JP CESTE FEDERACIJE BIH

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR THE PROJECT OF THE CONSTRUCTION OF THIRD LANE FOR SLOW VEHICLES ON SECTION GORNJE BRAVSKO - KLJUČ (M-5)

October, 2017

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LIST OF ABBREVIATIONS

BH - Bosnia and Herzegovina

CFD - Central Feedback Desk

CSOP - Construction Site Organization Plan

EIB - European Investment Bank

EIA - Environmental Impact Assessment

EMP - Environmental Monitoring Program

ESMF - Environmental Social Management Framework

ESMP - Environmental and Social Management Plan

EP - Environmental Permit

FBH - Federation of Bosnia and Herzegovina

FMoET - Federal Ministry of Environment and Tourism

USC - Una Sana Canton

IFI - International Financial Institutions

MP - Main project

MPCA - Management Plan in Case of Accidents

OP - Operational Policy of the World Bank

PAP - Project Affected Person

PPE - Personal Protective Equipment

PC Roads FBH - Public Company Roads of the Federation of Bosnia and Herzegovina

RAP - Resettlement Action Plan

RPF - Resettlement Policy Framework

TD - Tendering Documentation

TMP - Traffic Management Plan

WB - World Bank

WMP - Waste Management Plan

*AEHS - **Annual Environmental Health and Safety***

EXECUTIVE SUMARY

INTRODUCTION AND OBJECTIVES OF THE ESMP

This Project of Construction of third lane for slow vehicles on major road M5, section Gornje Bravsko – Ključ (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. The project of construction of the third lane on the major road *M-5, section Gornje Bravsko – Ključ,* is screened as a category B project according to the triggered Operational Policies OP 4.01 on Environmental Assessment of the WB as well as the screening procedure outlined in the project-specific ESMF. As such, this activity needs to have an ESMP developed, whereas pursuant to the local legislation this project does not require a water permit, an environmental assessment or an environmental permit - whether federal or cantonal. PC Roads FBH will ensure all required local permits for this Project are obtained.

LOCATION AND TRAFFIC DESCRIPTION

The projected third lane is situated on the main traffic direction of Ključ municipality, on the major road M-5, section Gornje Bravsko - Ključ. This section of the major road M5 is used as a transit since it lies on the most important direction to the capital city of Sarajevo from the direction of the Una – Sana Canton. The area of reconstruction is located outside of the urban area of Ključ, and no residential, public or commercial facilities are situated near the project. The nearest relevant traffic count device is on main road M5 is located in Klenovac. 4 km west of the project location and it shows that, in 2015, 1659 vehicles were passing daily.

PROJECT DESCRIPTION

On the road M5 Bos.Petrovac – Ključ the increased involvement of heavy freight vehicles that at reduced speed on the grade disturb the vehicles that are behind them was noted, in the past period of exploitation. The existing road on the section Bos.Petrovac - Ključ meets the calculated speed of only 60 km / h. Along the route there are not settlements and only a few connections to local and forest roads are present on the route. The section Bosanski Petrovac - Ključ begins close to the connection of the local road for Lanište Ripač that is on the road chainage approx. 6+320. The designer aligned the curves with the existing elements on the track, the road extension is for the right (mostly hill) side because of the good characteristics of the material in the slopes and because of the steep slopes on the embankments of the existing road. During route survey, special attention was paid to the position of the shaft, so that the new route uses existing road and minimizes traffic disturbances during the construction.

The main project of the section: Ripač - Vrtoče is planned in part as a closed drainage system, i.e. all precipitation water is collected from the roadway with concrete gutters and

segment trenches and taken to a suitable recipient. Since this section of the M5 main road passes through the uninhabited area, it has been noted that there are no conflicts with the existing infrastructure. Main road M-5 Bihać - Bos.Petrovac - Ključ is one of the major main roads in Bosnia and Herzegovina as it connects Unsko-Sanski Canton with the rest of the Federation, and links Sarajevo to Zagreb and further to the EU.

BASELINE OF PARTICULAR INTEREST

The terrain of the Project is mostly with an attitude in the range from 400 to 800 meters above sea level. Meteorological station in Ključ, closest to the site of reconstruction, reports following data: the average multi-annual temperature is 10.2 °C, the warmest month is July, with an average perennial air temperature of 19.4 °C and the coldest month is January when the average perennial temperature is 0.0 °C. The average rainfall measured at the same meteorological station, during multi-year period is 1080 mm per year. Judging by the location of the Project, it can be concluded that the highest air pollution refers to the traffic of the major road. Waters of the wider area belong to the Black Sea watershed. There are no surface watercourses in the project area, and no monitoring of noise levels near the Project area was conducted; 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. The land in the vicinity of the project section needed for project activities is public property. Woodland is the dominant land cover type covering large areas in the wider area of the bridge according to the CORINE methodology. On site we can find beech and fir forests, forest of beech and fir with spruce and larch. None of them is an endangered species. The location of the Project is not located within a protected area according to the Spatial Plan of FBiH and Spatial Plan of Una – Sana Canton. There are also no recorded archeological findings in the observed area.

According to the Development Strategy of the Municipality Ključ, the municipality has the population of 22.121 people who live in 7038 households. The population density is 54 ppl/km^2 which makes this municipality sparsely populated. The project road lies on the west entrance to the town and center of municipality Ključ from the direction of the cantonal Center Bihać and thus has major importance for the local community. For the inhabitants of the of the entire municipality the road section represents the fastest and most convenient way to reach Bihać, the health care, educational and administrative center of the region. The importance of the project lies also in transit traffic because the road lies on the main road M5, one of the most important transit roads in FBH which connects the north-west with the south-east of the country.

IMPACTS DURING PRECONSTRUCTION

Socio economic impacts: this project envisages adding a third lane to the existing road on Section Gornje Bravsko-Ključ. These activities imply the expropriation of 9 publicly owned land plots. The walkover survey has been conducted on the 2nd of September 2017 and it has been concluded that the public land necessary for the respective project activities is not

used in any way, neither formally or informally. Consultations with the municipality have been conducted 3rd of August, 2017. The municipality agrees to the expropriation of public land for the purpose of construction of third lanes and agrees to cooperate during all of the project activities. Land acquisition process for public land is in fact administrative transfer of ownership since previous owner has no claims and no compensation will be paid.

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, impact on geomorphology, soil quality and land use, and trafic safety impacts. The contractor is bound by the provisions of this ESMP to conduct a baseline of the biological and natural resources specific to the site, and to adapt the measures of the ESMP and their work performance based on such findings.

Socio-economic impacts:

- At this time, it is not expected that it will be necessary to temporarily occupy any privately or publicly owned land plots for lodging machines and disposal of materials. Machines and materials will be disposed on land owned by the Investor.
- New business opportunities are expected to be created for local businesses such as transporters, suppliers and other service providers.
- Difficult access to the national park Una cca 40 kilometers away from the project section.
- Although the project area is uninhabited, and the closest inhabited arera is 3 kilometers east the following adverse impacts during construction are expected: Noise increase, Inappropriate disposal of construction waste, Local businesses can be affected in means of late delivery of goods and products.

MITTIGATION MEASURES

The mitigation measures focus on the major identified impacts during pre-construction and construction 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, impact on geomorphology, soil quality and land use, trafic safety impacts, waste management, impacts on living conditions and impacts on local traffic.

ENVIRONMENTAL MONITORING PROGRAM

The monitoring measures focus on the major identified impacts during pre-construction and construction 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, impact on geomorphology, soil quality and land use, trafic safety impacts, waste management, impacts on living conditions and impacts on local traffic.

IMPLEMENTATION AND REPORTING

PC Roads FBH is the implementer of the project and will be responsible for the implementation and compliance of the project in line with ESMP. The Contractor will be responsible for the implementation of the environmental mitigation measures during construction.

PUBLIC DISCUSION AND INFORMATION DISCLOSURE

Public consultation of the subject ESMP was organized in Ključ after the WB approved 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 results of the public consultation are incorporated into the final ESMP.

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 Ključ 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, soil quality data, survey and analysis of vegetation cover prior to the beginning and upon completion of works on construction site. The Contractor shall develop 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.

1. INTRODUCTION

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

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

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

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

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

4. Project Implementation Support: Construction supervision and capacity building of the PC Roads FBH.

This Project of Construction of third lane for slow vehicles on major road M5, section Gornje Bravsko – Ključ (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

The project of construction of the third lane on the major road *M-5, section Gornje Bravsko – Ključ,* is screened as a category B project according to the triggered Operational Policies OP 4.01 on Environmental Assessment of the WB as well as the screening procedure outlined in the project-specific ESMF. As such, this activity needs to have an ESMP developed, whereas pursuant to the local legislation this project does not require a water permit, an environmental assessment or an environmental permit - whether federal or cantonal[1]. PC Roads FBH will ensure all required local permits for this Project are obtained.

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

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

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

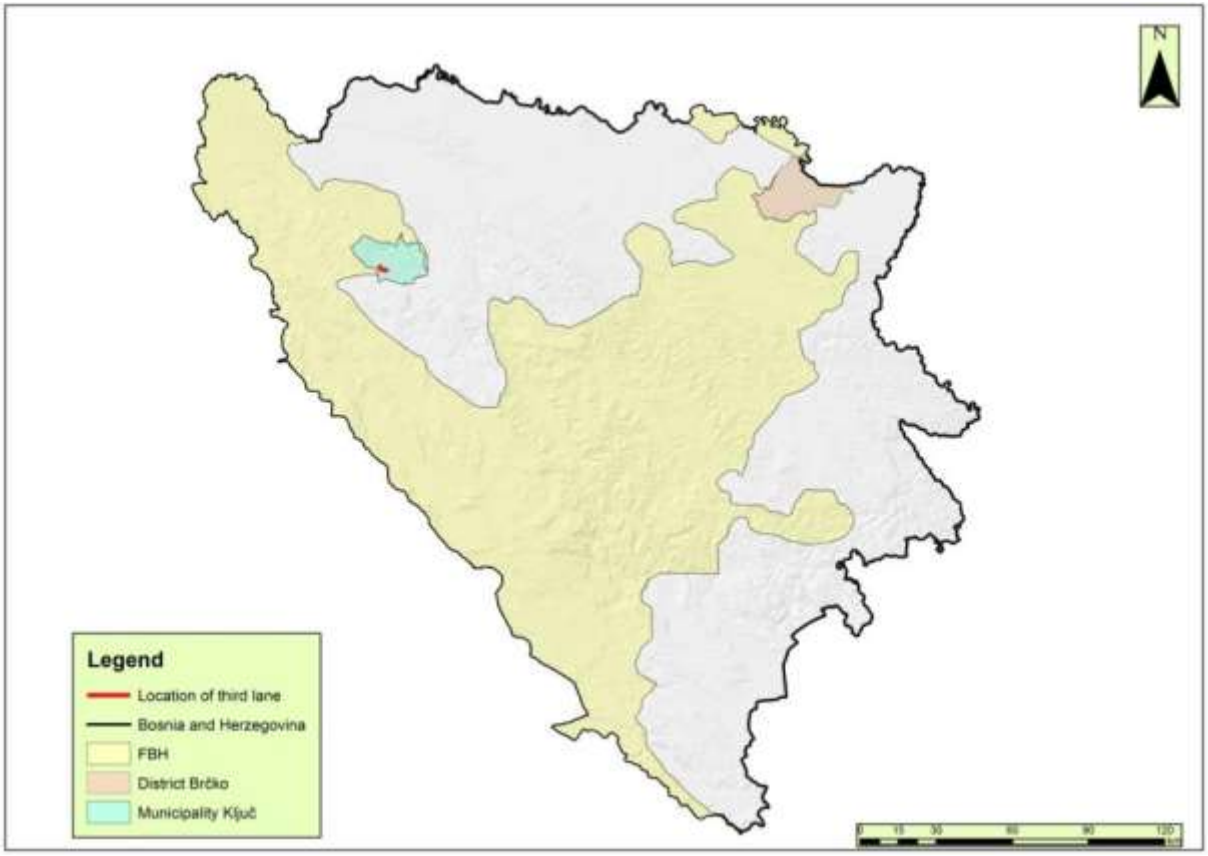
[1] *In FBH investments requiring EIA are identified by the Regulation on Plants and Facilities Subject to Obligatory Environmental Impact Assessment, and Facilities Which May be Constructed and Commissioned Only if Granted Environmental Permit (Official Gazette of FBH No. 19/04). In Una-Sana Canton 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 USC No. 18/07).*

limitation to these requirements, the Contractor shall prepare detailed list of mitigation measures and parameters to be monitored.

3. LOCAL DESCRIPTION

The projected third lane is situated on the main traffic direction of Ključ municipality, on the major road M-5, section Gornje Bravsko - Ključ. The major road M-5 connects the international border crossing Izačić near Bihać in the northwest of the country and Višegrad in the east of BH. In addition, the major road M-5 is part of the international E-road network E761 that connects Bihać in Bosnia and Herzegovina and Zaječar in Serbia.

Figure 1: The geographical location of the project



Source: PC Roads Federation of BH

The area of reconstruction is located outside of the urban area of Ključ, and no residential, public or commercial facilities are situated near the project.

This section of the major road M5 is used as a transit since it lies on the most important direction to the capital city of Sarajevo from the direction of the Una – Sana Canton.

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

Source: PC Roads Federation of BH

3.1. TRAFFIC DATA

PC Roads FBH has installed automatic traffic counting devices along the main traffic network throughout FBH. Automatic traffic counting is done since the 2005 and, last report[2] was published in 2016 with data for the previous year. The nearest relevant traffic count device on main road M5, located in Klenovac, 4 km west from the location of the project third lanes shows that, in 2015, the average annual daily traffic on the project location was 1659 (*Figure 3*). The other traffic count device in the vicinity of the project section is located in the town Ključ, 13 km east from the project section. It includes local, suburban and urban traffic thus making it not relevant for traffic analysis of the project section (the location of the project section implies that the impact of the project is greater for transit than for local traffic).

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

Figure 3: AADT in 2015

Source: PC Roads FBH, 2016

By the request of PC Roads FBH, traffic prognosis for the traffic network was developed by IPSA Institute Sarajevo in 2014[3] for the period 2013 to 2040. 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 M5, section Gornje Bravsko-Ključ

Major road	Section name	AADT									
		2016	2018	2020	2022	2023	2025	2030	2035	2037	2040
M 5	Gornje Bravsko-Ključ	1838	1923	1996	2120	2174	2355	2520	2666	2782	2965

Source: PC Roads FBH, 2014

An even and stable rise of the number of vehicles on the project section can be detected from table 1. The rise of the AADT in year 2040 will be almost 63% compared to the AADT in 2016 which shows the need for modernization with the aim of better traffic flow.

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

4. PROJECT DESCRIPTION

On the road M5 Bos.Petrovac – Ključ the increased involvement of heavy freight vehicles that at reduced speed on the grade disturb the vehicles that are behind them was noted, in the past period of exploitation. The exploitation speeds are low on the ascent of the existing road, which is particularly expressed among freight vehicles which cause accumulation of vehicles, reduce the level of services and affect the safety of the vehicles in traffic. As a result, it creates traffic jams, increases the exploitation costs and driving time.

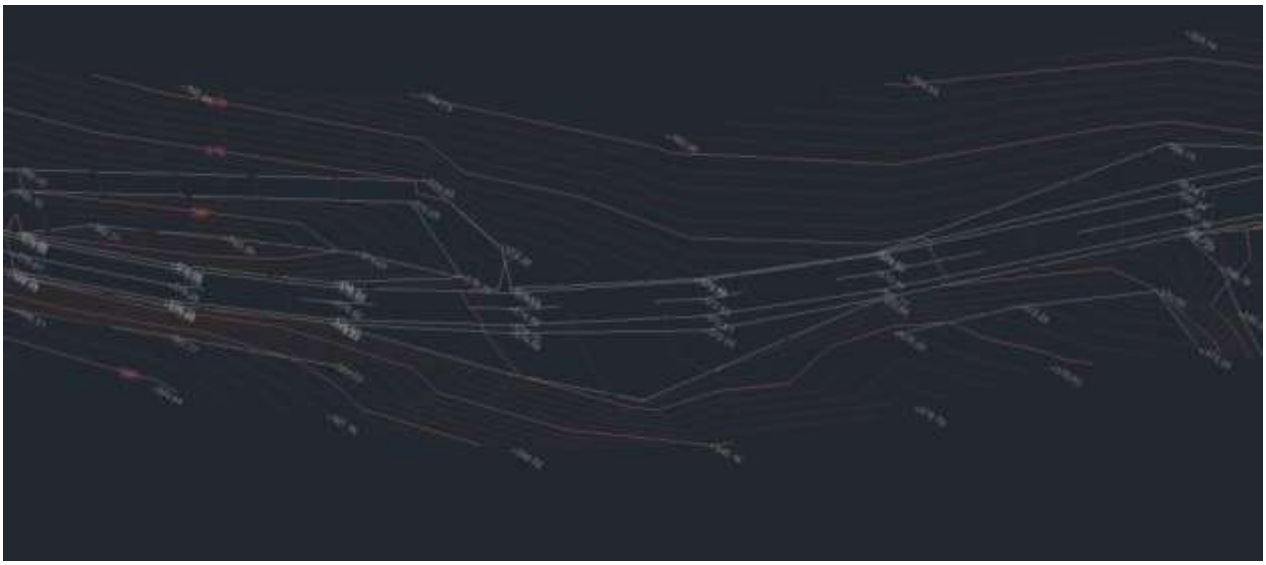
In order to reduce this impact it has been decided on building a third lane on the entire project section.

4.1. Existing road

The existing road on the section Bos.Petrovac - Ključ meets the calculated speed of only 60 km / h. The current route is in the fall towards Ključ with slopes between 0.5% and 7.0% while the width of the lanes is 7-8 m.

Along the route there are not settlements and only a few connections to local and forest roads are present on the route.

Figure 4: A sample of the existing road on section Gornje Bravsko-Ključ



Source: Except from Main Design, August 2015

4.2. New design

The section Bosanski Petrovac - Ključ begins close to the connection of the local road for Lanište Ripač that is on the road chainage approx. 6+320. The designer aligned the curves with the existing elements on the track, the road extension is for the right (mostly hill) side

because of the good characteristics of the material in the slopes and because of the steep slopes on the embankments of the existing road. During route survey, special attention was paid to the position of the shaft, so that the new route uses existing road and minimizes traffic disturbances during the construction.

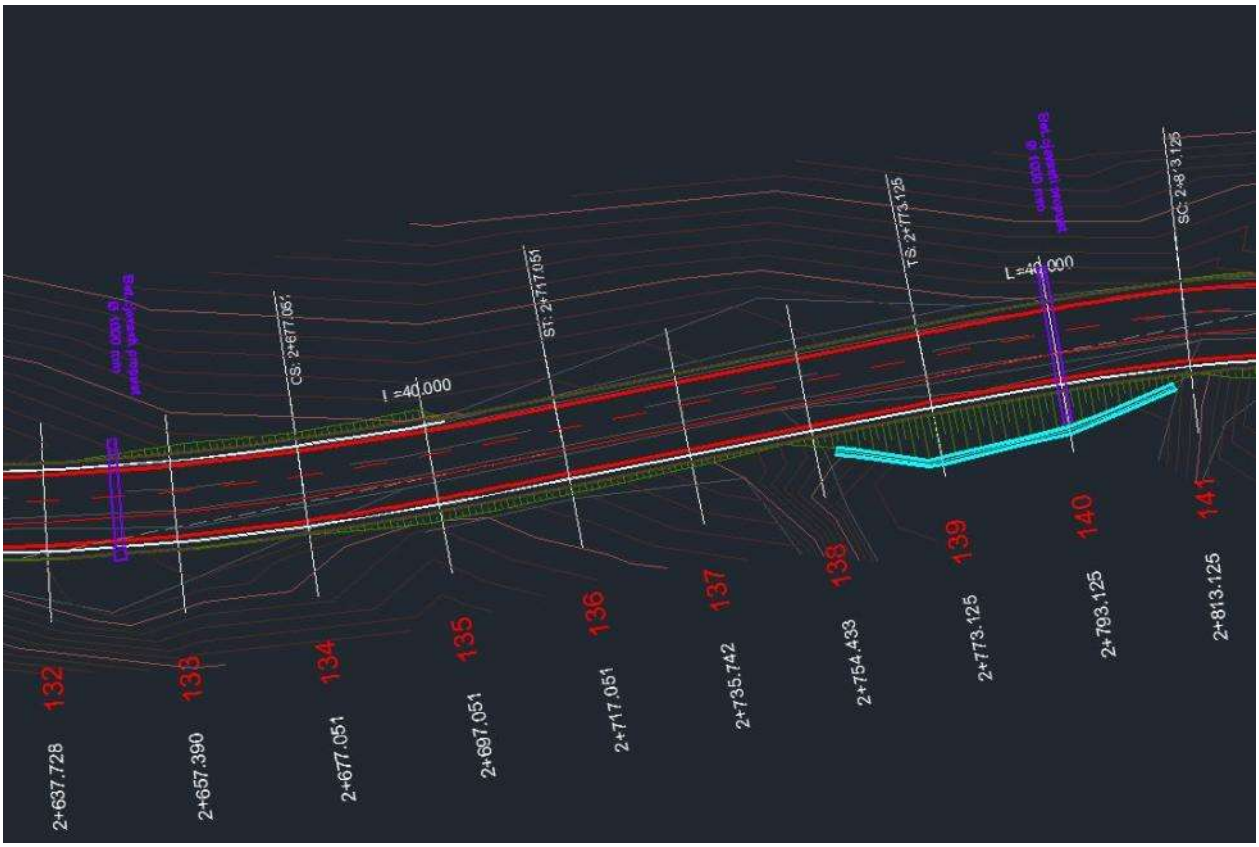
Road extensions in curves were calculated in combination with two trucks lorries and a passenger vehicle.

The main project of the section: Ripač - Vrtoče is planned in part as a closed drainage system, i.e. all precipitation water is collected from the roadway with concrete lorries and segment trenches and taken to a suitable recipient.

Since this section of the M5 main road passes through the uninhabited area, it has been noted that there are no conflicts with the existing infrastructure.

Main road M-5 Bihać - Bos.Petrovac - Ključ is one of the major main roads in Bosnia and Herzegovina as it connects Unsko-Sanski Canton with the rest of the Federation, and links Sarajevo to Zagreb and further to the EU.

Figure 5: A sample of the existing road on section Gornje Bravsko-Ključ



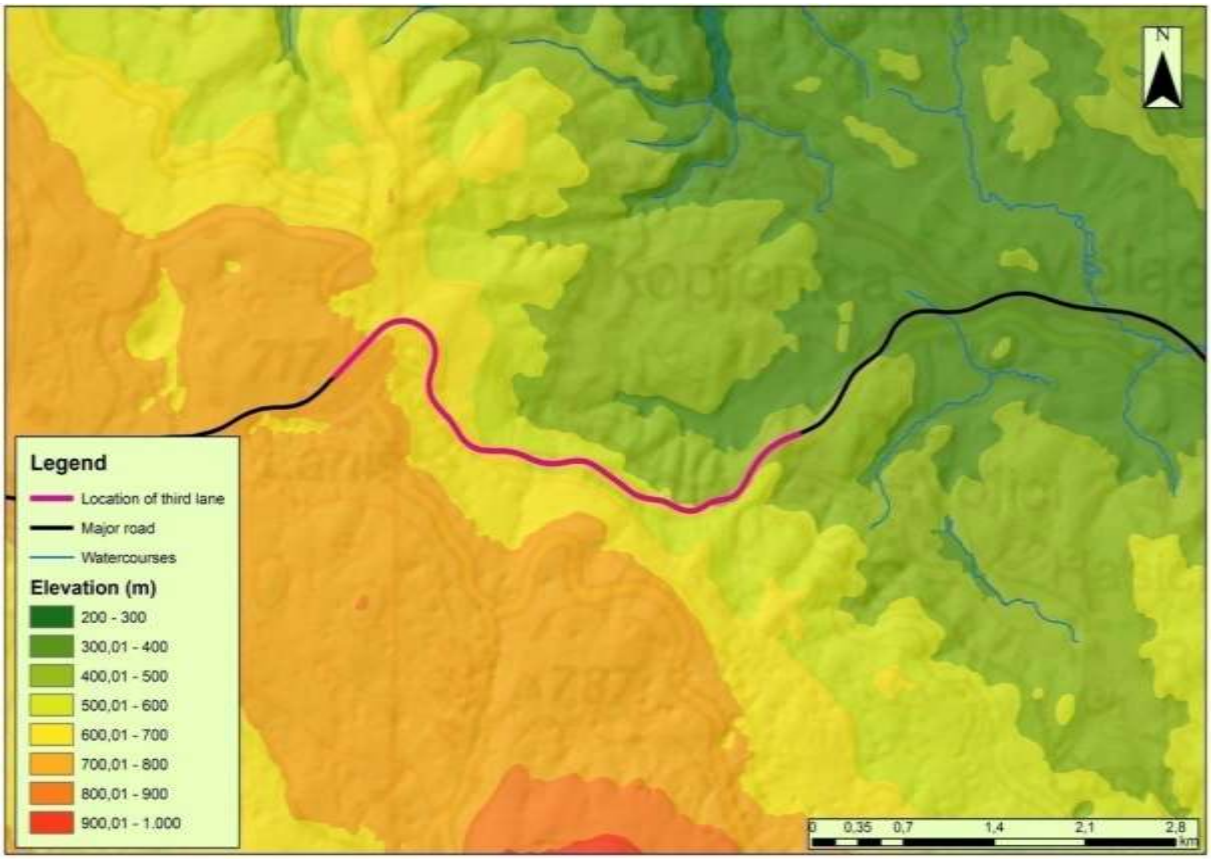
Source: Except from Main Design, August 2015

5. BASELINE OF PARTICULAR INTEREST

5.1. GEOGRAPHIC CONDITIONS

The terrain of the Project is mostly with an attitude in the range from 400 to 800 meters above sea level. In the wider area the altitude goes up to 1000 meters above sea level, as indicated in the next figure. From stratigraphic – petrographical point of view this area is composed from stable and well permeable rocks, and from structural geomorphological point of view this type of relief belongs to the karstic type of morphostructure. Aquifers are predominantly of fracture – cavernous porosity.

Figure 6: Geographical Map of Wider Area with the Project Location



Source: PC Roads Federation of BH

The geological structure of the area of reconstruction is characterized by lower and upper cretaceous sediments represented by layered dark-gray limestones with interlayer's of dolomite.

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

Source: Spatial plan of Una – Sana Canton 2012.-2032.

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 Ključ, closest to the site of reconstruction, reports following data: the average multi-annual temperature is 10.2 °C, the warmest month is July, with an average perennial air temperature of 19.4 °C and the coldest month is January when the average perennial temperature is 0.0 °C.

Table 2. Average temperature and precipitation for the multi-year period (1961.-1990.)

Month	*I*	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*	*X*	*XI*	*XII*	*Average*
Temperature (°C)	*0*	*2,3*	*5,8*	*10,2*	*14,4*	*17,5*	*19,4*	*18,9*	*15,6*	*10,9*	*6,1*	*1,7*	*10,2*
Precipitation (mm)	*69*	*69*	*79*	*100*	*100*	*116*	*97*	*87*	*93*	*83*	*99*	*90*	*1080*

Source: Spatial plan of Una – Sana Canton 2012.-2032.

The average rainfall measured at the same meteorological station, during multi-year period is 1080 mm per year. The rainiest month is June, when the average precipitation is 116 mm. The least precipitation occurs in January and February, only 69 mm on average. The annual rain regime of this area belongs to the continental pluviometric regime.

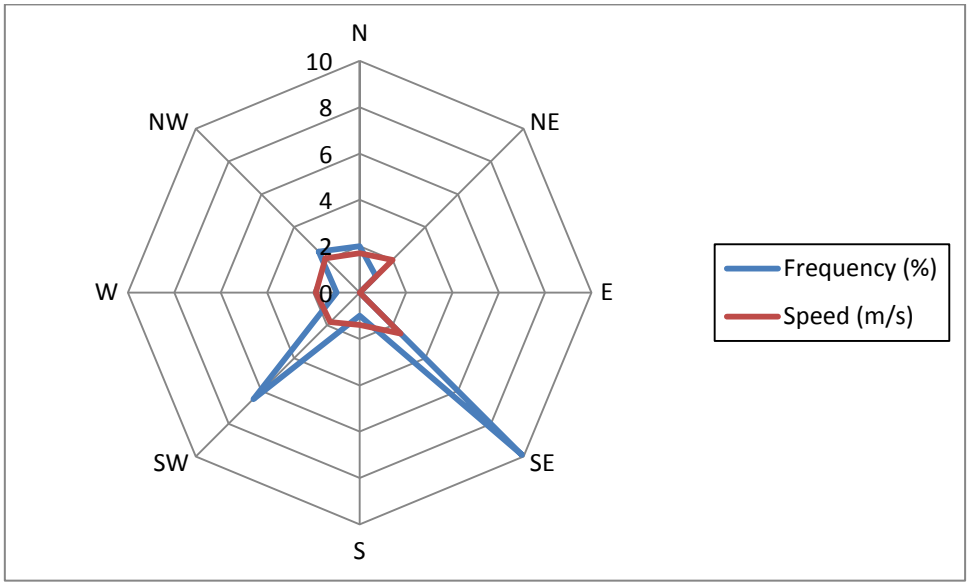
Table 3. Average wind speeds and frequency for the multi-year period (1961.-1990.)

Direction	*C*	*N*	*NE*	*E*	*SE*	*S*	*SW*	*W*	*NW*
Frequency (%)	*76*	*2,0*	*1,0*	*0*	*9,9*	*1,0*	*6,5*	*1,0*	*2,5*
Speed (m/s)	*-*	*1,7*	*2,0*	*0*	*2,5*	*1,4*	*1,8*	*1,9*	*2,1*

Source: Spatial plan of Una – Sana Canton 2012.-2032.

Wind roses depend on geomorphology, mountain ridges and the direction of the rivers. The dominant winds come from the southeast and southwest, but most of the time calms are present.

Figure 8. Wind roses from MS "Ključ"



Source: Spatial plan of Una – Sana Canton 2012.-2032.

5.3. AIR QUALITY

No particular monitoring of air quality for this location was performed, neither for the area of Ključ. 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.

5.4. WATER AND WATER QUALITY

Waters of the wider area belong to the Black Sea watershed. There are no surface watercourses in the project area. However, since the project lies on water-permeable karst, attention must be paid to specific measures aimed to protect the groundwater.

5.5. NOISE LEVELS

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

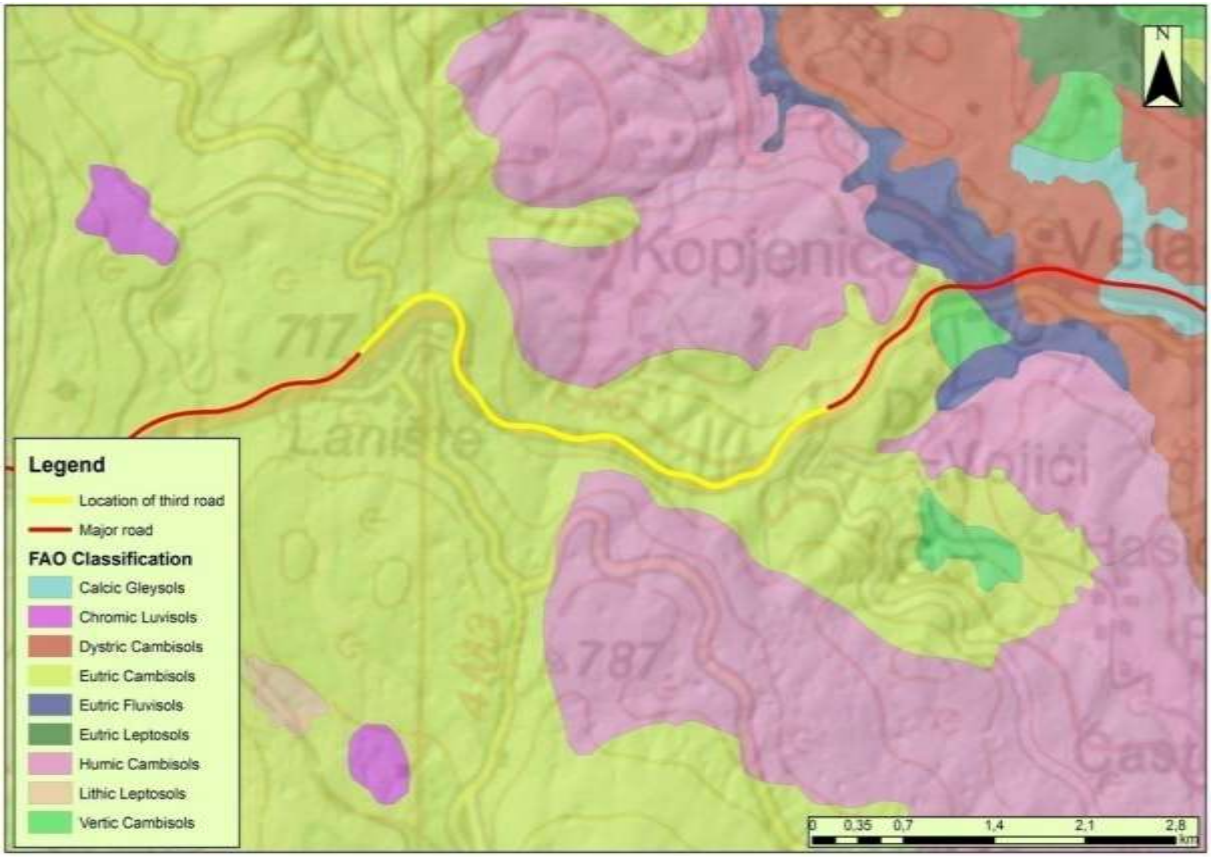
In close proximity to the Project area, , there are no facilities for residential (houses) and business purposes (stores), and according to the Law on Noise Protection, they fall under the sixth zone, where allowed noise levels are 70 dBA during day and 70 dBA at night. There are no sensitive receptors (hospitals, health resorts etc.) around the area that could be impacted by an increased noise level.

5.6. LAND AND LAND USE

The soil around the planned project represents automorphic soil in the form of eutric cambisols. Besides them, in the wider area we can find other automorphic soils such as humic cambisols and vertic cambisols, but also fluvial soils like eutric fluvisols.

The land in the vicinity of the project section needed for project activities is public property.

Figure 9: Soil map of the wider area of the project

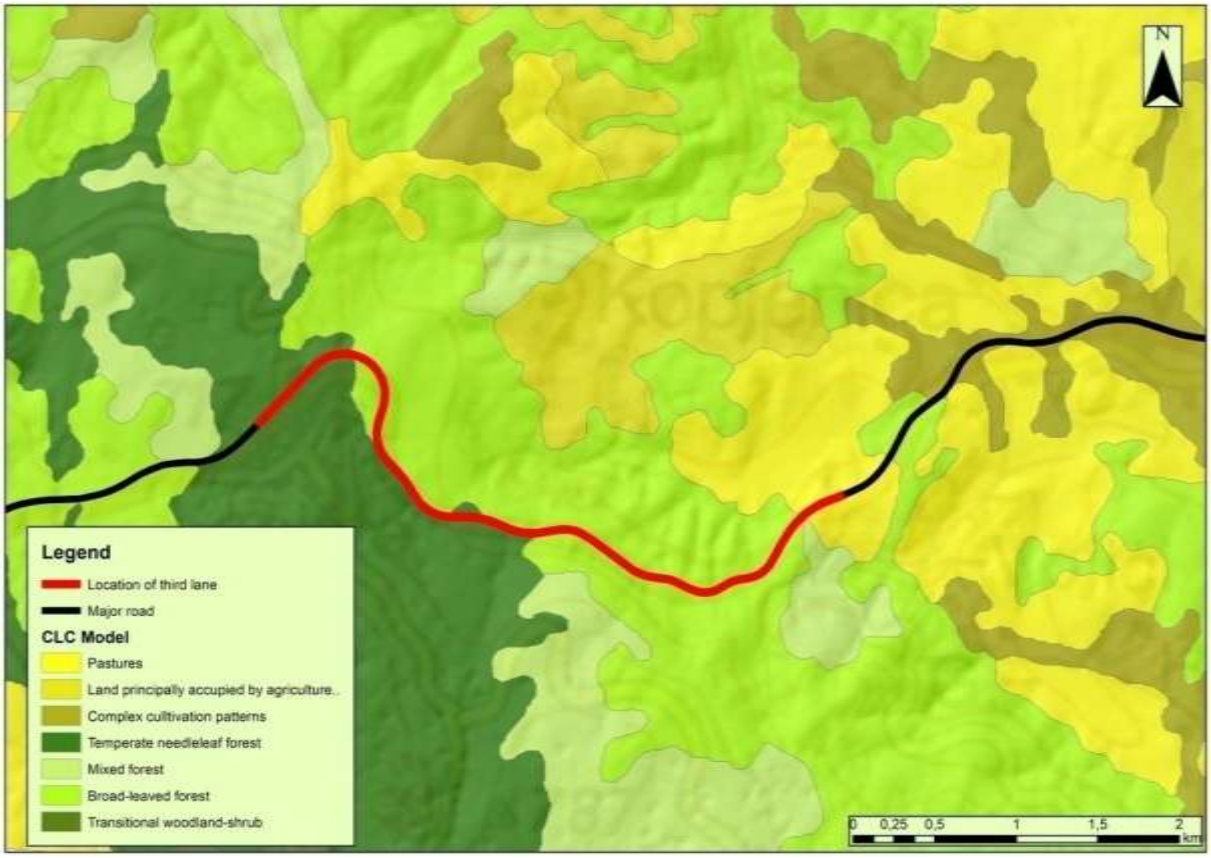


Source: Spatial plan of Una – Sana Canton 2012.-2032.

Woodland is the dominant land cover type covering large areas in the wider area of the bridge according to the CORINE methodology[4]. There are no residential or any other objects near the project site. No agricultural land or land of high importance is located in close vicinity of the site.

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

Figure 10: Land use in the wider area of the project according to CORINE model



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

5.7. FLORA AND FAUNA

According to the Development Strategy of the municipality Ključ, main representatives of flora in the area of the Municipality are various types of grasslands, artificially cultivated grass and clover-grass mixtures, herbs, artificially cultivated crops and vegetables plants, artificially grown fruits, trees, bushes and shrubs, herbs that provide useful berries and various kinds of edible and poisonous mushrooms. The forest has the following forest tree species: fir, beech, spruce, hornbeam, maple, ash, oak, pine, larch and linden tree acacia and willow in smaller quantities.

On site we can find beech and fir forests, forest of beech and fir with spruce and larch. None of them is an endangered species. However the Contractor shall hire a biologist to conduct a survey and analysis of vegetation cover prior to the beginning and upon completion of works on construction site.

5.8. PROTECTED AREAS

The location of the Project is not located within a protected area according to the Spatial Plan of FBiH and Spatial Plan of Una – Sana Canton. There are also no recorded archeological findings in the observed area according to Commission to Preserve National Monuments.

5.9. POPULATION AND SETTLEMENTS

According to the Development Strategy of the Municipality Ključ, the municipality has the population of 22.121 people who live in 7038 households (52% of that are male and 48% are female). The population density is 54 ppl/km^2 which makes this municipality sparsely populated in accordance with the average population density in FBH which equals 89 ppl/km^2.

The municipality of Ključ has three primary schools and one high school. The nearest university lies in Banja Luka in Republic of Srpska (cca 70 km away) and Bihać (cca 90km away). The health care system in the municipality is within the average of Federation BH with 810 people per one doctor. Primary and secondary health care as well as a public pharmacy and several private practices are present in the city. Only primary health care as well as one public pharmacy and two private dental practices are present in the city. The nearest secondary and tertiary health care centers are in Sanski Most (cca 30km away) and Bihać (cca 90 km away).

The project road lies on the west entrance to the town and center of municipality Ključ from the direction of the cantonal Center Bihać and thus has major importance for the local community. For the inhabitants of the of the entire municipality the project road represents the fastest and most convenient way to reach Bihać, the health care, educational and administrative center of the region.

The importance of the project lies also in transit traffic because the road lies on the main road M5, one of the most important transit roads in FBH which connects the north-west with the south-east of the country.

Figure 11: Distance of the project section to the nearest residence area

Source: Roads of FBH

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

6.1. IMPACTS DURING PRE-CONSTRUCTION

Socio-economic impacts

Land acquisition process: this project envisages adding a third lane to the existing road on Section Gornje Bravsko-Ključ. These activities imply the expropriation of 9 publicly owned land plots. After the public discussion, it was found that after land plot splitting, the number of publicly owned land plots for expropriation rose to 28.

The walkover survey has been conducted on the 2nd of September 2017 and it has been concluded that the public land necessary for the respective project activities, such as material and machinery storage, is not used in any way, neither formally or informally. Consultations with the municipality have been conducted 3rd of August, 2017. The municipality agrees to the expropriation of public land for the purpose of construction of third lanes and agrees to cooperate during all of the project activities.

Land acquisition process for public land is in fact administrative transfer of ownership since previous owner has no claims and no compensation will be paid.

Table 4: Land plots necessary for project activities

No.	Location (section)	Land plot no.	Type of impact	Category	Private / public (owner)	Total area of plot (m2)	Area that needs to be expropriated (m2)	Structure (commercial or residential)	Other assets (natural objects)	Informal use of land plot
1	**Ključ/Kopljenica**	717	Land Acquisition	Land plot	Public (PC Woods of USC)	400000	626(<1%)	no	wood	no
2[5]		722	Land Acquisition	Land plot	Public (PC Woods of USC)	Formal data unreliable	99 (-%)	Informal auxiliary structure used by woodkeepers	wood	no
3		1446	Land Acquisition	Land plot	public (PC Woods of USC)	400000	39(<1%)	no	wood	no
4		1447	Land Acquisition	Land plot	Public (owned by investor)	153682	n/a	no		no
5		1459	Land Acquisition	Land plot	Public (PC Woods of USC)	400000	341 (<1%)	no	wood	no
6		1477	Land Acquisition	Land plot	Public (PC Woods of USC)	6941592	2975 + 1827 (<1%)	no	wood	no
7		1479	Land Acquisition	Land plot	Public (PC Woods of USC)			no	wood	no
8		1485	Land Acquisition	Land plot	Public (PC Woods of USC)	400000	10(<1%)	no	n/a	no
9		1486	Land Acquisition	Land plot	Public (PC Woods of USC)	30000	11(<1%)	no	wood	no
10		1488	Land Acquisition	Land plot	Public (owned by investor)	40595	n/a	no	n/a	no
11	**Ključ/Vojići**	1052	Land Acquisition	Land plot	Public (owned by investor)	40595	n/a	no	n/a	no
12		1098	Land Acquisition	Land plot	Public (PC Woods of USC)	7896906	5471 (<1%)	no	wood	no
13		1178	Land Acquisition	Land plot	Public (owned by investor)	40595	n/a	no	n/a	no

Source: PC Roads of FBH

[5] Results of land screening determined that the total area of plot 722 (13-9 Austro-Hungarian old survey) is much larger than that identified by the municipality Ključ. The municipality has been informed of the mistake but it cannot be corrected due to the unreliable baseline survey. The approximate total area of the land plot is 6000 m^2. The informal auxiliary structure that is located on this land plot is approximately 200 meters away from the part that will be expropriated and the expropriation will have no impact on the structure.

Figure 12 (a-f): Photographs made during the walkover survey on the 2th of September, 2017

a) land alongside the project section

b) land alongside the project section

c) land alongside the project section

d) land alongside the project section

Source: PC Roads of FBH

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 construction of third lane will lead to a temporary increased emission of such gasses as SO_2,CO_2, CO, NO_X and Pb.

Dust generation- where the most important polluters are solid particles (PM10 and PM2,5). Possible sources of dust generation include demolition works, site preparation activities, especially excavation and leveling, handling of building materials such as 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 Groundwater Quality

Possible contamination of groundwater – may occur due to general construction activities and malpractice including inappropriate extraction of resource material, handling of hazardous substances (i.e. chemicals and paint), inadequate waste handling, liquid and solid equipment damage which may lead to leakage of lubricants and fuel (increased blurring, input of fats and oils) etc. These impacts can be avoided by working carefully and respecting the construction practices set forth in this ESMP, so the construction will not have a significant negative impact on the groundwater.

Impact on Geomorphology and Soil Quality

- Possible occurrence of rockfall depending on the type of terrain and stability of slopes;
- Erosion – removal of topsoil may poses risk from erosion of bare soil and enhances the impact of rainwater;
- Soil compaction due to construction machinery (vehicles and equipment for construction) moving around the location;
- Uncontrolled (storing, handling and depositing) and untreated waste is one of the major sources of pollution that can disrupt soil quality.

Impact on Land use

Construction of the third lanes may lead to:

- Conversion of present land use: from forest to construction land,

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

Impact on Biological and Natural Resources

- Work of heavy machinery during construction phase may lead to plants being covered with dust (e.g. blockage and damage to stomata, shading, abrasion of leaf surface or cuticle), which will affect plants growth and feeding base for animals;
- Pollution of soil with hazardous substances (fuel and oils in case of spills) can harm biodiversity of the surrounding area.
- Removal of a layer of vegetation may destroy animals' habitats.

Impact on the Protected Areas

- The observed project is not situated in any of the existing or planned protected areas, or in their close vicinity. No impacts on protected areas are expected.

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 project section, leading to congestion and obstruction is likely to be experienced on local roads and on major roads (M-5). This is especially expected during delivery of construction material to site and collection of waste from site. During the reconstruction of the lanes, one of the traffic lane will be closed for traffic therefore there will be decrease in traffic flow and possible standstills on the project section and surrounding area.

Socio-Economic Impacts

Temporary land acquisition and damage to private property: At this time, it is not expected that it will be necessary to temporarily occupy any privately or publicly owned land plots for lodging machines and disposal of materials. Machines and materials will be disposed on land owned by the Investor.

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

opportunities with opening new workplaces during road construction. This impact is considered to be short-term and small

Impact on Natural heritage: difficult access to the national park Una cca 40 kilometers away from the project section. Although the project section is the most convenient way to reach the national park from the south east part of Bosnia and Herzegovina this impact is minimized by the avoidance of full traffic stoppage throughout the entire construction period.

Impact on living conditions of local communities

Although the project area is uninhabited, and the closest inhabited area is 3 kilometers east the following adverse impacts during construction are expected:

- Noise increase,
- Inappropriate disposal of construction waste (Detailed provisions for management of construction waste should be provided in the WMP)
- Local businesses can be affected in means of late delivery of goods and products. The impact is short termed and low due to the fact that there will be no full stoppage of traffic during the construction

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

6.3. IMPACTS DURING OPERATION AND MAINTENANCE

Neither new negative environmental impacts, nor deterioration of existing negative impacts, during operation and maintenance are expected.

Socio-Economic Impacts

Impacts on traffic: According to Table 1: Traffic prognosis for the main road M5, section Gornje Bravsko-Ključ, an increase to the number of vehicles is expected during the operational phase. Accordingly, by the year 2040 the number of vehicles will be increased by cca 63% in reference to the number of vehicles in 2015 (the latest AADT measurement data) Furthermore, an increase in speed of vehicles is expected due the adding of the third lane.

6.4. POSITIVE IMPACTS

Project implementation 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:

- Adding third lane will improve the connection between the municipality and cantons in the area;

- Improved quality of life on the whole (better access to important institutions: health, education, job etc.);
- Additional third lanes for slow vehicles as a direct consequence will have better traffic flow and less congestion, what means the emissions from traffic pollutants shall decrease.
- Less damages to vehicles,
- Better traffic flow,
- Easier use of the road in winter conditions.

6.5. Enhancement measures

Table 5: Enhancement measures

Impact	Improvements to be achieved	Cost Assessment (US$)		Institutional Responsibility	
		Operative	Implementation	Operative	Implementation
▪ Traffic	▪ High improvement of drivers safety with constructing a separate lane for slow vehicles and enhancing drivers traffic visibility; ▪ Better traffic flow ▪ Reduction in time travel and cost by enhancing road surface, improving road and travel safety by building a third lane for slow vehicles, ▪ Easier use of the road in winter conditions.	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Socio-economic	▪ New job and business opportunities for local construction workers and firms; ▪ Better access for local community to the Cantonal Center where necessary services such as jobs, education, health are present	Included in construction works	Included in supervision	Contractor	PC Roads FBH
▪ Air and Soil	▪ Due to construction of third lanes for slow vehicles there will be less congestion, meaning the emissions of traffic pollutants will decrease what will as a result have better air quality and lesser soil pollution.	Included in construction works	Included in supervision	Contractor	PC Roads FBH

7. MITIGATION MEASURES

The purpose of this ESMP is to set forth mitigation measures associated with the environmental impacts identified for this given project activity. The mitigation measures are included in this section and summarized in *Table 6*. This chapter includes also the general provisions and mitigation measures that the contractor hired for construction of third lane 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[6]:

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

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

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

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

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

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

shall also include management of traffic according to the season, notably trying to minimize impacts during the summer months.

Within the framework of the project, PC Roads FBH prepared a Resettlement Policy Framework (RPF) which clarifies land acquisition/resettlement and compensation principles, organizational arrangements and procedures for planning land acquisition/resettlement. In this sub-project land acquisition of public land is expected while no private land plots will be expropriated.

7.1. MITIGATION MEASURES IN PRE-CONSTRUCTION PHASE

7.1.1. Contractor Management

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

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

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

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

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

- The Contractor will comply with applicable BH and FBH laws, EU standards and WB requirements, including the relevant Operational Policies, this ESMP, framework ESMF and the Environment, Health and Safety guidelines, where applicable.

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

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

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

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

The contractor shall:

- Ensure that all workers are required to comply with all national/federal legislation on labor and health and safety, as well as any other relevant standards including the World Bank Group EHS guidelines; and be held responsible if compliance is not met
- Be responsible for all activities undertaken by his subcontractors;
- Maintain regular effective two-way communication with all workers, sharing information and assisting in dealing with any unforeseen problems promptly.
- Exchange information and request any plans from sub-contractors which deals with significant health and safety hazards and risks created by or associated with their work activities.

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

During the construction phase, Contractors will be required to allocate the responsibility of overseeing day-to-day compliance with the SS ESMP to a senior member of staff. Contractors will be responsible for the implementation of all measures included in the SS ESMP for all activities undertaken in terms of the construction contract (including work undertaken by subcontractors). Compliance of Contractors with these measures will be assessed by the Construction Supervisor appointed by the JP Ceste FBIH, in line with the Decree on Construction Site Organisation, Mandatory Documentation on Construction Site and Construction Work Participants.

7.1.2. Land Acquisition of public property

This project envisages adding a third lane to the existing road on section Gornje Bravsko-Ključ. These activities imply the expropriation of 9 publicly owned land plots.

Land acquisition process for public land is in fact administrative transfer of ownership since previous owner has no claims and no compensation will be paid.

7.2. MITIGATION MEASURES IN CONSTRUCTION PHASE

7.2.1. Environmental Management

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

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

Compliance of Contractors with provision of ESMP will be assessed by the Construction Supervisor appointed by PC Roads FBH, in accordance with the Ordinance on Construction Site Development, Obligatory Documents on Construction Site and Participants in Construction Work (Official Gazette of the FBH, No. 48/09, 75/09 and 93/12).

Compliance reviews will be submitted by Contractor to PC Roads FBH on a monthly basis. Non-conformances, incidents and deviations from the ESMP will be communicated to PC Roads FBH, or the Supervisor, as soon as possible, within 24 hours form the time of occurrence, where PC Roads FBH shall react to the occurrence a.s.a.p. and impose corrective measures with a deadline for undertaking them.

All mitigation measures are specified in the Table 6. Environmental and Social Impacts Management Plan.

7.2.2. Health and Safety

Works on the rehabilitation of the project road section may pose health and safety risks for construction workers and visitors to the construction site. Population near the construction site and construction workers, as well as road users 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 of heavy machinery during the construction period.

Therefore, the Contractor is obliged to:

- Ensure that only properly trained/licensed people operate heavy machinery;

- Implement suitable safety standards for all workers and site visitors, which should not be less than those laid down in the international standards[7] in addition to complying with the national standards the FBH,
- Make sure basic safety features for visitors are in place, such as construction warning signs for protecting unsafe areas from being accessed or the obligation for every visitor to wear a helmet before entering the construction site
- Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular road rehabilitation activity and specific classes of hazards in the work areas,
- Provide personal protective equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty equipment and by replacing damaged equipment with new one.
- Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job.
- Appoint an environment, health and safety manager to look after the health and safety of the workers.

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,

[7] *- Occupational Safety and Health Convention, 1981 (No. 155)*

- Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)

- The Safety and Health at Work Directive 89/391/EEC

-World Bank Occupational Health and Safety Guidelines (April 30, 2007.)

- and other Recommendations and EU directives

- 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 reconstruction of the crossroads, include in TMP the following parts: detailed drawings of traffic solutions by showing all bypasses, temporary roads, temporary turns, necessary barricades, signalization/lighting, traffic signs etc.
- Ensure signs in strategic parts of traffic roads.
- Install and maintain a sign on each important crossroads, on roads which will be used during reconstruction works, which will clearly indicate the following data in a local language:
    - Location: station label and settlement name,
    - Duration of construction,
    - Name and contact address/telephone number of responsible personnel,
    - Name and contact address/telephone number of contractor,
    - Sincere apology for the caused inconvenience.

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

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

TMP should include details about the following:

- Construction plan by phases,

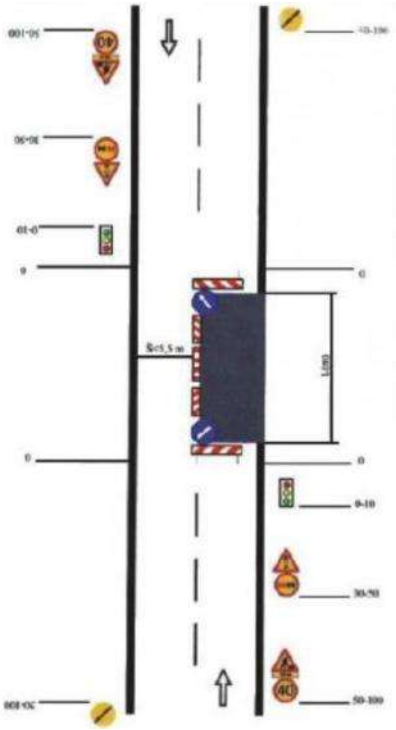
- Beginning and duration of works,
- Overview of the existing conditions near the construction site,
- Identification of affected areas,
- Mitigation measures
- Circulation plans, including zones of entry and exit, routes for towing of material, turnaround points, parking areas, zones of interlocking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

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

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

Road safety measures that will be in place during the reconstruction of the project road section include light and vertical traffic signage as shown on figure 14.

Figure 13: scheme of an example of road safety measures during the construction phase



Source: PC Roads Federation of BH

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 public or private land will have to be occupied during construction for lodging machines and disposal of materials.

On the project location mainly public land is present, thus if temporary land acquisition is needed during construction, this will be agreed upon with the municipality.

However, if temporary occupation of private land is needed during construction, this will be agreed upon with respective owners and the compensation will be paid in accordance with provisions determined in the RPF before the land is accessed. The contractor is responsible for keeping the works within the right of way.

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

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Job creation and impacts on local business	▪ Informing the public in advance about the construction works, in order to enable businesses and workforce in the area to prepare for the demand on the market via local newspapers, the municipality's notice board and website and via PC Roads' website as soon as the contract is signed ▪ Informing business owners in advance about the construction works, in order to be able to plan the necessary road use accordingly (via local newspapers, the municipality's notice board and website and via PC Roads' website as soon as the contract is signed)	Internal resources	Internal resources	Contractor + PC Roads FBH	Contractor + PC Roads FBH	
CONSTRUCTION PHASE						
▪ Access restriction	▪ Implementation of the provisions on providing timely information to citizens through the media about upcoming construction works, expected duration of the works, alternative routes, etc. via an information leaflet on the construction site, the local newspapers, the municipality's notice board and website and via PC Roads' website as soon as the contract is signed ▪ Implementation of TMP. ▪ Clear signs posted. Notifications made through media or other road safety clubs on road closure. ▪ Area where materials and equipment are stored are clearly marked and closed off to unauthorized access.	Included in construction works	Included in supervision	Contractor	Supervisory body*	

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

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

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

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

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
	permit; ▪ When not in use the equipment and machinery need to be shut down; ▪ Maximum speed of the vehicle on unpaved roads should be restricted to 20 km/h.					
▪ Emissions into groundwater: - possible contamination of groundwater	▪ Ensure there is an emergency plan to contain all leaks and spills that result from an accident. ▪ Prevent any repairs, handling of machinery, fuels or lubricants in areas that are not designated for such use. ▪ Proper waste disposal and separation of hazardous waste is required, as well as the engagement of authorized companies for final waste disposal; ▪ Oil and fuel collection systems to be fitted to prevent leakage; ▪ Vehicles and machines need to be regularly maintained to prevent leakage.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Soil degradation and emissions to soil: - soil erosion; - soil contamination by oils, fuels and other hazardous substances; - occurrence of rockfall.	▪ Control during earthworks to prevent degradation of terrain stability is required; ▪ Proper waste disposal; separation of hazardous waste; engagement of authorized companies for final waste disposal; ; track of the final disposal sites especially for removed asphalt; note/record of the waste amounts; ▪ Oil and fuel collection systems to be fitted to prevent leakage	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Conversion of the area and conversion	▪ The land determined for use by the Project can only be used for the construction activities and no other land is	Included in construction	Included in	Contractor	Supervisory	

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
of present land use: - changes in land use; - deforestation;	available for i.e. storage of building material, parking of the heavy machinery etc. in terms of preventing land disturbance. ▪ Oil and fuel collection systems to be designed to prevent leakage; ▪ Rehabilitate deforested areas after completion of works. ▪ Replacement afforestation activities for the areas where forest/trees will be removed to compensate for the third lane; ▪ All trees will be removed in cooperation with the responsible authorities who will manage the lumber.	works	supervision		body*	
▪ Removal of vegetation cover and topsoil, degradation of biological and ecological resources at the construction site; ▪ Decrease in the current aesthetic value of the landscape (construction site); ▪ removal of vegetative cover.	▪ Prevent and control oil, fuel, and chemical spillages that can find their way to the ground water; ▪ Topsoil must be must be returned and re-vegetated after construction activities are done; ▪ Planting ligneous plants around roads and adjacent areas can help to support local flora and fauna; ▪ All trenches up to 0,5 m of depth must be sloped or have ramps in case of necessity for animals' exit. All trenches shall be checked whether there are any animals before covering them with soil; ▪ Seeding, planting and re-vegetation with autochthonous species should cover areas affected by the Project; ▪ The land intended for the Project needs can only be used for the construction activities and no other land is available for i.e. storage of building material, parking of the heavy machinery etc. in terms of soil disruption.	Included in construction works	Included in supervision	Contractor	Supervisory body*	

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Inadequate waste handling	▪ Implementation of WMP that shall ensure environmentally sound collection of waste, its storage, transport and final disposal, and primarily reuse / recycling. ▪ No clandestine waste disposal will be allowed on site, including open burning of wastes. ▪ The waste should be stored for a short period of time and should be removed as soon as possible. ▪ The waste should be primarily recycled or reused where possible and then finally disposed ▪ No open burning of wastes is allowed on site ▪ All waste that cannot be reused should be handed over to a licensed company or agent (amounts are to be recorded as well as types of handling actions). ▪ Disposal sites of construction material will be determined by the municipality and should be handled in the most appropriate environmental manner.	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Inadequate workers safety	▪ Implementation of work safety measures: - Provide workers with a safe and healthy work environment as defined in the Occupational Health and Safety Management Plan (OHSMP), developed as a part of the Construction Site Organization Plan (CSOP) that will be developed for the Project - Provide personal protective equipment, - Respect safety procedures, - Provide portable toilets, - Provide drinking water	Included in construction works	Included in supervision	Contractor	Supervisory body*	

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
▪ Accidental situations i.e. spills, leakage of oils, fats, fuels and similar hazardous materials	▪ Implementation of Environmental Management Plan which includes: - Spill Response Plan, - Emergency Preparedness and Response Plan. ▪ Implementation of Management Plan of Fire and Explosion ▪ Implementation of Labor Protection Law	Included in construction works	Included in supervision	Contractor	Supervisory body*	
▪ Materials supply and transport	▪ Implementation of CSOP to ensure materials are transported in covered vehicles to reduce impacts on environment	Included in construction works	Included in supervision	Contractor	Supervisory body*[*]	
CHANCE-FIND PROCEDURES DURING CONSTRUCTION PHASE						
▪ Impacts on cultural heritage	▪ If archaeological findings or other chance finds appear on or near construction site immediate work suspension and local authorities notification is required;	Included in construction works	Included in supervision	Contractor	Supervisory body*	In case of finding cultural heritage, supervision is implemented by the competent institution

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

Impact/Problem	Mitigation Measures	Cost Assessment (US$)		Institutional Responsibility		Comments
		Operative	Implementation	Operative	Implementation	
OPERATION PHASE						
▪ Problems due to lack of maintenance	▪ Regular road maintenance works	Included in maintenance works	Internal resources	Contractor for maintenance works	PC Roads FBH	
▪ Decrease in road safety due to the increase of traffic and speed	▪ Regular maintenance of road safety equipment and signage	Incl. in maintenance works	Internal resources	Contractor for maintenanc e works	PC Roads FBH	

8. ENVIRONMENTAL MONITORING PROGRAM

The table below presents monitoring plan necessary for construction site – developed in connection with 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 below.

The monitoring plan on construction site will be used by Supervision Engineers of PC Roads FBH. These signed lists will be forwarded to PC Roads FBH, who will be responsible for monitoring and reporting about the compliance.

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

Table 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
PRE-CONSTRUCTION PHASE								
▪ Job creation and impacts on local businesses	▪ Number of employed persons from local communities ▪ Timely informing the local communities	Wider area of construction	Inspection	Prior to construction	Included in performance	Included in performance	Contractor	Contractor
CONSTRUCTION PHASE								
▪ Access restrictions	▪ TMP in place, ▪ Implementation of RPF, provisions on compensation procedures for businesses affected by access restrictions	Construction site	Visual inspection	Random checks at least once a week during the construction	Included in supervision	Included in supervision	Supervisory body + PC Roads FBH	Supervisory body + PC Roads FBH
▪ Restrictions on land use and damage to the private property (agricultural plots, horizontal infrastructure, fences and railings) due to disposal of construction waste, and parks of heavy machinery	▪ CSOP in place, ▪ Disposal of construction and maintenance materials, ▪ Position heavy machinery parks, ▪ Implementation of RPF provisions on compensation procedures in case occasional land use cannot be avoided, compensation will be provided to affected owners/users	Construction site	Visual inspection	Prior to construction and 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

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
	▪ Grievances (including ones from workers)							
▪ Impacts on local traffic (increase of local traffic, including heavy machinery and trucks, operation of roads with only one lane causing traffic delays and limited access)	▪ TMP in place ▪ Traffic patterns, ▪ Timely information to the citizens	On construction site and nearby	Visual inspection and inspection	random checks during the week	Included in supervision	Included in supervision	Supervisory body	Supervisory body
▪ Air emissions: - exhaust gasses; - dust generation	▪ Level of dust (amount of particles of sediment and floating particles) ▪ Emissions of exhaust gases from vehicles and equipment ▪ (SO_2, NO_2, dim and PM_{10})	Construction site	Measuring devices	As a baseline and during construction when needed and upon complaints by the citizens	-	500 USD/measuring	Contractor	Authorized laboratory
▪ Increased level of noise and vibration: - noise levels - vibration	▪ Level of noise	In populated places near the construction site	Measuring devices	Upon order by supervisory organ or upon complaints by the citizens	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory
Soil pollution	▪ Soil quality, including, PH, heavy metals, phosphorus, nitrogen, Na, Ca, salts, PAHs hydrocarbons	On representative plots of land near construction sites	Taking samples and standard laboratory analyses	As a baseline and upon order by supervisory organ or upon complaints by the citizens	-	500 USD /measuring	Contractor + Supervision	Authorized laboratory

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
▪ Emissions into groundwater and soil due to improper waste handling	▪ CSOP in place, ▪ WMP in place	Construction site	Visual inspection, disposal records or receipts from landfills	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Soil degradation: - soil erosion; ▪ occurrence of landslide and rockfall.	▪ Implementation of CSOP; ▪ Implementation of WMP.	Construction site	Visual inspection	Regularly during construction	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Conversion of the area and conversion of present land use: - changes in land use; - deforestation;	▪ Implementation of CSOP	Construction site	Visual inspection	Regularly during construction, as appropriate.	Included in performance	Included in performance	Contractor + Supervision	
▪ Removal of vegetation cover.	▪ Number and type of planted vegetation and analysis of vegetation cover prior to the beginning and upon completion of works.	Construction site	Visual inspection and record-taking	Prior to beginning (baseline) and upon completion of works	Included in performance	Included in performance	Contractor + Supervision	Contractor
▪ Degradation of biological and ecological resources	▪ All trenches up to 0,5 m of depth must be tilted or have ramps in case of necessity for animals' exit. All trenches shall	Construction site	Visual inspection	Regularly during construction, as appropriate.	Included in performance	Included in performance	Contractor + Supervision	Contractor

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

Potential impact	Which parameter is to be monitored?	Where will the monitoring be performed?	How will the monitoring be performed?	When will the monitoring be performed?	Cost assessment (US$)		Responsibility	
					Implementation	Operative	Implementation	Operative
▪ Workers safety	▪ Implementation of work safety measures (protection equipment, toilets, drinkable water etc.) ▪ Implementation of World Bank Occupational Health and Safety Guidelines	Construction site	Visual inspection	Daily	Included in performance	Included in performance	Contractor + Supervision	Contractor

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 the entire period of 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 contracted 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.jpcfbih.ba/ba/kontakti/kontakti.shtml.

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

9.2.2. Supervision Engineer to PC Roads FBH

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

9.2.3. 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 Ključ after the WB approved the draft of the ESMP.

The document was published and available to the public in a local language on the website of PC Roads FBH on 31.05.2018 and on the website of Ključ Municipality on 01.06.2018. Public consultations were announced on the website PC Roads FBH on 31.05.2018 and on the website of Ključ Municipality on 01.06.2018, and on 02.06.2018. in local newspapers (Dnevni Avaz). The public consultations were held on 18.06.2018. in Ključ, and the Minutes of the Public Discussion on ESMP is an Appendix 3 of this document. Public consultations were attended by 7 interested parties.

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

After public discussion the documents is disclosed again on the website of PC Roads of FBH.

10.2. INFORMATION DISCLOSURE

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

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

Schedule of works and potential changes to the schedule will also be 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 Ključ municipality.

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

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

The grievance can be logged in writing with the Contractor, at the construction site as well as in the contractor's offices. The contractor is obliged to hand out the Grievance Registration Sheet, explain the grievance mechanism to the concerned citizen and forward the filled in Grievance Form to the central Feedback Desk in PC Roads FBH . The grievance can also be filled in within PC Roads FBH, by phone, by fax, and by e-mailing it to the designated e-mail address zalbena@jpcfbih.ba, or by mail to the address Terezija 54, 71000 Sarajevo.

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

All grievances will be 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, soil quality data, survey and analysis of vegetation cover prior to the beginning and upon completion of works on construction site. The Contractor is also obliged to ensure these measurements during and after completion of the construction works. The Contractor will ensure that the measurements are conducted by authorized agencies and that they are based on the findings and recommendations of a qualified expert.

The Contractor shall develop a Construction Site Organization Plan (CSOP) that is made up of:

a. Implementation Plan of this ESMP,

b. a detailed Waste Management Plan (WMP)]

c. Study on Safety (includes Elaborate on Safety at Work and Elaborate on Protection From Fire and Explosions),

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

These studies are to be developed in accordance with federal acts[8], before starting the execution of works, while the Contractor's legal obligations defined in the Bidding Documents and Contract shall be based on the a provisions of this ESMP . The Contractor shall submit these studies to the PC Roads FBH supervisory engineer, Environmental and Social Specialists, before beginning of works, and the company has to accept and approve them prior to start of works.

Due to the time constraints related to the issuance of the bidding documents, the public consultations are to be held prior to the start of works but once the bidding documents have been issued; therefore the 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.

[8] 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

11.2. Social aspects

- Public consultations;
- Implementing the changes derived from the public consultations (if any) to the ESMP;
- Expropriation of 9 Public land plots.

APPENDICES

APPENDIX 1. GRIEVANCE FORM

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

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

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

Date of the Incident?

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

What would you like to see happen?

DATE:	SIGNATURE:

RETURN THIS FORM TO: *CENTRAL FEEDBACK DESK*

PC ROADS OF THE FBH
Terezija 54,
71000 Sarajevo
Note: All copies are returned to PIU

APPENDIX 2. GRIEVANCE REGISTRATION TEMPLATE TABLE

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

APPENDIX 3. REPORT ON PUBLIC DISCUSSION

JP CESTE FEDERACIJE BIH

JP Ceste Federacije BiH d.o.o. Sarajevo poziva sve zainteresirane subjekte, nevladine organizacije i stanovnike Općine Ključ i naselja koja gravitiraju području namjeravane izgradnje trake za spora vozila na dionici Gornje Bravsko – Ključ u Ključu, da uzmu učešće u

JAVNOJ RASPRAVI

o nacrtu **Plana upravljanja okolišem i društvenim aspektima za projekat izgradnje trake za spora vozila na dionici Gornje Bravsko – Ključ (M5)**

koja će se održati u Ključu, **u prostorijama Općine Ključ 18.06.2018. 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 Ključ.

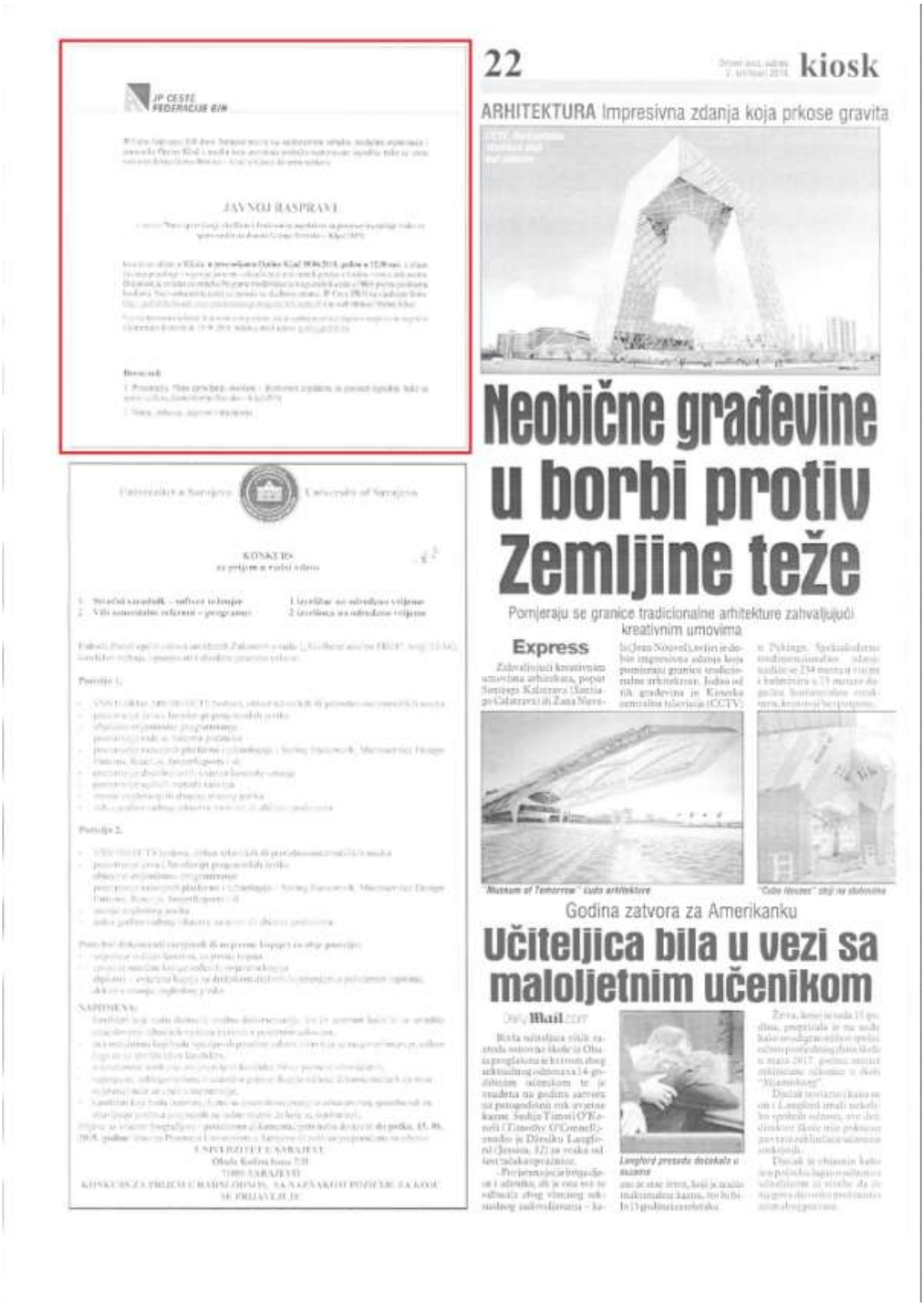
Svi zainteresirani subjekti koji nisu u mogućnosti da prisustvuju javnoj raspravi mogu svoje sugestije i komentare dostaviti do 18.06.2018. putem e-mail adrese: pimt@jpcfbih.ba.

Dnevni red:

1. Prezentacija Plana upravljanja okolišem i društvenim aspektima za projekat izgradnje trake za spora vozila na dionici Gornje Bravsko – Ključ (M5)
2. Pitanja, diskusija, odgovori i objašnjenja

31.05.2018.

Announcement of Public discussion in the Local Newspaper „Dnevni Avaz“ (02.06.2018.)



JP CESTE FEDERACIJE BiH

JAVNOJ RASPRAVI

Univerzitet u Sarajevu — University of Sarajevo

KONKURS

22 kiosk

ARHITEKTURA Impresivna zdanja koja prkose gravita

Neobične građevine u borbi protiv Zemljine teže

Pomjeraju se granice tradicionalne arhitekture zahvaljujući kreativnim umovima

Express

"Museum of Tomorrow" djelo arhitekte

"Cube houses" stoji na stubovima

Godina zatvora za Amerikanku

Učiteljica bila u vezi sa maloljetnim učenikom

Daily Mail.com

Langford presudu doživjela u suzama

JP CESTE FEDERACIJE BIH

JAVNOJ RASPRAVI

Dnevni red:

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

1. PC Roads of FBH website (published on May 31, 2018)

https://jpcfbih.ba/bs/novosti/javna-rasprava-o-nacrtu-plana-upravljanja-okolisem-i-drustvenim-aspektima-za-projekat-izgradnje-trake-za-spora-vozila-na-dionici-gornje-bravsko-kljuc-m-5/50 - Announcement of the Public discussion (B/H/S language)

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

https://jpcfbih.ba/en/news/public-consultations-on-draft-esmp-for-the-project-of-the-construction-of-third-lane-for-slow-vehicles-on-section-gornje-bravsko-kljuc-m5/50 - Announcement of the Public discussion (English language)

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

2. Municipality of Ključ website (published on June 1, 2018)

http://opcina-kljuc.ba/2018/06/01/javna-rasprava-o-nacrtu-plana-upravljanja-okolisem-i-drustvenim-aspektima-za-projekat-izgradnje-trake-za-spora-vozila-na-dionici-gornje-bravsko-kljuc-m5/

http://opcina-kljuc.ba/wp-content/uploads/2018/06/ESMP_21_Bos.-Petrovac-Klju%C4%8D-Prevoj-Lani%C5%A1te-Izgradnja-trake-za-spora-vozila-1.pdf


JAVNA RASPRAVA o nacrtu Plana upravljanja okolišem i društvenim aspektima za projekat izgradnje trake za spora vozila na dionici Gornje Bravsko – Ključ (M5)
OBAVIJEST


PLAN UPRAVLJANJA OKOLIŠEM I SOCIJALNIM ASPEKTIMA ZA PROJEKAT IZGRADNJE TRAKE ZA SPORA VOZILA NA DIONICI GORNJE BRAVSKO - KLJUČ (M-5)

MINUTES

of Public Discussion on the Draft Environmental and Social Management Plan for the Project of Construction of a Third Lane on the Section Gornje Bravsko-Ključ (main road M5)

A public discussion on the Draft Environmental and Social Management Plan for the Project of Construction of a Third Lane on the Section Gornje Bravsko-Ključ (M5) was held on June 18, 2018 in the premises of the Municipality of Ključ at 12 PM.

On behalf of the PC Roads of the Federation of Bosnia and Herzegovina public discussion was attended by:

- **Anis Bašić** – substitute for the Project Manager for the Project of Construction of a Third Lane on the Section Gornje Bravsko-Ključ
- **Selma Ljubijankić** - member of the PIT in charge of social aspects under the Road Sector Modernization Program
- **Haris Zejnić** – PIT assistant for environmental monitoring under the Roads Modernization Program.

A list of all participants is enclosed to these minutes.

Selma Ljubijankić opened this public discussion, greeted all participants and presented representatives of the PC Roads of the FBH and gave a brief introduction on the Road Modernization Program and the document.

After the introduction, **Haris Zejnić** presented the Draft Environmental and Social Management Plan for the Project of Construction of a Third Lane on the Section Gornje Bravsko-Ključ (M5). He familiarized all participants with the project goals, mitigation measures of all identified potential environmental and social impacts, monitoring plan, disclosure of information, grievance mechanism, requirements for start of works, and other relevant information from the document. It was stressed out that this is the draft document and explained that all the relevant comments from the public discussion will be included in the final document. It was also emphasized that the document was revised by the World Bank team and, after the adoption, will become a binding document for the contracting parties in the implementation of the project itself.

After that, **Anis Bašić** presented the technical features of the project. He pointed out that the length of the third lane is 4.8km, while the width of the third lane equals 3.25m, and the total thickness of the pavement structure equals 53 cm. He also noted that the tendering procedure for construction works is ongoing. Furthermore, he added that the condition for acquiring the building permit is solved property rights relations, currently pending for the respective project.

Rufad Čajić: It is important to note that in the project area there are no specially identified natural or cultural-historical values, which is stated by the Municipal Plan of the Municipality Ključ. I believe that the traffic flow during the construction works is the most important thing for the subject project, which is also identified and mitigated through the respective document. Another thing that needs to be taken into consideration is certainly the course of actions during an accidental situation, eg. leaking in from the construction machinery.

Haris Zejnić: Both items were identified in the respective ESMP, as you already stated.

Nermin Kapetanović: Are you familiar with the optical fiber cable that the Army installed before the war?

Rufad Čajić: such matters have been handled during the process of acquiring the zoning permit.

Nermin Kapetanović: What is the deadline for construction works?

Anis Bašić: The deadline for construction works is 6 month from the commencement date.

Rufad Čajić: i would like to add one more positive impact of the project that, as I noticed was not identified in the ESMP- the easier use of the road in winter conditions.

Senad Zečević, in charge of the administrative procedure of expropriation of real estate (in front of the Municipality of Ključ): The Municipality of Ključ has, immediately after a public hearing, which was not attended by representatives of the Ministry of Agriculture, Water Management and Forestry of the Una-Sana Canton, although a proper invitation was send, sent a letter to the respective ministry in which they asked for Declaration regarding expropriation of land owned by them.

The Forestry has given an affirmation that it does not oppose expropriation, and that the expertise of a skilled forestry expert has been carried out with good quality.

Anis Bašić: Who will be in charge for cutting the forest?

Senad Zečević: the Federal Ministry of Agriculture, Water Management and Forestry will be responsible for the forging of the forests by a special Decision issued after the expropriation process is completed. I would add that the estimated costs of expropriation amount to some KM 31,000.00 because the Cantonal Ministry does not have the right for compensation of the land but only for the wood mass.

Anis Bašić: It should be acknowledged that Creditor will not grant approval for the signing of the Construction Contract until the expropriation process is completed.

Senad Zečević: I would just like to point out that the number of parcels to be expropriated (after the splitting) increased to 28 as opposed to the number specified in the document.

The public consultation ended at 1 PM.

Photographs of participants in the Public Consultations in Ključ (business premises of Ključ Municipality)

List of Participants in the Public Consultations

JP CESTE FEDERACIJE BIH

Javna rasprava o nacrtu Plana upravljanja okolišem i društvenim aspektima za projekat izgradnje trake za spora vozila na dionici Gornje Bravsko – Ključ (M5), u Ključu 18. Juna 2018.g.

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