoda s izvora Klanice do rezervoara u naselju. **A.MISZMOVIC**

doznanje i drugih mještana. Decenijama nisu dobili ovaj slat, da imam vodu na česmani. Uvijek smo se patili, ali više, brala Boga, ne možemo. Moramo se nad nadoknuti na to da imamo vodu u kući - rekla je Krežak.

**Prava travakica**

Sreća nije krio ni Mehmed Bukarić, koji je, kako je rekao, pila vodu godinama.

**Fatmir: Ne mogu vjerovati**  
**Bukarić: Većim zadovoljan**  
**Krežak: Nećemo se više patiti**

**Konakovićevo pismo UNSA-i i Privrednoj komori Traži stručnjake da vode ZOI**

► Premijer KS Elmedin Konaković obogateo lističeg rada Skupštine i Nadzornog odbora ZOI 34 strukturne i vode odložio je zamjeniti stručnjake. Tako je izlazio prošlog dopis direktora Univerziteta u Sarajevu, Privrednoj komori i Udruženja poslodavaca KS da predlože stručne kadrove za upravljačke strukture, koji će činiti osnovu Skupštine ZOI-ja. U dopisu pisa da Vlada imena dostavi do 14. februara.

Ovo bi, inače, mogla biti uvertura u smjeni članova Skupštine, Nadzornog odbora i direktora preduzeća ZOI 34, čiji izvještaji radu Skupština KS na posljednjoj sednici nije usvojila. **F. SA**

**Mask: Džepni telefon poput fišerke**

**Ličnost dana** **Elon Musk**

## Iron Man stvarnog svijeta

Njegova raketa može ići do Marsa, pa čak i do najdalje planete u Sunčevom sistemu, Plutona

Elon Musk (Elon Musk), tehnološki izumitelj i milijardarder, u životu je prošao i dobru i lošu, poznato, ali se i digno poput fišerke.

Sada će u male historije ući kao osoba koja je lansirala najvažniju raketu na svijetu, vlastitu „Falcon Heavy“.

Privatna američka firma „SpaceX“ tako je ostvarila nova preokreticu, a sam Musk tvrdi da raketa može ići do Marsa, pa čak i do najdalje planete u Sunčevom sistemu, Plutona. Kaže da još pokušava shvatiti šta se dogodilo, jer mu sve izgleda nadvladano.

Lansiranje je koštalo 500 miliona dolara, a čak tri puta komparativno malo ujednažavajući projekat.

Musk je rođen 28. juna 1971. u Pretoriji. Na čelu je firmi poput „Tesla“ i „SpaceX“, a danas ga mnogi smatraju Iron Manom stvarnog svijeta.

Od oktobra 2017. Muskovo bogatstvo se procjenjuje na 21 milijardu dolara, čime se u 2017. postao 21. najbogatija osoba u Americi. **A. K.**

## Pravo na pomoć iz budžeta Novčana podrška porodicama i borcima

Porodice u decem i članovi porodica boraca u Općini Novo Sarajevo imaju pravo na dodatni za decem, a specijalni dodatni za invalidne borčanske djecu, decem bez jednog ili oba roditelja.

Majke koje nisu u radnom odnosu imaju pravo na jednokratnu pomoć za upravljanje novorođenčeta, prehranu djeteta do šest mjeseci života, subvencionirane dijelove troškova vanjskih bolničkih djeca u predškolskim ustanovama. Porodice mogu ostvariti pravo na isplatu po 50 KM mjesečno s iznosa od godišta, kao i na dodatni jednokratni naknadu za porodice po rođenju bliznaca, trećeg i četvrtog naravnog djeteta u iznosu od 500 KM po djetetu - kazali su iz Općine.

Kada je u pitanju borci i članovi porodica, oni imaju pravo na jednokratnu novčanu pomoć, oni čija primanja po članu domaćinstva ne prelaze iznos najniže penzije. **F. SA**

**United Nations Development Programme**

**United Nations Development Programme (UNDP)** is the UN's global development network, advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. If you are highly motivated, pro-active, energetic, enjoy challenges, enthusiastic, capable of working independently in a complex environment, we strongly encourage you to apply for the following national position in Sarajevo:

**Field Associate**

Detailed job description and UNDP Personal History Form (PH1 form) are available at UNDP Reception, Zmaj od Borne bb, Sarajevo or at [hr@undp.org](mailto:hr@undp.org). Interested candidates are invited to submit their online application including PH1 by 22 February 2018 through [www.banquo.org](http://www.banquo.org) only.

**JP CESTE FEDERACIJE BiH**

JP Ceste Federacije BiH d.o.o. Sarajevo poziva sve zainteresovane subjekte, fizičke, pravne, organizacije i ustanove općine Tešanj i naselja koja privremeno, privremeno rekonstrukcije mosta preko rijeke Vrbas, da se prijavljuju.

**JAVNOJ RASPRAVI**

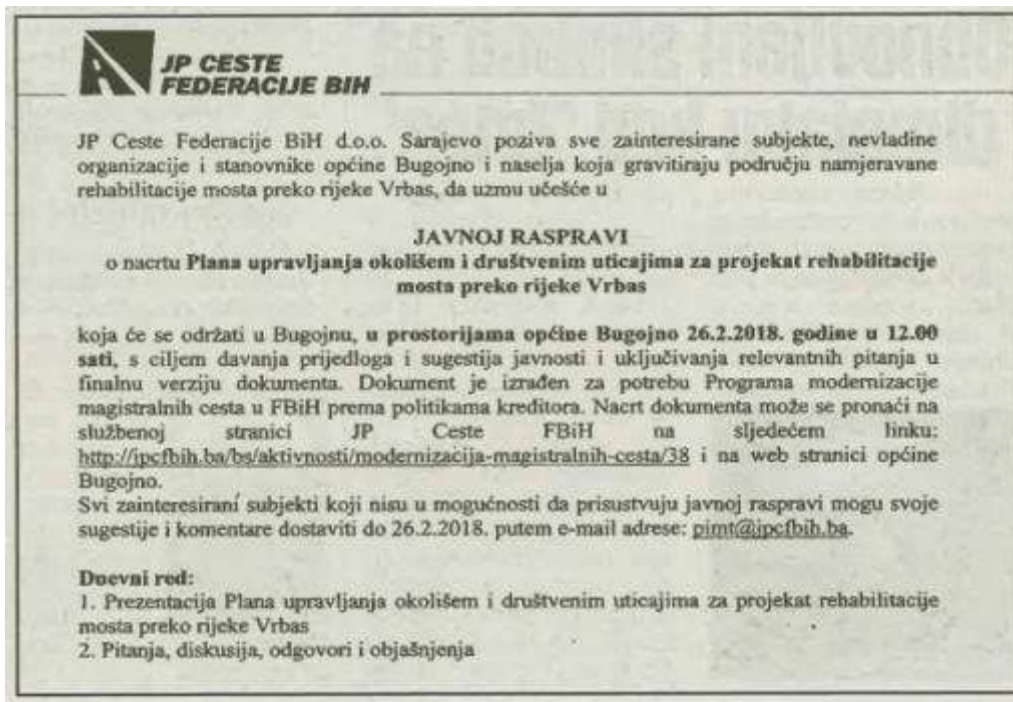
o izradi Plana upravljanja objektima i društvenim objektima za projekat rekonstrukcije mosta preko rijeke Vrbas

Koja će se održati u Sarajevu, u prostorijama općine Tešanje 26.2.2018. godine u 12:00 sati, u cilju davanja preporuka i sugestija javnosti i uključivanja zainteresovanih građana u finansijsku verziju dokumenta. Dokument je dostupan na portalu Programa modernizacije magistralnih cesta u FBiH prema linku: <http://www.mps.gov.ba>. Na isti dokument može se pristupiti na elektroničkoj stranici JP Ceste FBiH na adresi: <http://www.jpc.gov.ba> i na web stranici općine Tešanje: <http://www.tešanje.gov.ba>.

Svi zainteresovani subjekti koji žele učestvovati da pripreme javnoj raspravi mogu svoje sugestije i komentare dostaviti do 26.2.2018. godine e-mail adresom: [zaj@jpc.gov.ba](mailto:zaj@jpc.gov.ba)

**Dodatni podaci:**

1. Informacije Plana upravljanja objektima i društvenim objektima za projekat rekonstrukcije mosta preko rijeke Vrbas
2. Pitanja, dokumenti, 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

<http://jpcfbih.ba/bs/novosti/javna-rasprava-o-nacrtu-plana-upravljanja-okolisem-i-drustvenim-aspektima-za-projekat-rehabilitacije-mosta-preko-rijeke-vrbas/27>

Announcement of the Public discussion (B/H/S language) 07.02.2018.

[http://dev.jpcfbih.ba/assets/upload/dokumenti-modernizacija/ESMP\\_Vrbas.pdf](http://dev.jpcfbih.ba/assets/upload/dokumenti-modernizacija/ESMP_Vrbas.pdf) - Document (B/H/S language) 07.02.2018.

<http://jpcfbih.ba/bs/aktivnosti/modernizacija-magistralnih-cesta/38>

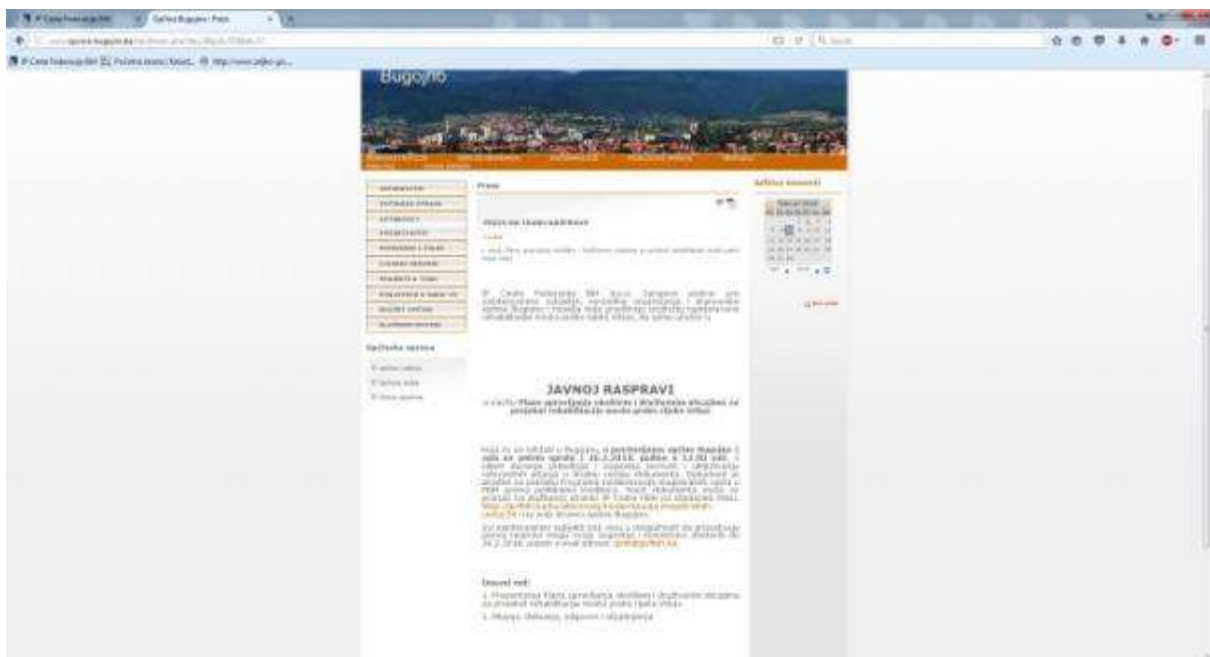
[http://dev.jpcfbih.ba/assets/upload/dokumenti-modernizacija/ESMS\\_Vrbas\\_EN.pdf](http://dev.jpcfbih.ba/assets/upload/dokumenti-modernizacija/ESMS_Vrbas_EN.pdf) - Document (English language) 07.02.2018.

<http://jpcfbih.ba/en/activities/modernization-of-main-roads/38>



2. Municipality of Bugojno – webpage

<http://www.opcina-bugojno.ba/ba/stream.php?sta=3&pid=53&kat=17> - 07.02.2018.



**MINUTES of Public Consultation Meeting on the draft Environmental and Social Management Plan of the Project of Rehabilitation of the Bridge over r. Vrbas**

Held on February 26, 2018 at 12 am in the business premises of Bugojno Municipality

The purpose of the public consultation meeting on the draft Environmental and Social Management Plan of the Project of Rehabilitation of the Bridge over r. Vrbas was to provide the public with the draft of the above document.

The public consultation meeting was organized by the Investor, PC Roads of the Federation of Bosnia and Herzegovina whose designated team was led by: Behudin Strojil - Project Manager, Selma Ljubijankić – PIT Member in charge of Project Social Aspects and Haris Zejnić – PIT Assistant for EIA Monitoring.

A list of all attendees is enclosed to these minutes.

These minutes were composed by Haris Zejnić.

**Welcome and Introduction:**

- **Selma Ljubijankić** welcomed the attendees and, on behalf of the Investor PC Roads of the Federation of BiH, presented the Investor's team. An overview of the Roads Modernization Program was presented, including the above document.
- **Haris Zejnić** introduced the attendees to the draft Environmental and Social Management Plan of the Project of Rehabilitation of the Bridge over r. Vrbas, including goals of its provision, mitigation measures of all potential identifies environmental and social impacts, monitoring plan, information disclosure, grievance mechanism, requirements regarding work commencement and other relevant information. He 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 pointed out 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.
- **Behudin Strojil**, project manager, presented an overview of the Project of Rehabilitation of the Bridge over r. Vrbas, describing the scope of works and their execution. The Project has been submitted for inspection, followed by explanation of bridge elements, characteristic profiles of the structure, technology of construction, drainage, etc.

Discussion session followed the introduction part.

- **Faris Brkić** is of the opinion that 20% of savings would be feasible if the existing bridge span were to be maintained. Namely, the spanning structure would be 17 m shorter (in total 44 m). With regards to the temporary bypass, Mr. Brkić is convinced that the one will be partially impacted by floods, so therefore the other variants should be used. He enquired whether the bridge will be at the same elevation or not.
- **Behudin Strojil** replied that the current bridge is built with the application of a Cantilever system that is quite weak. The new bridge is designed as a continuous and integral structure so that the proposed solution would be good in terms of bridging the dry obstacle. Also, it was emphasised that the hydraulic profile will be less expensive than the previous one, and the contractor will be obliged to maintain the bypass during the 6 months work period. It was further clarified that the bridge is at the same elevation. Late March is the anticipated period of works commencement.
- **Antunović Zdenko**, the assistant to the Federal Minister of Physical Planning, expressed his gratitude to the Bugojno Municipality and PC Roads for acting promptly in order to meet the demands of the local community, and stressed that this project would mean a lot for the municipality of Bugojno. From his point of view, this project is a beginning of the implementation of a bypass. Moreover, it was added that the term rehabilitation that came up in document title should be replaced by the term reconstruction as the rehabilitation means re-establishing the previous condition.
- **Selma Ljubijankić** replied that the term rehabilitation forms an integral part of the procurement plan as such, and for this reason, even though the suggested term reconstruction would be more adequate, terms rehabilitation will have to be maintained.
- **Boris Jokić**, Ekoelement Association enquired about the responsibility over monitoring, reporting and dealing with inquiries about waste water collector.
- **Haris Zejnić** replied that the implementation of the monitoring plan shall be assigned to works supervision body. **Behudin Strojil** further clarified that the supervision body is made of group of engineers to provide monitoring and what's more important for the local community is that there are at least three instances to address their complaints. Concerning the waste water drainage system, it was stated that a closed drainage system is foreseen, including the installation of a grease and oil separator to drain impurities and grease from the structure.
- **Edina Ćatić**, president of the local community Vrbas I enquired about the temporary bypass and traffic management plan during the works. She asked whether Trzići I Street will remain a main road or become a local road. It is commonly assumed that

one should re-establish the original condition of the road planned to be used as a bypass after completion of the works.

- **Behudin Strojil** replied that the road in question will remain the main road M16.4. He points out that base line survey of all the roads planned to be used as temporary bypass will have to be carried out and any potential damage will have to be repaired. The attendees were presented the alignment of the planned temporary bypass through the local community Vrbas I.

- **Dževad Hadžić** expressed his concern that the design is not in line with the town planning scheme of Bugojno, because there is a gas station currently under construction. It was suggested taking into consideration the width of the bridge exit.

- **Behudin Strojil** explained that the bridge fits the road vertical alignment and there will be no issue of this kind whatsoever. Any access to the main road must be approved by the PC Roads of the FBiH.

- **Hasan Ajkunić**, Mayor of the Municipality of Bugojno thanked the representatives of the PC Roads of the FBiH and other attendees for taking part in this discussion meeting, and underlined the importance the project has for the local community. He specially suggested taking into consideration the houses being close to the bridge in terms of granting their access.

- **Bakir Mešić** asked whether water supply will be interrupted during the works execution.

- **Behudin Strojil** clarified that all installations will be equipped with new and more modern bearings. Therefore, there will be no interruption in water supply.

- **Musić Nurfet**, a local entrepreneur, assumed that it's necessary for the PC Roads to redirect local freight traffic to foreseen temporary bypass in the local community Vrbas I because there are no other alternatives.

- **Behudin Strojil** replied that the previous statement favours the construction of temporary bypass over a designed by-pass that would allow communication and freight traffic, and he found the suggestion justified. Moreover, it was stated that variant of the bypass through the local community Vrbas I is unsuitable for freight traffic.

- **Faris Brkić** insisted on paying attention to adjust the horizontal curve to road conditions in order meet the minimum radii.

- **Behudin Strojil** clarified that the first part of the design of bridge, on the basis of which the structure has been designed, was the traffic management. Therefore, all the audits have been completed and the design was done adequately.

The public consultation meeting ended at 13.15 pm.

*Photographs of participants in the Public Consultations in Bugojno (premises of Bugojno Municipality)*





## List of Participants in the Public Consultations



Javna rasprava o Planu upravljanja okolišem i društvenim aspektima za projekat rehabilitacije mosta preko rijeke Vrbas, Bugojno, 26. februar 2018.g.

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