



LOCAL ROADS CONNECTIVITY PROJECT



ENVIRONMENTAL AND SOCIAL
MANAGEMENT PLAN (ESMP)

*Upgrading of streets in village Dvoriste, in
Municipality of Berovo*



ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
Project: Upgrading of streets in village Dvoriste, Municipality of Berovo

Prepared by:

Slavjanka Pejchinovska-Andonova, MSc, Environmental Engineer

Environmental and Social (E&S) Specialist

TABLE OF CONTENTS

| | |
|--|----|
| 1. INTRODUCTION..... | 1 |
| 2. PROJECT DESCRIPTION | 2 |
| 2.1 Baseline condition of Municipality of Berovo | 2 |
| 2.1.1 Demography..... | 2 |
| 2.1.2 Climate features | 2 |
| 2.1.3 Seismology | 3 |
| 2.1.4 Water..... | 4 |
| 2.1.5 Air quality..... | 4 |
| 2.1.6 Waste | 4 |
| 2.1.7 Geology and soil | 5 |
| 2.1.8 Flora and fauna | 5 |
| 2.1.9 Noise..... | 5 |
| 2.1.10 Cultural heritage | 6 |
| 2.2 Project location | 6 |
| 2.3 Project Activities | 8 |
| 2.4 Sensitive receptors | 10 |
| 3. POTENTIAL ENVIRONMENTAL IMPACT AND RISK AND IMPACT AND RISK ASSESSMENT..... | 10 |
| 4. ENVIRONMENTAL AND SOCIAL MITIGATION PLAN..... | 15 |
| 5. ENVIRONMENTAL AND SOCIAL MONITORING PLAN | 18 |
| 6. ANNEX..... | 22 |

IMAGES

| | |
|--|----|
| Figure 1 Location of the project area in relation with the Municipality of Berovo..... | 2 |
| Figure 2 Some biodiversity representatives of Municipality of Berovo | 5 |
| Figure 3 Micro location of the upgrading streets in village Dvoriste | 6 |
| Figure 4 Macro location of the project area in village Dvoriste..... | 7 |
| Figure 5 Current situation of the project area in village Dvoriste..... | 8 |
| Figure 6 Cross section of the layout of storm water system and relevant streets | 22 |

TABLES

| | |
|--|----|
| Table 1 Planned project activities in village Dvoriste, in Municipality of Berovo..... | 8 |
| Table 2 Potential impacts and risks | 10 |
| Table 3 The estimated values of generated waste streams (according to the Main Design) | 12 |

ABBREVIATIONS

| | |
|-------|---|
| EIA | Environmental Impact Assessment |
| EPR | East Planning Region |
| ESMF | Environmental and Social Management Framework |
| ESMP | Environmental and Social Management Plan |
| IPA | Important Plant Area |
| LRCP | Local Road Connectivity Project |
| MoEPP | Ministry of Environment and Physical Planning |
| MSC | Macro seismic |
| MTC | Ministry of Transport and Communications |
| OH&S | Occupational Health and Safety |
| PCE | Public Communal Enterprise |
| PIU | Project Implementation Unit |
| RM | Republic of Macedonia |
| RNM | Republic of North Macedonia |

1. INTRODUCTION

The transport sector in Republic of North Macedonia is characterized with poor condition of the local roads network, unsatisfactory level of financing of road maintenance, weakness of international investment in distribution sector and transport sector etc. Such poor condition of the local roads is as a result of lack of financial capacity of the Local Self Government that differs from region to region in the country. Some of the local roads in the rural areas are in an unacceptable condition with no access to the hospitals, schools and markets so this issue brings social problems as well.

In order to support the municipalities in the Country by 70 million Euro investment secured by the World Bank, Ministry of transport and communications will implement the Local Roads Connectivity Project (LRCP) mostly in rehabilitation of existing local road infrastructure (urban / rural streets, regional and local roads), reupdrading, rehabilitation, upgrading, pedestrian paths, street lightening, water drainage and capacity building of the municipal staff.

When preparing these type of projects, according to the national environmental requirements (Law on Environment and secondary legislation), it is necessary to submit a Notification Letter for intention to start the project to the MoEPP which initiates the environmental impact assessment procedure and based on the Opinion, to prepare the EIA Report. No EIA Report was delivered during the assessment (so far). The EIA Report has to be prepared, and whose approval is under the competence of the mayor of the municipality (Official Gazette of the Republic of Macedonia No 32/12) or the Mayor of Skopje or the Mayor of the Municipality, chapter X – Infrastructure projects, item 1 Upgrading of local roads.

The EIA Report shall be prepared in accordance with Article 24 of the Law on Environment (Official Gazette of the Republic of Macedonia No 53/05, 81/05, 24/07, 159/08, 83/09, 48/10, 124/10, 51/11, 123/12, 93/13, 187/13, 42/14, 44/15, 129/15, 192/15, 39/16 and 98/18) and the Rulebook on the form and contents of the EIA Report in accordance with the types of activities for which the report is being prepared, as well as in accordance with the entities performing the activity and the scope of activities being performed by the legal and natural entities, the procedure for their approval, as well as the method for keeping of the register of approved reports (Official Gazette of the Republic of Macedonia No 44/13, 111/14). If the issued Opinion of the MoEPP is positive and EIA Report has to be prepared, the Municipality of Berovo shall prepare an EIA Report and send a copy thereof together with the Decision to the MTC for approval. In order to address Project's potential environmental and social concerns in accordance with the requirements of the World Bank Environmental and Social Standards, Environmental and Social Management Framework (ESMF) was prepared for the whole LRCP September/October 2019. ESMF is used, as the most appropriate tool, for addressing environmental and social aspects of sub-projects identified in the course of project preparation and implementation.

The sub-project has an aim to improve the road infrastructure in the village Dvoriste in Municipality of Berovo through upgrade of four branches of the streets in the village in total length of approx. 2.900 m. The project main activities will include: mechanical cutting of asphalt pavement with a depth of 15 cm, asphalt scraping and clearing of existing pipelines, drainage ditch excavation and fitting of drainage pipeline, placing roadbase layer, bearing bitumen layer over existing asphalt and compacting all layers of asphalt.

Taking into account the nature, size, location, as well as the specifics of the potential environmental impacts during the upgrading of streets in village Dvoriste, ***the Project Upgrading of streets in village Dvoriste, in Municipality of Berovo was classified as project with substantial risks, which requires the preparation of Environmental and Social Management Plan (ESMP) in accordance with the WB environmental and social standards.***

2. PROJECT DESCRIPTION

2.1 Baseline condition of Municipality of Berovo

Municipality of Berovo is located in the eastern part of RNM as part of Eastern statistical/administrative region of RNM. The Municipality of Berovo covers an area of 597 km² with coordinates: 41° 39' 25.24" North, 22° 50' 3.83" East. The borders of the Municipality are as follows: in the eastern part is located borderline with the Republic of Bulgaria; in the southern part borders with the Municipalities of Novo Selo, Bosilovo and Vasilevo; in the northern part are located Municipalities of Pehcevo and Delcevo; and in the western part are located Municipalities of Radovis and Vinica.

The Municipality has 13,941 inhabitants (revised Census data from 2002). From total nine local communities, city of Berovo is considered as urban area while the rest eight local communities Rusinovo, Smojmirovo, Ratevo, Dvoriste, Macevo, Mitrasinci, Budinarci and Vladimirovo are considered as rural area (villages) within the Municipality. In Figure 1 is presented location of the project site regard the location of the Municipality of Berovo.

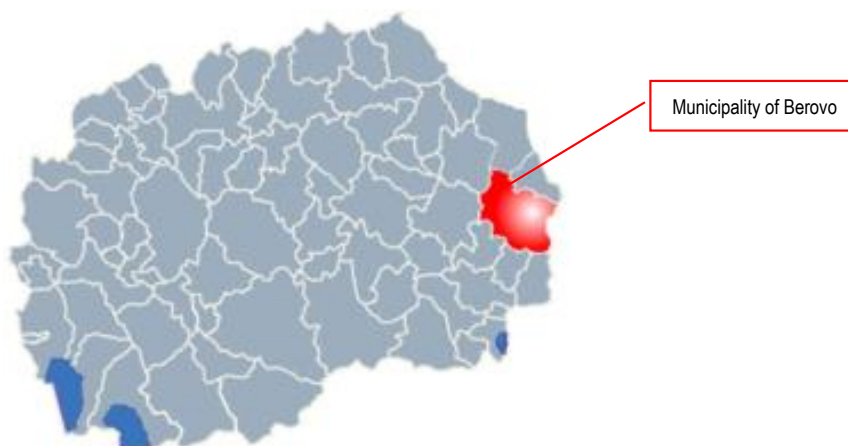


Figure 1 Location of the project area in relation with the Municipality of Berovo

2.1.1 Demography

The latest census data in the RNM is the 2002 census. Recent data is used only for those statistical categories for which the Statistical Office of the RNM has updated the records. According to the 2002 census data, Berovo had a population of 13,941. According to 2011 estimates made by the Statistical Office of the RNM as of 30.06.2011 Berovo has 13,337 inhabitants and the average age of the population is 39,93 years. The number of households in the Municipality is 4,706 with an average of 3,1 inhabitants per household. 96% of the inhabitants are Macednians, 3% are Roms and others.

2.1.2 Climate features

The position of the Municipality of Berovo in the far eastern part of the Republic, in a mountainous area, it is defined by a temperate-continental climate with climate modification in the high mountainous and flat parts.

The City of Berovo has a significantly lower mean annual air temperature than the areas at the same altitude in the wider part of this valley. At an altitude of 800 meters, the average annual temperature is 11.1°C, and in Berovo 8.7 °C. The coldest month in this is January, with an average of -1.2°C. The warmest month is July with an average of 18.2 °C.

Floods and landslides risk

Municipality of Berovo is part of East Planning Region. Due to the size of the area, the diversity and the specificity of the erosion factors, within the East Planning Region (EPR) are noted a variety of pluvial and fluvial erosion processes, as well landslides and rock decomposition. The most erosive areas are located in the catchment of the Kalimanaci reservoir, in the upper area of watershed of river Bregalnica. Areas of second category of danger of erosion are defined in the part of the

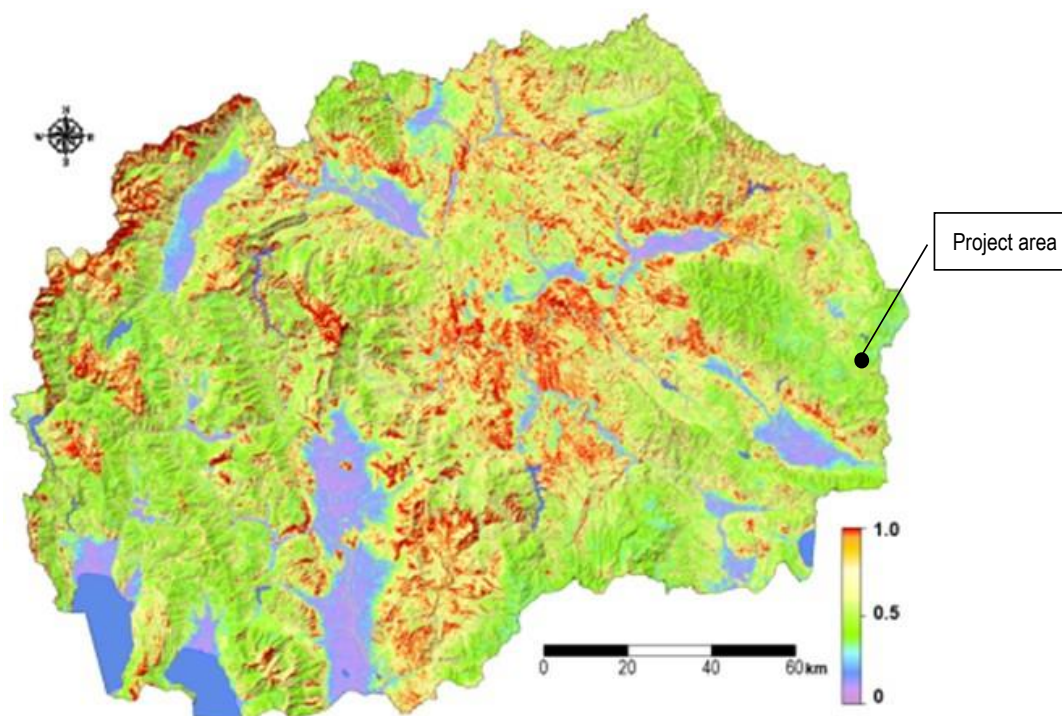
watershed of Orizarska River. The most erosive watersheds, that contribute for the largest amount of produced sediment in EPR, are following, presented in Table 1. Table 1 Most erosive watersheds in EPR

| Watershed | W-m ³ /y (annual production of erosive material (sediment)) |
|--------------------------------------|--|
| Zletovska River | 190.652 |
| Kamenicka River | 151.167 |
| Kriva Lakavica | 144.846 |
| Osojnica River | 136.602 |
| Zelevica | 103.510 |
| Sushica River | 100.232 |
| Orizarska River | 74.228 |
| Ratevska River | 63.509 |
| Bregalnica – upper area of watershed | 59.430 |
| Ochiplaska River | 49.690 |

source: Spatial Plan of Eastern Planning Region for period of 2013-2030 (draft version)

Due to erosion damage in the past within EPR, various anti-erosion and flood preventive measures and activities have been carried out (almost 6000ha of heavily eroded land is planted, 17 high flood risk areas are completely regulated, etc.). (source: Spatial Plan of Eastern Planning Region for period of 2013-2030 (draft version).

In Figure 2 is presented location of the project area regards the risk of flooding, landslides and erosion in RNM.



Source: https://www.fakulteti.mk/news/18-02-10/vo_narednite_denovi_i_nedeli_se_ochekuva_zgolemen_rizik_od_poplavi_i_svlechishta_niz_makedonija

Figure 2 GIS model of areas at increased risk of flooding (purple), landslides (orange) and enhanced erosion (red)

According to the aforementioned, the project location in Municipality of Berovo is characterized as location with low risk of erosion, landslides and flooding.

2.1.3 Seismology

According to the seismic activity so far, the area of the municipality of Berovo belongs to areas with significant seismic instability. Based on registered earthquakes from 1901 to the present day, six epicentres have

been recorded with intensity lower than VI ° MSC, as well as seismic exposure to terrain of IX ° and X ° MSC. According to the macroseismic regionalization of the Republic, most of the territory of the Municipality of Berovo belongs to the zone with maximum expected seismic intensity of IX ° and X ° per MSC scale, and in the southern parts of the municipality with intensity of VII ° per MSC, with a change of MSC epicenter hotspots.

2.1.4 Water

Within the analyzed porosity, the dominant hydrographic object is the river Bregalnaica (located about 12km north from the project area) and the open surface canals. There are two river basins on this territory, Bregalnica and Struma. Larger tributaries of the Bregalnica are: Pehchevska, Ratevska, Umienska, Kamenica and Javoi doi gravitating towards the Maleshevo-Pijanje valley. Larger than the Strumica basin are Firanska River, Bezgashtevska River that gravitate towards the Strumica Field. Groundwater analysis and study in the area has not been carried out.

According to the depths of the wells and boreholes it is concluded that beside the riverbed the groundwater level ranges from 3-5.0 m, and in the aluvian plain of 8-14 m. On the territory of the municipality are recorded more than 120 springs with a total output of 140 liters / sec. More promising sources are recorded on terrains with elevations above 1000 meters.

2.1.5 Air quality

In the Republic of North Macedonia, monitoring of the ambience air quality is performed by the Ministry of Environment and Physical Planning, which manages the State automatic air quality system composed of 17 measuring stations of which 5 are located in Skopje, and the closest measuring station to the project location is the one in City of Strumica, located south-west from the project location in Municipality of Berovo. In this air quality measuring station, monitoring is performed of the following: sulphur dioxide, nitrogen dioxide, carbon monoxide, ozone and suspended particles with size of 10 micrometers (PM₁₀)

The sources of suspended particles are burning of fossil fuels and biofuels, different industrial processes, traffic, incineration of waste and wild fires. One of the most important sources is heating of homes and administrative capacities, mainly due to the incomplete incineration of wood in the old furnaces. The number of times the average daily threshold limit value of PM₁₀ at the Strumica measuring point in 2018 was exceeded for 112 days, in the year of 2019 (until August) there were 65 days in which the average daily threshold limit value was exceeded.

In the Republic of North Macedonia, the key and dominant source of sulphur oxides in the air are the processes of burning of fuels (coal and fuel-oil). The average daily SO₂ concentrations at this measuring station have not exceeded the threshold value for the year of 2018 and the year 2019 (until August).

Carbon monoxide is formed during the incomplete incineration of fuels in internal combustion engines and energy plants, as well as during different industrial processes, public institutions and households. The maximum daily 8 hour average values of CO concentrations at this measuring station for the year 2018 and the year 2019 (until August) there have not been any exceedance of the threshold value.

The maximum daily 8 hour average values for the ozone concentration in the year 2018 were exceed 58 times, in the year 2019 (until August) the threshold limit value was exceed 12 times. For the 1 hour average values of NO₂ for the year 2018 and 2019 (until August) there were no exceedances of the upper threshold limit.

2.1.6 Waste

Deposition of municipal solid wastes, is one of the most serious problems in the Municipality of Berovo.

The waste in Municipality of Berovo is disposed of at the landfill Uvin Valog, located at about 3 km northwest of the City of Berovo, in the immediate vicinity of the Smojmirovska river and only 200 meters from the Bregalnica river. The landfill does not meet the minimum sanitary standards and regulations. There are no infrastructures (water, electricity), no disinfectant, no death animal pits etc. The waste is disposed of without any treatment (only leveled and filled with soil and sand).

In the City of Berovo the solid municipal waste is collected and disposed by PCE "Usluga", with own vehicles. In addition to rural settlements, waste is disposed by the local people, which leads to the creation of unregulated landfills.

Because there is no appropriate alternative landfill for waste disposal from project activities, the generated waste streams should be disposed at landfill Uvin Valog (located about 16km northwest from the project area in v. Dvorishte).

2.1.7 Geology and soil

The territory of the Municipality of Berovo, geologically, belongs to the Serbian-Macedonian mass, formed by tectonic movements in pre-Paleozoic, Herzinian and alpine orogenesis.

According to the lithologic-stratigraphic characteristics of the flattened rocks. The following geological formations are distinguished: Precambrian metamorphic rocks, Riber-Cambrian and Old Paleozoic metamorphic rocks, Paleozoic granitoids, Triassic, Paleogene, Neogene and Quaternary sediments. The Precambrian metamorphic rocks form the basis of the terrain. This complex occupies rather large areas in the eastern and southeastern parts of the Municipality, in the catchment area of Cironska and Rateva Reka and the spring of Bregalnica.

2.1.8 Flora and fauna

The most common forests are pine forest (*fam. Pinaceae*), oak forest (*fam. Fagaceae*) and beech forest (*fam. Fagaceae*). As a result of years of intensive use of oak forests, they are now in the process of forming young seedlings of varying density. The beech belt is present in the mountain and sub-mountain belt. Better preserved beech forests are of great importance for forest management. Acidophilic pine forests occur in the belt of beech forests. Above them there are white pine complexes (*Pinus sylvestris*). The meadows are less represented. Due to the suppression of forests, the hilly pastures are spread over large areas, as opposed to the mountain pastures are small in size. As an integral part of the biocenosis in the area of the Municipality there are various forms of amphibians, mammals, reptiles, birds and insects. The group of birds and mammals of particular biotopes comprises numerous associations, with numerous individuals found from the lowest to highest elevations (deer, rabbit, partridge, etc.).



Figure 3 Some biodiversity representatives of Municipality of Berovo

2.1.9 Noise

In the RNM only in the bigger cities, the environmental noise is monitored, whereas in the Municipality of Berovo there is no monitoring station, therefore the noise pollution is not monitored. There are not recorded any complains about increased level of noise at the project site

2.1.10 Cultural heritage

In Berovo there are four churches and one of them is St. Archangel Michael (located about 13km northwest from the project area) built in the 18th century. Archeological places in Berovo are Breza - a settlement from the late antic period, Gradishte - a settlement with necropolis from the late antic period and many others.

2.2 Project location

The project area, where the project activities for upgrading of several streets will be performed, is located in the eastern part of the Municipality of Berovo, precisely in its rural area - village Dvoriste.



Figure 4 Micro location of the upgrading streets in village Dvoriste

Table 2 Length of four street branches in v. Dvoriste

| No. | Sub-project locations | Length (in m) |
|-------|-----------------------|---------------|
| 1 | Branch 1 | 1,987.7m |
| 2 | Branch 2 | 265.9m |
| 3 | Branch 3 | 434.5m |
| 4 | Branch 4 | 218.1m |
| total | | 2,906.22m |

In the wider surrounding of the project site are located: Emerald site "Malesevo" (about 2,5-3km northeast from the project area); Berovsko lake (about 7km north from the project area); Important Plant Area (IPA) "Pehcevo – Judovi Livadi" (about 18km north from the project area); Monument of Nature "Monospitovo marsh" (located about 23km southwest from the project location); regional road 1302; city of Berovo (located about 13km northwest from the project location), etc. A map with these listed sensitive areas is presented in Annex 2. In Figure 4 is presented macro location of the project area (street branches) in village Dvoriste.



Figure 5 Macro location of the project area in village Dvoriste

The project area is located in hilly terrain, in the southern slope of the Maleshevo Mountains. According to the last Census in 2002, there were 757 inhabitants in the village. The length of the project area, where the upgrading street activities will be implemented, is 2,906.22m (2.9km), within four street branches. Along and near the route of the streets are located following objects: houses of the local population in village Dvoriste; local primary school; health center; agricultural fields; church; Dvorishka river; etc. The micro location of the four branches (project area) is given in Figure 5.

In 11.06.2019, PIU (represents from the MTC and responsible staff from Municipality of Berovo) conducted a site visit of the project location in village Dvoriste, in order to provide screening of the current condition of the relevant streets. Following situation of the project location was noted:

- a) The terrain of the project area is steep, with hilly configuration.
- b) The width of the route of existing streets is variable (from 3 m up to 3.5 m)
- c) Most of the streets are unpaved/ earthen road. The asphalt pavement on some spots of the streets is heavily damaged.
- d) The height difference between the route starting and ending point is significant.
- e) Along the route of the project location are noted fences of households of the local population, power lanes, etc.





Figure 6 Current situation of the project area in village Dvoriste

Sub-project will support the implementation for the following activities: because of the hilly terrain configuration, the risk of flooding is increased; in order to prevent risk of flood the surface storm water drainage system (consisting of concrete canals-ribbons) should be constructed; also it should incorporate sidewalks; underground installations for street lighting and optical cables – if and where is feasible (to be determined by the engineering design), etc.

2.3 Project Activities

The planned project activities will be performed in three phases: preparatory activities (marking out and clearing up of the 4 upgrading sites to be upgraded– branch streets), upgrading of 4 branch streets (installation of crushed stone material, putting asphalt layer, etc.), and operational phase – activities related to regular and preventive maintenance of relevant streets. The total length of the new road will be 2.906,22 m. The sub-project The main project activities are presented in Table 1.

Table 3 Planned project activities in village Dvoriste, in Municipality of Berovo

| Branch 1 (length =1,987.7m) | |
|-------------------------------|---|
| Project phases | Project Activities |
| Preparatory activities | <ul style="list-style-type: none"> • Marking and securing the route at the project location; • Removal/ clearance of vegetation is not planned; • Mechanical cutting of asphalt pavement with a depth of 15 cm; • Coating with unstable emulsion; • Asphalt scraping; • Clearing of existing pipeline; • Dislocation of candelabras; |

| | |
|-----------------------------------|---|
| Upgrading phase | <ul style="list-style-type: none"> • Mechanical excavation of soil (loading and transport to landfill) 789 m³ • Compacting the bed to the required compaction; • Mechanical making of embankment obtained from excavation; • Making of reinforced concrete culvert ø1000; • Drainage ditch excavation (loading and transport to landfill) 46 m³; • Spreading of sand under drainage pipe; • Fitting of drainage pipeline ø110; • Embedding of filtration material; • Placing roadbase layer; • Spraying of diluted bitumen over the road; • Placing a bearing bitumen layer over existing asphalt; • Placing a secondary layer; • Placing a bearing bitumen layer over new road upgrading; • Compacting a secondary layer of asphalt concrete; • Fitting of concrete drain channels. |
| Operational phase | <ul style="list-style-type: none"> • Clean up the upgrading site; • Maintenance in the winter period; |
| Branch 2 (length = 265.9m) | |
| Project phases | Project Activities |
| Preparatory activities | <ul style="list-style-type: none"> • Marking and securing the route at the project location; • Removal/ clearance of vegetation is not planned; Mechanical cutting of asphalt pavement with a depth of 15 cm; • Coating with unstable emulsion; • Dislocation of candelabras; |
| Upgrading phase | <ul style="list-style-type: none"> • Mechanical excavation of soil (loading and transport to landfill) 436 m³ • Compacting the bed to the required compaction; • Mechanical work of embankment obtained from excavation; • Making of reinforced concrete culvert ø1000; • Drainage ditch excavation (loading and transport to landfill) 112 m³; • Spreading of sand under drainage pipe; • Fitting of drainage pipeline ø110; • Embedding of filtration material; • Placing roadbase layer; • Placing a bearing bitumen layer over existing asphalt; • Compacting a secondary layer of asphalt concrete; • Fitting of concrete drain channels |
| Operational phase | <ul style="list-style-type: none"> • Clean up the upgrading site; • Maintenance in the winter period; |
| Branch 3 (length = 434.5m) | |
| Project phases | Project Activities |
| Preparatory activities | <ul style="list-style-type: none"> • Marking and securing the route at the project location; • Removal/ clearance of vegetation is not planned; • Mechanical cutting of asphalt pavement with a depth of 15 cm; • Coating with unstable emulsion; • Asphalt scraping; • Clearing of existing pipeline; |
| Upgrading phase | <ul style="list-style-type: none"> • Mechanical excavation of soil (loading and transport to landfill) 214 m³ • Compacting the bed to the required compaction; • Mechanical making of embankment obtained from excavation; • Making of reinforced concrete culvert ø1000; • Drainage ditch excavation (loading and transport to landfill) 12 m³; • Spreading of sand under drainage pipe; • Fitting of drainage pipeline ø110; • Embedding of filtration material; |

| | |
|-----------------------------------|--|
| | <ul style="list-style-type: none"> Placing roadbase layer; Spraying of diluted bitumen over the road; Placing a bearing bitumen layer over existing asphalt; Placing a secondary layer; Placing a bearing bitumen layer over new road upgrading; Compacting a secondary layer of asphalt concrete; Fitting of concrete drain channel. |
| Operational phase | <ul style="list-style-type: none"> Clean up the upgrading site; Maintenance in the winter period; |
| Branch 4 (length = 218.1m) | |
| Project phases | Project Activities |
| Preparatory activities | <ul style="list-style-type: none"> Marking and securing the route at the project location; Removal/ clearance of vegetation is not planned; Mechanical cutting of asphalt pavement with a depth of 15 cm; Coating with unstable emulsion; Asphalt scraping; Dislocation of candelabras; |
| Upgrading phase | <ul style="list-style-type: none"> Mechanical excavation of soil (loading and transport to landfill) 297 m³; Compacting the bed to the required compaction; Mechanical making of embankment obtained from excavation; Drainage ditch excavation of soil (loading and transport to landfill) 10 m³; Spreading of sand under drainage pipe; Fitting of drainage pipeline ø110; Embedding of filtration material; Placing road base layer; Spraying of diluted bitumen over the road; Placing a bearing bitumen layer over existing asphalt; Placing a secondary layer; Placing a bearing bitumen layer over new road upgrading; Compacting a secondary layer of asphalt concrete; Fitting of concrete drain channel. |
| Operational phase | <ul style="list-style-type: none"> Clean up the upgrading site; Maintenance in the winter period; |

2.4 Sensitive receptors

During the preparation activities and upgrading phase, sensitive receptors that will be affected, are: workers (who will be engaged during the upgrading phase) and local population (who will gravitate along the sites). Also, as sensitive objects that need to be taken into consideration during the implementation of the project activities, are houses, local primary school, and health center. This conclusion is referring in aspect of increased level of noise, air emissions and easy access to the individual housing facilities.

3. POTENTIAL ENVIRONMENTAL IMPACT AND RISK AND IMPACT AND RISK ASSESSMENT

As described in the previous chapter, the project activities will be implemented in three phases: preparatory activities (marking out and clearing up of the 4 sites to be upgraded– branch streets), upgrading of 4 branch streets (installation of crushed stone material, putting asphalt layer, etc.), and operational phase – activities related to regular and preventive maintenance of relevant streets. The potential impact and risks are shown in .

Table 4.

Table 4 Potential impacts and risks

| Preparatory phase | Upgrading phase | Operational phase |
|--|---|--|
| <ul style="list-style-type: none"> • <i>Clearing and marking out the sites to be upgraded;</i> | <ul style="list-style-type: none"> • <i>Procurement and transportation of upgrading materials;</i> • <i>Excavation of soil;</i> • <i>Installation of crushed stone material;</i> • <i>Installation of storm water drainage system</i> • <i>Paving of relevant streets in v. Dvoriste</i> | <ul style="list-style-type: none"> • <i>Clean up the upgraded sites;</i> • <i>Transportation of the generated waste to the landfill,</i> |
| Possible impacts | | |
| <ul style="list-style-type: none"> • <i>OHS risks</i> • <i>Safety risk for local population (especially near houses, local primary school and health center)</i> | <ul style="list-style-type: none"> • <i>OHS risks</i> • <i>Community safety risks,</i> • <i>Air quality,</i> • <i>Noise,</i> • <i>Waste generation</i> • <i>Water pollution</i> | <ul style="list-style-type: none"> • <i>Waste generation,</i> • <i>Noise</i> • <i>Air emissions</i> |

As a result of implementation of project activities in the rural area of Municipality of Berovo, the main adverse environmental impact can be seen through: increased level of noise (produced from the usage of construction machinery), possible air emissions, improper waste management, possible water pollution (Dvorishka river) in compliance with OHS requirements and possible risk on local population. Main obligatory activities prior the start of sub-project activities that should be conducted from the Contractor are: preparation and implementation of **OHS Plan for risky terrains including Labor management procedures** (in order to prevent injuries of workers on sub-project locations), preparation and implementation of **Traffic management plan** (in order to provide proper transportation of goods and people within all sub-project locations, with directions for re-routing the traffic) and also preparation and implementation of **Community Safety Plan**. In order to provide maximum safety for local population during sub-project activities, the Contractor should mark, fence and place alert signalization along the upgrading sites (prohibition for entrance of unemployed on upgrading sites). The preparation and releasing of **Information note/Press** from the municipal staff should be performed also before the start of the sub-project activities with detailed information about the type of upgrading activities and their duration (announced via municipality web page (<https://www.berovo.gov.mk/>) and municipality board in the village).

Workers should wear PPE. They also must be informed on Grievance Redress Mechanism, as well as the right to organize in workers organization, by their employer the Contractor/Sub-contractor. All engaged workers must have regulated full employment status during their assignment on this project, and all their health and pension insurance must be covered in full for the engaged period by their employer. During the upgrading phase of the four streets branches in Municipality of Berovo, the possible **air emissions** that may occur are from operation of the mechanical machinery and equipment (dust and gas emissions). In operational phase of streets, air emissions will be generated from mobile sources of pollution – vehicles. To prevent and avoid adverse environmental impacts the Contractor should imply mitigation measures given in the Mitigation Plan (table below).

The operation of heavy machinery will also generate increased level of noise and vibration during the streets' upgrading. Taking into consideration the noise sensitivity of the project location and national legislation for noise protection (Official Gazette of RM No.79/07, 124/10, 47/11, 163/13 and 146/15) the project for upgrading of streets in village Dvoriste consists of two areas:

- area with II degree of noise protection regard the presence of health center, primary school and church (the maximum limit values should not exceed 45 dB(A) for night and 55 dB(A) for evening and day); and
- area with III degree of noise protection because of the mixed area with family houses and agricultural fields (the maximum limit values should not exceed 55 dB(A) for night and 60 dB(A) for evening and day).

The proper waste management of the different waste streams that will be generated on the upgraded sites in Municipality of Berovo (such as soil, asphalt, communal waste) should be implemented such as: appropriate selection, transportation and final disposal (according to national legislation Law on Waste and List of Waste codes – Official Gazette of RM No. 100/05). **Waste Management Plan** should be prepared and implemented by the

Contractor in order to prevent possible waste disposal near/in the river Dvorishka. As part of this plan, the options for reuse/recycling of the generated waste streams should be included (e.g. reuse of the removed layer of asphalt). For final waste transportation and disposal in Municipality of Berovo, the main responsibility lays on PCE "Usluga" from Berovo (the waste disposal will be performed on landfill "Uvin Valog", located at about 3 km northwest of the City of Berovo). In Table 5 are presented the estimated values of generated waste streams (according to the Main Design).

Table 5 The estimated values of generated waste streams (according to the Main Design)

| Relevant street | Branch 1 | | Branch 2 | | Branch 3 | | Branch 4 | |
|-----------------|-------------------|------------------|-------------------|----------|-------------------|-----------------|-------------------|-------------------|
| Type of waste | Excavated soil | Asphalt | Excavated soil | Asphalt | Excavated soil | Asphalt | Excavated soil | Asphalt |
| Waste code | 17 05 04 | 17 09 04 | 17 05 04 | 17 09 04 | 17 05 04 | 17 09 04 | 17 05 04 | 17 09 04 |
| Quantity | 844m ³ | 11m ³ | 548m ³ | / | 226m ³ | 2m ³ | 307m ³ | 0,1m ³ |

On some spots along the route of the project location, passes Dvorishka River (tributary of river Strumica). This water recipient is classified as II class (low level of pollution-mezotrophic status, high level of autoperification which can be used for fish growing, bathing, water sports and recreation). In order to prevent possible water pollution the Contractor should respect and imply requirement given in national legislation for water sector. In order to maintain **good ecological status** of Dvorishka river, the Contractor should forbid temporary or final waste disposal near /in river band of this water recipient (e.g disposal of soil, asphalt, leakages of motor oils and lubricants, etc.)

As mentioned before, in the wider surrounding of the project site are located several **protected areas**: Emerald site "Malesevo" (about 2,5-3km northeast from the project area), Important Plant Area (IPA) "Pehcevo – Judovi Livadi" (about 18km north from the project area) and Monument of Nature "Monospitovo marsh" (located about 23km southwest from the project location). Because of the wide distance between them and project area, the project's realization shall not cause any adverse impact on the flora and fauna.

Because of the narrow terrain in some parts of the existing unpaved streets in village Dvoriste (the width is from 3-3.5m), the Contractor has to survey the area along the roads (it should be done in the design phase of the project by the designers) in order to understand better the situation on high risks locations (houses or other private properties at the very narrow streets) and to implement the measures to protect the property. The survey should be done together with the Investor (Municipality of Berovo staff dealing with urban planning, expropriation issues and litigation) prior the upgrading works started. The inspection should be done on each high risk property (e.g. fences, garages, houses, village economies facilities, etc.) to determine their condition prior to upgrading. The high risk properties along the areas should be listed and for each the preventive technical measures should be developed and implement. The type of tools and equipment for excavation and other upgrading operations to be used near the risk properties should be environmentally friendly in term of noise level, vibration, easy rotation, etc. in order to prevent damage of structures of existing properties and minimize the impact on human health. The careful handling with machinery near the family houses in order to prevent possible damages is essential and the short OHS training to the workers should be delivered prior to start working in the risk houses vicinity, by the OHS authorized company engaged by the Contractor

Good communication between all involved stakeholders (Contractor, Supervisor, municipal staff, Environmental Inspector, Communal Inspector, PIU from MTC and other relevant persons from Municipality of Berovo) is very important for providing continuous performance of the project activities and successful completion of overall project. The PIU from MTC and project manager from the Municipality of Berovo will facilitate good communication and coordination of the project activities on spot. The main obligation of the Contractor is to implement the measures identified by the following Mitigation Plan. Monitoring of the implementation of the proposed environmental measures should be performed by the Supervisor but also by the municipality staff (Communal Inspector, Environmental Inspector, Project Manager) who will visit the project locations more frequently and together with the Supervisor will monitor if the proposed measures have been applied.

Implementation of ESMP

This ESMP should be a part of contract that the PIU will sign with the Contractor for implementation of the project activities. The Contractor is obligated to perform all proposed preventive or mitigation environmental and social measures in this plan and to keep the evidence of any documents related to applying these measures (e.g., letter asking the municipality for disposal of inert waste, records on OHS training performed for all workers before start of activities, all developed EHS plans, etc.). The OHS training should be organized by the Contractor for all workers prior start the project activities and prior any specific tasks with high health risks. The training should be delivered by the authorized OHS company and everyday OHS risks should be assessed by the Contractor's OHS responsible person working on the location on daily basis. Evidence for all trainings delivered should be kept.

The Supervising Engineer needs to monitor the implementation of proposed measures by the Contractor and Contractor's subcontractors with visual checking, reviewing the records of evidence that the measures have been applied and ask the Contractor to apply the measures as soon as possible. The non-compliances should be recorded and the Report on any non-compliances should be reported to the municipality (Project Manager) immediately, and the Project Manager will report it to the PIU. Each non-compliance should be closed with appropriate measure/s and the evidence should be kept. The regular monthly report should contain all environmental and social issues raised during that period and the evidence on solutions should be provided as well.

PIU will have main responsibilities regarding the Project implementation, project coordination, monitoring activities and reporting.

The Environmental/Social Specialist engaged by the PIU will be responsible for ensuring proper environmental management of all Project activities, conduct environmental supervision by carrying out document reviews, site visits and interviews with Contractor, Supervising Engineer and municipality staff. She/he will supervise Contractors' compliance with ESMP and visit the project location at least once a month and the Monitoring Report reflecting main issues and arrangements and timing for their solution will be prepared and submitted to the PIU. The semi-annual Project Report should contain a chapter with Environmental/Social risks/impacts of the project and the status of implementation the ESMP proposed measures.

The municipality has a main role for daily monitoring of project activities engaging the Supervising Engineer and coordinating all activities on location nominating the responsible person – Project Manager.

The PIU need to organize regular meetings with the Project Manager, Contractor, representatives from MTC, responsible person from the Municipality of Cesinovo-Oblesevo and the ES specialist on a monthly basis or during any site visit.

Public disclosure

The Municipality of Berovo submit draft version of this ESMP to review and approval of the PIU Environmental and Social Experts, who then (when confident that the document meets WB quality and content requirements) submit the draft document for the review and clearance by the World Bank. After the clearance is obtained, the document have to be publicly disclosed.

The Draft ESMP will be available for the public on web site of the Municipality of Berovo (<https://www.berovo.gov.mk/>) and the web site of the MTC PIU (<http://www.mtc.gov.mk/>). During the 14 days after the disclosure of the prepared ESMP document, the Municipality of Berovo will conduct public hearing event in order to inform the public on the proposed sub-project activities, anticipated impacts and the ways of their mitigation. Should there be any important feedback provided during the public consultation meetings, such feedback should be duly addressed and incorporated in the final document.

Based on the comments received by the stakeholders, the minutes of meeting would be prepared, including the list of participants and main comments on the prepared document. The final ESMP will be submitted to the MTC

PIU for the final approval of the Environmental and Social Experts. After the approval of the ESMP the document will be publicly available together with Minutes of meeting from the conducted public hearing event.

Approved Final version of ESMP should be included in the Grant Agreement with sub-project proponent, and then into the respective bidding documents and construction contracts.

4. ENVIRONMENTAL AND SOCIAL MITIGATION PLAN

| Potential impact | Impact scale | Proposed mitigation measures | Responsibility |
|---|--|--|--|
| Project activities: Preparation activities before upgrading the streets: Marking out the routes for upgrading of streets in village Dvoriste, in Municipality of Berovo | | | |
| <p>Possible adverse social and health impacts to the population, drivers and workers due to:</p> <ul style="list-style-type: none"> – Lack of ensured safety measures at the start of upgrading works; – Injury passing near by the upgrading sites; – Not compliance with strict OHS standards and work procedure – Inappropriate public access within the streets Branch 1, 2, 3 and 4 in village Dvoriste | <p>Local/ within the streets in village Dvoriste, Municipality of Berovo</p> <p>Short term during the upgrading period</p> <p>Significance - major</p> | <ul style="list-style-type: none"> ➤ Preparation, approval and implementation of OHS Plan for risky terrains prior start of activities; ➤ Preparation, approval and implementation of Community Safety Plan prior start of activities; ➤ Preparation, approval and implementation of Waste Management Plan (with reuse/recycling activities included) prior start up activities; ➤ Preparation, approval and implementation of - Traffic management Plan during project activities (in correlation with municipality staff, prior start the upgrading activities); ➤ Provision of the information via municipal web site (https://www.berovo.gov.mk/), local community, and municipality board about the type and duration of upgrading activities; ➤ Because of the narrow terrain in some parts of the existing unpaved streets in village Dvoriste (the width is from 3- 3.5m), the Contractor has to survey the area along the roads in order to understand better the situation on highly risks locations/houses or other private properties and to implement the measures to protect the property. The survey should be done together with the Investor (Municipality of Berovo staff dealing with urban planning, expropriation issues and litigation) prior the upgrading works started. The inspection should be done on each high risk property (e.g. fences, garages, houses, village economies facilities, etc.) to determine their condition prior to upgrading. The high risk properties along the upgrading areas should be listed and for each the preventive technical measures should be developed and implement. The type of tools and equipment for excavation and other upgrading operations to be used near the risk properties should be environmentally friendly in term of noise level, vibration, easy rotation, etc. in order to prevent damage of structures of existing properties and minimize the impact on human health. The careful handling with upgrading machinery near the family houses in order to prevent possible damages is essential and the short training to the workers should be delivered prior start working in the risk houses vicinity. ➤ The Contractor is required to submit a preliminary TMP, which will be part of the ESMP. Before the start of the project activities, the updated TMP with Community Safety Plan will be submitted to ESS. It will be presented to the workers on regular basis. TMP will specifically deal with safety of the pupils and local population using the road (walking / driving); ➤ Contractor to make assessment and to record the state of the property and objects that are close to the road, prior commencement of any works. Records should be kept in case of future damage claims by the local property owners ➤ Application of good upgrading practice for marking out the project sites including: <ul style="list-style-type: none"> • Ensure the appropriate marking out the project sites, section by section along the streets; • Placement of alert signs especially for limitation of speed driving near the streets under upgrading; • Placement of warning tapes; • Installation of Notice board with general information about the project, Contractor and Supervisor at project location; | <ul style="list-style-type: none"> • Contractor – Bidder • Supervisor • Municipality staff (Communal Inspector and Environmental Inspector) |

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
Project: Upgrading of streets in village Dvoriste, Municipality of Berovo

| Potential impact | Impact scale | Proposed mitigation measures | Responsibility |
|--|--|--|---|
| | | <ul style="list-style-type: none"> Forbidden of entrance of unemployed persons within the warning tapes; Community and Worker's OH&S measures should be applied (first aid, protective clothes for the workers, appropriate machines and tools); During the project activities the Contractor should provide easy access of the local population to their family houses primary school, health center, etc.; The streets should be kept clean; The mobile toilet should be placed on the project sites; Machines should be handled only by experienced and trained personnel, thus reducing the risk of accidents; Trying to avoid compliance, if any appeared recording grievances and promptly response and overcome the problem; Constant presence of firefighting devices should be ensured in case of fire or other damage; All workers must be familiar with the fire hazards and fire protection measures and must be trained to handle fire extinguishers, hydrants and other devices used for extinguishing fires; Larger quantities of flammable liquids should not be kept on the site along the streets under upgrading. All engaged workers on this project must have regulated employment status by Contractor/sub-contractor and must receive full health and pension insurance, all in compliance with local labor related legislation and ILO standards. | |
| Project activities: Upgrading of streets in village Dvoriste, in Municipality of Berovo | | | |
| Possible emissions by transportation vehicles and impact on air quality in the village Dvoriste due to: <ul style="list-style-type: none"> Gases emissions of dust-suspended particulates Traffic congestion will be caused as well causing changes in existing traffic circulation | Local/ within the village Dvoriste (Branch 1,2,3 and 4) Short term/ major | <ul style="list-style-type: none"> Upgrading sites, transportation routes and materials handling sites should be water-sprayed on dry and windy days; Upgrading materials should be stored in appropriate places covered to minimize dust; Vehicle loads likely to emit dust need to be covered; Usage of protective masks for the workers if the dust appears; Restriction of the vehicle speed within the upgrading locations; Perform regular maintenance of the vehicles and upgrading machinery in order to reduce the leakages of motor oils, emissions and dispersion of pollution; Burning of debris from ground clearance not permitted. | <ul style="list-style-type: none"> Contractor – Bidder Supervisor |
| Possible noise disturbance as a result of outdoor equipment usage and transportation vehicles driving around the sites | Local/along the project location in Municipality of Berovo short term /medium | <ul style="list-style-type: none"> The project location belongs to mixed area: area with II degree of noise protection regard the presence of health center, primary school and church (the maximum limit values should not exceed 45 dB(A) for night and 55 dB(A) for evening and day); and area with III degree of noise protection because of the mixed area with family houses and agricultural fields (the maximum limit values should not exceed 55 dB(A) for night and 60 dB(A) for evening and day). The upgrading work should be not permitted during the nights; the operations on sites shall be restricted to the hours 7.00 -19.00. | <ul style="list-style-type: none"> Contractor – Bidder Supervisor |

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
Project: Upgrading of streets in village Dvoriste, Municipality of Berovo

| Potential impact | Impact scale | Proposed mitigation measures | Responsibility |
|---|---|---|---|
| | | <ul style="list-style-type: none"> The control of noise level should be performed before the start up with the working activities and during work peaks; | |
| Possible impact on water courses – Dvoriska river in village Dvoriste | Local/near Dvoriska river, on some sport along the route of the project location Short term/ major | <ul style="list-style-type: none"> Minimize storage or disposal of substances harmful to water – Dvoriska river; In order to maintain good ecological status of Dvorishka river, the Contractor should forbid temporary or final waste disposal near /in river band of this water recipient (e.g disposal of soil, asphalt, leakages of motor oils and lubricants, etc.) The streets should be kept clean and tidy to prevent the build-up of oil and dirt that may be washed into a water course or drain during heavy rainfall. | <ul style="list-style-type: none"> Contractor – Bidder Supervisor |
| Possible adverse environmental impact and health effects could occur as a result of generation of the different waste streams The inappropriate waste management and not in time collection and transportation of waste streams | Local/ within the project location in Municipality of Berovo Short term/ major | <ul style="list-style-type: none"> Identification of the different waste types at the upgrading sites (soil, humus, bottles, food, etc.); Classification of waste according the national List of Waste (Official Gazette no.100/05); The main waste would be classified under the Waste Chapter 17 “Construction and demolition wastes (including excavated soil from contaminated sites)” with the waste code, 17 05 – Excavated soil and stones, 17 09 04 – Mixed waste from construction site and 17 03- bituminous material; Small amount of solid municipal waste could be found (food, beverages), as well as packaging waste (paper, bottles, glass, etc.). Proper containers/waste bins should be provide at the project site during the upgrading activities; Collection and transportation of the inert and communal waste by the PCE "Usluga" from Berovo (the waste disposal will be performed on landfill “Uvin Valog”, located at about 3 km northwest of the City of Berovo; The options for reuse/recycling of the generated waste streams should be taking into consideration (e.g. reuse of the removed layer of asphalt, excavated soil, etc.). Possible hazardous waste (motor oils, vehicle fuels) should be collected separately and authorized collector and transporter should be sub-contracted to transport and finally dispose the hazardous waste; The materials should be covered during the transportation to avoid waste dispersion; Burning of waste in the site or around is prohibited. | <ul style="list-style-type: none"> Contractor – Bidder Supervisor Municipality staff (Communal Inspector) Mayor of the Municipality of Berovo PCE "Usluga" from Berovo |
| Possible adverse impact on cultural heritage site in v. Dvoriste (church) | Local/ within the project location in Municipality of Berovo Short term/ minor | <ul style="list-style-type: none"> Possible damages of the church due to the improper handling and manipulation of the construction machinery and equipment – only competent and trained staff should be working with this equipment during the upgrading activities; Possible noise disturbance during the upgrading activities – the Contractor should provide usage of construction machinery and equipment that generate lower noise level; | <ul style="list-style-type: none"> Contractor – Bidder Supervisor Municipality staff (Communal Inspector) |
| Project activities: Operational phase of the streets in village Dvoriste, in Municipality of Berovo | | | |

| Potential impact | Impact scale | Proposed mitigation measures | Responsibility |
|--|--------------|------------------------------|----------------|
| <ul style="list-style-type: none"> In the operational phase of the projects, there is a potential risk for traffic safety due to the limited width of the roads on some places. The implementation of mitigation measures should be in compliance with national regulative for traffic safety - Law for road traffic safety (Official Gazette of RM, No.54/07, 86/08, 98/08, 64/09, 161/09, 36/11, 51/11,114/12, 27/14 and 169/15). | | | |

5. ENVIRONMENTAL AND SOCIAL MONITORING PLAN

| What parameter to be monitored? | Where is the parameter to be monitored? | How is the parameter monitored? | When is the parameter monitored (frequency of measurement)? | Why is the parameter monitored? | Cost | | Responsibility | |
|--|---|--|--|--|--------------------------------|------------|---|---|
| | | | | | Upgrading | Operations | Upgrading of streets in village Dvoriste, in Municipality of Berovo | Operations of the streets in village Dvoriste |
| Project stage: Preparation activities before upgrading the streets: Marking out the routes for upgrading of streets in village Dvoriste, in Municipality of Berovo | | | | | | | | |
| Application of PPE and protection measures for workers in order to minimize possible injuries at construction site | At the project sites | Visual checks | During the clean-up activities At the beginning of each working day during the sub-project activities | To prevent health and safety risks – mechanical injuries To be in compliance with national communal health regulation and OH&S standards | Included in the project budget | | Contractor/sub-contractors - Bidder Supervisor Communal Inspector at the Municipality of Berovo | |
| Prepared all required documents related to OH&S, Community safety and Traffic Management | Within the project location | Review of the prepared documentation (OHS Plan Community safety Plan Traffic Management Plan (TMP) | During the clean-up activities At the beginning of each working day during the sub-project activities | To prevent health and safety risks – mechanical injuries To be in compliance with national communal health regulation and OH&S standards | Included in the project budget | | Contractor - Bidder Supervisor Communal Inspector at the Municipality of Berovo | |
| Training of workers and informing of the local population about the project activities | At the project site | OHS training By OHS authorized company engaged by the Contractor | Before the start up of the project activities | To prevent health and safety risks – mechanical injuries of the worker and local population To be in compliance with national communal health regulation and OH&S standards | Included in the project budget | | Contractor - Bidder Supervisor Communal Inspector at the Municipality of Berovo | |

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
Project: Upgrading of streets in village Dvoriste, Municipality of Berovo

| What parameter to be monitored? | Where is the parameter to be monitored? | How is the parameter monitored? | When is the parameter monitored (frequency of measurement)? | Why is the parameter monitored? | Cost | | Responsibility | |
|--|---|---|---|--|--------------------------------|------------|---|---|
| | | | | | Upgrading | Operations | Upgrading of streets in village Dvoriste, in Municipality of Berovo | Operations of the streets in village Dvoriste |
| | | Provision of the information via TV, radio and municipality web site (https://www.berovo.gov.mk/) about the project activities | | | | | | |
| Conducting survey of the area along the streets (highly risks locations/houses) to determine their condition prior upgrading work | At some narrow parts of the streets in village Dvoriste | With taking photos on highly risk locations/houses along the local road | Before the start of upgrading activities | In order to prevent damages on private properties of local population and to implement preventive measures to protect the properties | Included in the project budget | | Contractor/ Municipality of Berovo staff dealing with urban planning, expropriation issues and litigation | |
| Project stage: Upgrading of streets in village Dvoriste, in Municipality of Berovo | | | | | | | | |
| Existence of applicable Traffic Management Plan for the project and Notices for the availability of the plan and information on traffic regulation set on bulletin board in the village. | Within the project locations | Visual monitoring | During the working day | To ensure the coordinated traffic flow through the project location and easy access of local population to their homes | Included in the project budget | | Contractor - Bidder Supervisor Communal Inspector at the Municipality of Berovo | |
| Use of PPE by the workers | At upgrading site | Visual monitoring | During the works | To ensure workers safety on site | Included in the project budget | | Municipality of Berovo, Labor inspection | |

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
Project: Upgrading of streets in village Dvoriste, Municipality of Berovo

| What parameter to be monitored? | Where is the parameter to be monitored? | How is the parameter monitored? | When is the parameter monitored (frequency of measurement)? | Why is the parameter monitored? | Cost | | Responsibility | |
|---|--|---|---|--|--------------------------------|------------|--|---|
| | | | | | Upgrading | Operations | Upgrading of streets in village Dvoriste, in Municipality of Berovo | Operations of the streets in village Dvoriste |
| Forbidden disposal of the waste streams (solid and liquid) near or in the river bend of Dvoriska river in order to prevent possible water pollution | In village Dvoriste near the project location | Visual check if the waste is disposed near Dvoriska river | During the project activities (once per week) | To ensure good status of water quality | Included in the project budget | | Contractor - Bidder Supervisor | |
| Primary selection of the generated different waste streams at the project location | On the upgrading sites | Review the documentation | At the beginning of work with new material/s | In order to ensure separation of hazardous from the non-hazardous waste as well as inert from biodegradable waste | Included in the project budget | | Contractor – Bidder Supervisor | |
| Collection and transport of hazardous waste (if any occurs) | On safety temporary storage | Review the transportation list and conditions at the storage facility | Before the transportation of the hazardous waste (if there is any) | To improve the waste management practice on municipality and national level/ Not to dispose the hazardous waste on the waste disposal spots | Included in the project budget | | Authorized Contractor for collection and transportation of hazardous waste (if any occurs) | |
| Collection transportation and final disposal of the solid waste | At the upgrading sites and near them (within the village Dvoriste) | Visual monitoring and reviewing the transportation and disposal lists from the sub-contractor | After the collection and transportation of the solid waste on regular base each day | Not to leave and dispose the waste streams on the sites in order to avoid the environmental and health impact on local population To have the real data for generated waste streams and to improve the waste management | Included in the project budget | | Contractor – Bidder Supervisor and PCE “Usluga” from Berovo | |
| Fulfilled Annual Report for collection, transportation and disposal of waste | Local self-government administration | Review of documentation – Identification of waste list | After the accomplishment the task of collection, transportation, temporary disposal | To improve the waste management on local and national level To be in compliance with national legal requirements | Included in the project budget | | Mayor of Municipality of Berovo / Ministry of Environment and Physical Planning | |

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
Project: Upgrading of streets in village Dvoriste, Municipality of Berovo

| What parameter to be monitored? | Where is the parameter to be monitored? | How is the parameter monitored? | When is the parameter monitored (frequency of measurement)? | Why is the parameter monitored? | Cost | | Responsibility | |
|---|---|---|--|--|--------------------------------------|---------------------|--|---|
| | | | | | Upgrading | Operations | Upgrading of streets in village Dvoriste, in Municipality of Berovo | Operations of the streets in village Dvoriste |
| | | | and final disposal of waste | | | | | |
| Baseline monitoring of noise and additional upon public complaint (if happens) | Along the streets where are located family houses | With noise measurement calibrated equipment | Before the start up with the working activities and During the work peaks | To ensure noise level limits according regulation | Part of the regular Contract or cost | | Contractor; Accredited company for measuring the level of provided by the contractor; Authorized environmental inspector, Construction inspector | |
| Project stage: Operational phase of the streets in village Dvoriste | | | | | | | | |
| Implementation of mitigation measures (e.g. placement of the horizontal and vertical traffic signalization for speed limitation of the vehicles, convex wide angle mirrors, etc.) Limitation of the generated noise as road conditions allows; | Along the streets especially in some narrow parts (where the width is less than 3.5m) | Decreased number of traffic accidents along the local roads | Continuously (the parameter should be monitored in compliance with - Law for road traffic safety (Official Gazette of RM, No.54/07, 86/08, 98/08, 64/09, 161/09, 36/11, 51/11,114/12, 27/14 and 169/15). | To achieve safety of the local population and their private properties and to be in compliance with national regulative for traffic safety | | Municipality budget | | Ministry of internal affairs (branch office in Municipality of Berovo |

6. ANNEX

Annex 1 Layouts of the street elements in v. Dvorishte

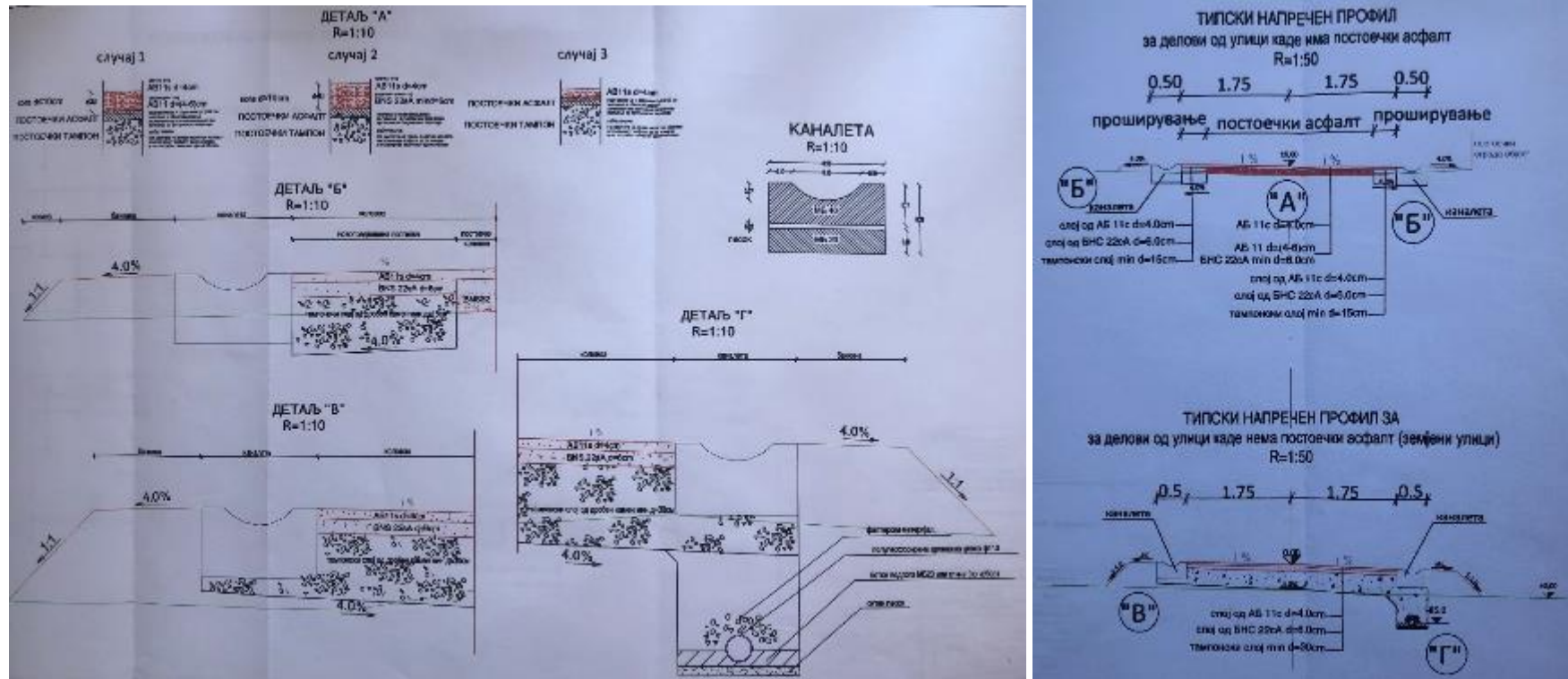


Figure 7 Cross section of the layout of storm water system and relevant streets

Annex 2 Map of sensitive areas in the wider surrounding of the project site in Municipality of Berovo

