PROJECT APPRAISAL DOCUMENT

CONSTRUCTION OF LOCAL ROAD AND STREETS

December 2012

MUNICIPALITY BOSILOVO

I. PROJECT DESCRIPTION

A. GENERAL INFORMATION ABOUT THE MUNICIPALITY

1. Map of the municipality

2. General information

The Bosilovo municipality is located in the outermost southeastern part of Macedonia, only 7km from the town Strumica – the biggest urban center in this part of the country. The municipality encompasses territory of 150km^2 and 16 settlements. Municipality was created in 1996 based on the Law on Territorial Division.

Most of the population is Macedonian (over 95%) with small number of Turks. Due to favorable climate and significant number of sunny days there are excellent conditions for agriculture and wine production. Municipality has exceptional resource – swamp of Monospitovo (400ha) – preserved as a natural monument. The marsh was treated over 50 years ago with construction of drainage system, which resulted in partial drying of the mud. Monospitovo swamp still remains unique due to several tree species, ferns, swamp reeds and endemic species of animals like birds or fish. Municipality Bosilovo received 170,000 Euro from EU IPA funds on cross-border cooperation for revitalization of the marsh.

B. DEMOGRAPHIC AND ECONOMICAL PROFILE

1. Demography

Total population of the municipality comprises 14,260 residents and 3,661 households (2002 Census), which means the average number of households' members is 3.9. Given the municipal territory the average density of population is 88 residents per km^2.

Table 1: Population by settlements

	Settlement	Population	Households
1.	Borievo	926	278
2.	Bosilovo	1698	446
3.	Gecerlija	373	88
4.	Drvos	699	163
5.	Ednokukevo	678	165
6.	Ilovica	1907	464
7.	Petralinci	605	174
8.	Radovo	851	200
9.	Robovo	576	149
10.	Saraj	937	245
11.	Sekirnik	1194	315
12.	Staro Baldovci	269	71
13.	Turnovo	941	242
14.	Hamazali	22	7
15.	Stuka	781	207
16.	Monospitovo	1803	447
	Total:	14,260	3,661

Source: 2002 Census

The age structure shows that 12% of the total municipal population is more than 65 years old. This is slightly higher than the average in Macedonia (11%). The share of young population below 14 years is 21%. Male population dominates female (51.5% vrs 48.5%).

Table 2: Age structure of population

	Total	Male	Female
0-14	2982	1520	1462
15-64	9577	5076	4501
over 65	1701	745	956
Total	14260	7341	6919

Source: 2002 Census

2. Economy

The economy is based on agriculture and farming, which occupy over 70% of population. Subsequently, there is food industry, wood processing industry, contraction and mining of metal ore.

Main enterprises are as follows:

- Dairy "Zdravje" in Radovo – 42 employees;
- Greenhouses "Oranzerii" – in Hamzali, on territory of 48h (18ha covered), annual production of vegetables 4,420t;

- "Agrolozar" in Hamzali includes winery "Dalvina" and production of grapes and peaches on the area of 520ha (450ha for grapes and 70ha for peaches). Annual production of grapes is around 3,500t;
- Chicken farm "Ekonomja" in Borievo;
- Mine "Orgazden" located on the territory of municipality Bosilovo (head of the company is in Strumica municipality) for stone (*feldspad*) extraction, area of 4.33km^2, 5 employees, and annual extraction 26,000t ore.

The structure of population by employment status is presented in the following table.

Table 3: Employment status in Bosilovo municipality

Total population	Potential labor force	Labor force	Unemployed	Employed	Employment rate	Unemployment rate
14,260	11,171	6,259	1,923	4,336	38.8%	30.7%

Source: Bosilovo municipality

Unemployment rate is comparable to the country level. However, the municipality is characterized by high share of population non-active in the labor market (4,912 inhabitants are registered as non-active). Moreover it is estimated that about 2300-2400 citizens live abroad. As a result employment rate is equal to 38.8% only.

Infrastructure

The municipality is crossed by M-6 road leading from Strumica to the Bulgarian border. There is also passing regional road connecting municipalities Strumica and Berovo. Then, there are 14 local roads of 106.9 km long, out of which only 40.2 km are asphalted.

Coverage with water supply network is equal to 75% - out of 16 inhabited settlements only 4 do not have water supply network. There is regional water supply network "Ilovica" with technologically advanced filter station. It was designed to supply the following rural settlements: Ilovica, Stuka, Radovo, Sekirnik, Borievo, Bosilovo and Turnovo. By end 2008, 1491 households were connected to this water supply network. The management of network is responsibility of CSE "Ograzden" from Bosilovo. Network is supplied with water from artificial lake "Ilovica" located at the mountain Ograzden, close to the filter station. It occupies territory of 0.5km^2 and has water accumulation capacity of 420,000m^3. Water is used for irrigation of 90ha agricultural land near to rural settlements Ilovica and Stuka. Two rural settlements – Drvos and Monospitovo have local water supply networks managed by local communities. However, the amount of water during the summertime is not sufficient, as well as its quality. There is no sewage network in any of the municipal settlements.

In 2001 when the water supply system was created, the municipal CSE was established to manage the system.

None of the local roads have storm water system. The drainage of local roads is resolved with open drainage channels.

Education

Two primary schools are located at the municipal territory (Bosilovo, Ilovica) with 12 rural sub-divisions. In total 1327 pupils get primary education.

C. GENERAL DESCRIPTION OF THE PROJECT

1. Basic description of project and current situation

The project assumes construction of 2 local streets in villages Petralinci and Radovo and 1 local road connecting villages Monospitovo and Bansko. The total length of selected streets/road is equal to 2,462m.

Table 4. Length of selected streets (m)

Local road	Length
Monospitovo-Bansko	1475
in Radovo	564
in Petralinci	423
TOTAL:	2462

The municipality is implementing MSIP financed sub-project on construction of the bridge on the road Monospitovo-Bansko. The basic design for the local road Monospitovo-Bansko has also been developed. The total length of the road is 2.368.82km out of which 1.475km is on the territory of Bosilovo municipality and 0.895km on the territory of Strumica municipality. Bosilovo municipality planned to construct section on its territory with the funds from Regional Development Bureau (subordinated to the Ministry of Local Self-Government) devoted for the South-East Planning Region. However, there amount of money granted is not sufficient. Therefore, the municipality decided to apply for MSIP funds to get financing for construction of Monospitovo-Bansko road and granted funds will be used for construction of the section of the road on territory of Strumica municipality. Technical solution for road is coordinated with the bridge location. There are no private houses on the road Monospitovo-Bansko.

On the streets selected for this sub-project there is no sewage or storm-water system. The water supply line is on the street in Radovo and along the road Monospitovo-Bansko.

Figure 1: Local road Monospitovo-Bansko

The streets in Radovo and Petralinci are located in the middle of villages and have not sub-base not asphalt layer. There are plenty of private houses along both roads. By municipal data there are 52 inhabitants on the street in Petralinci and 80 inhabitants on the street in Radovo. On the street in Petralinci there are private houses, church and post office, whereas in Radovo there are only private houses. The road in Radovo has transit character as it connects two villages: Radovo and Ilovica.

Figure 2: Street in Petralinci

Figure 3: Street in Radovo

2. Future situation

Population of Bosilvo municipality will get access to asphalted road connecting Monospitovo-Bansko. Hence, population living in two rural settlements – Radovo and Petralinci – will get access to the asphalted streets. Road Monospitovo-Bansko and street in Radovo have transit character.

Direct beneficiaries of the project are residents of rural settlements Bansko (Strumica municipality) and Monospitovo (Bosilovo municipality) – about 4500 persons. Indirect beneficiaries are all resident of the municipality (14,260) as construction of road connecting villages Monospitovo and Bansko allows connecting with other local roads in the municipality.

Hence, direct beneficiaries are people living on selected streets: namely in Petralinci – 52 inhabitants and in Radovo – 80 inhabitants.

3. Goals

The main purpose of the proposed technical solution for these local road/streets is to provide their long run improvement by maximizing the technical life of the surface so as to correspond to valid local road standards, thus meeting the needs of the local communities.

The objectives of the technical solution of the project are as follows:

- Facilitate local communication in the municipality – provide traffic comfort, convenience and safety for the pedestrians and traffic by improving the surface of the road/streets as well as their carrying characteristics,
- Improve access of farmers to their plots,
- Easier access to Monospitovo swamp – improve accessibility to tourist attractions and ensure better access to the tourist service points in the municipality,
- Decrease transport costs,
- Increase in productivity of work,
- Improve quality of life – satisfy various social, recreational and residential needs of citizens in the local communities.

The indirect results of the project implementation will be decrease in money spent for road repairs and reallocation of those funds to other municipal services. Then, it might be expected that the property value of houses in Radovo and Petralinci, on the streets selected for this sub-project, will increase leading to growth of revenues from property taxes. On the street in Petralinci about 70% of houses are constructed with permits, and the remaining 30% are in process of ex-post legalization. For the selected street in Radovo the relations are 75/25%.

The project refers to the strategic priorities of the municipality. On 28 June 2010 the Council made a decision on priority projects and selected “Rehabilitation and improvement of local roads”. Point 1.5 of this decision refers to the local road Monospitovo-Bansko.

On 12 April 2012 the municipal Council approved “Program on construction, reconstruction, maintenance and protection of local roads/streets in Bosilovo municipality in 2012”. Point B of the program refers to street in Radovo. During the year the municipality managed to provide funds for asphalting 200m of this street only.

The municipality is making efforts to provide funds for streets construction/ rehabilitation, but its own financial resources are limited. In 2011-2012 it managed to provide funds from EBRD, WB, ASR, AFSARD and own funds, however the needs are much bigger, as less than half of local roads is asphalted (40km out of 107km).

Table 5. Implemented infrastructure projects in Bosilovo municipality

	Project name	Financing source
2011		
1.	Construction of bike track in v.Stuka 493.41m	AFSARD/OF
2.	Construction of local road Petralinci-Gecerlija 770m (started in 2010, 1700m constructed from AFSARD/OF)	EBRD

3.	Construction of local road Monospitovo-Ednokukevo 2120m	WB/MTC
4.	Construction of local road Radovo-Staro Baldovci 650m	WB/MTC
5.	Construction of local street in v.Borievo 1072.5m	ASR/OF
6.	Construction of local street in v.Saraj 698.5m	ASR/OF
7.	Crossings on the following roads: Turnovo-Stuka, Turnovo-Radovo, Turnovo-Ilovica	
8.	Construction of bridges in Petralinci and in Monospitovo	OF/BRD
9.	Construction of wooden bridge on Monospitovo swamp	OF/MEPP
10.	Horticultural activities in villages: Monospitovo, Radovo, Ilovica, Stuka, Turnovo, Borievo, Drvos, Sekernik, Bosilovo	OF
11.	Supportive facility for storage of wood for use of primary school in v.Saraj	
12.	Supportive facility for storage of wood for use of primary school in v.Ilovica	
13.	Bus stations in v.Radovo and v.Drvos	
14.	Setting lighting on playground in v.Monospitovo	
15.	Construction of street guiles in v.Monospitovo	
2012		
1.	Construction of local road Radovo-Staro Baldovci 1810m	EBRD
2.	Construction of street in Radovo 200m	OF/ASR
3.	Construction of street in Bosilovo 208m	OF/ASR
4.	Horticultural activities in villages: Monospitovo	OF
5.	Construction of parking and regulation of the river bed of Stucka River in v.Stuka	OF
6.	Construction of street in v.Sekirnik 460m and regulation of central area in v.Bosilovo	AFSARD/OF
7.	Construction of new public taps in v.Ilovica and in settlement Stuka	
8.	Construction of etno-cultural center in settlement Stuka and partial replacement of asbestos roof on school building in v.Turnovo	SDA/OF
9.	Construction of information-educative center in Bosilovo	IPA[1]

Abbreviations: AFSARD – Agency for financial support of agriculture and rural development, OF – own funds, MTC – Ministry of Transport and Communications, ASR- Agency on State Roads, BRD – Bureau for Regional Development, MEPP – Ministry of Environment and Physical Planning, SDA – Swiss Development Agency

[1]Cross border cooperation between Macedonia and Bulgaria

II. SOCIAL IMPACT

The sociological study refers to five areas: social diversity and gender, institutions, rules and behavior, stakeholders, participation, social risk. It is based on meetings with relevant stakeholders. Face-to-face interviews were conducted with top municipal officials including mayor, and representatives of the urban and financial departments. Hence, the project idea was presented to the public in an open debate. Second, the project was presented to the Council and got its approval.

Demographic analysis presented in chapter I allow formulating the following conclusions:

- The municipality is relatively small by the number of inhabitants and widely distributed among 16 settlements,
- This is rural municipality,
- Population is older than country average – 12% vs 11% is share of population over 65 years old,
- Male population is dominant with its share of 51.5%,
- By ethnic grounds population is homogenous with dominance of Macedonian population (>95%). Second ethnic group are Turks,
- The unemployment rate is comparable to country level (38.8% vs. 38%),
- The number of businesses is very limited. Additional employment opportunities are created by the location close to Strumica – the biggest urban center in this part of the country.

The municipal needs in infrastructure investments are high, especially in investment in rural roads as less than half of local roads is asphalted (40km out of 107km). On the other hand the municipal capacity to finance such projects is limited. For last 2 years it managed to asphalt about 8km km of local roads providing financing from different sources (EBRD, WB, ASR, AFSARD and own funds – see Table 5).

Analyzing the social impact of this project it is necessary to identify main stakeholders – organizations, groups or individuals who might have interest in success of the project, can contribute/ affect project implementation, or can directly or indirectly influence the design and implementation. The following stakeholders were identified: mayor, municipal administration, inhabitants, political parties, local social organizations like NGOs or media. The legal framework requires organization of consultations on any infrastructure projects proposed by the municipality. In line with those legal requirements the municipality organized public debate on the proposed project on 23 November 2012. The entrance was free to anyone interested. The municipality was represented by the mayor, director of the legal department and inspector on urban and construction works. The mayor presented content of the projects, estimated value and financing sources and conditions. It was stressed that all legal issues were clarified. The street in Petralinci being the subject of this project starts in the middle of the village, from the Catholic Church and ends at connection with road to Berovo. The street in Radovo starts in the middle of the village and leads in direction of Ilovica village. The loan has grace period and will be repaid in the following years when the additional revenues from mining license will start to flow in. The citizens expressed their support for the project and there were no single criticism.

Based on the public debate on November 30, 2012 the municipal Council approved the projects and the way of its financing. The Council comprises 15 members representing different political parties: 7 members from VMRO-DPMNE, 6 members from SDSM, 1 from PODEM and 1 from LDP. Voting results on this sub-project were the following: 9 votes in favor, 5 against and 1 restrained.

Based on this public consultation one may conclude that citizens are fully informed of the project, its goals, costs and consequences. All stakeholders had access to information and could influence scope

of the project. There are no NGOs active at the municipal territory. Citizens' interests are mostly expressed by political parties, which are present in the municipal Council. Voting results indicate that in a democratic procedure the majority of Council members supported project implementation. Based on this support expressed by citizens in public debate and their representatives in Council voting one might conclude that there is no resistance to the project.

The project will not cause a feeling of inequality among the citizens. All the municipal inhabitants are the beneficiaries of the project as streets/roads selected have transit character. The project does not favor any social or ethnic group. The project was publicly consulted and approved by the majority of Councilors, therefore it is not expected that some group, organization or institution might cause some problems during implementation.

Citizens are not expected to participate directly in the project as all the costs will be covered with the loan.

This Project is not a subject to resettlement issues because the project involves construction of already existing local streets/road located on a municipal territory. Technical design was prepared in accordance with urban plan, but also in line with local conditions. As a result, there are no property issues in this sub-project.

Concluding, the project does not carry any social risks. It is considered cost-effective over a long run and will contribute to improvement in community standards of living in Bosilovo municipality. The project is priority for the public administration and citizens. The population is not expected to contribute financially. The project is not subject to resettlement issues. No expropriation is expected to be raised during the implementation of the project.

Potential success of the project depends on its efficient implementation. The quality of constructed roads is of the highest importance. The citizens will pay special attention to quality as the loan will have to be paid off during the next 13 years from the municipal budget. The project is designed in such a way that during the loan repayment there should not be incurred any additional maintenance costs, except regular ex-ante predicted. The quality of project implementation will be provided by supervision on the selected company employed by the municipality. However, to achieve high quality of provided works citizens involvement is necessary.

III. ENVIRONMENTAL IMPACT

The project consists of three sub-projects:

a) Construction of the local street in village Petralinci in length of 423m,

b) Construction of the local street in village Radovo in length of 564m,

c) Construction of local road in length of 1475m connecting villages Monospitovo and Bansko.

Currently, the two streets (village Petralinci and village Radovo) are an unpaved roads, which are in a poor condition with considerable deformations and they do not satisfy the basic criteria in terms of loads, speed and traffic safety, which is the reason for envisaging their construction. The length of the street in village Petralinci is 423m and extends from the urban part of the village Petralinci to the start of the national road Strumica – Berovo. The street in village Radovo has length 749.91 m out of which 564 meters will be the subject of this project.

According to the technical design, the local road Monospitovo-Bansko has a length of 2,368.82m out of which 1,475m is part of the road that belongs to the municipality Bosilovo and is the subject of construction with this project.

The width of the carriageway is set at 3m and the vehicle speed is proposed to 40km/h.

Carriageway structure for two streets in village Petralinci and Radovo is designed for light vehicles traffic and consists of 25cm road base build of well compacted crushed stone material and 7cm BNHS 16A asphalt layer.

The drainage of the storm water from the carriageway is solved by the cross slopes and slopes along the path on the carriageway and the water is discharge through the gutters in the existing channel.

Technical solution envisages setting horizontal and vertical signalization on both streets.

The local road between village Bansko and village Monospitovo is proposed to be with width of carriageway of 4m with vehicle speed of 40km/h.

Carriageway structure for the local road is designed for light vehicles traffic and consists of 30cm road base build of well compacted crushed stone material and 4 cm AB 11 asphalt layer and BN 22 with 6cm asphalt bearing layer.

The drainage of the storm water from the carriageway is solved by the cross slopes and slopes along the path on the carriageway and gutters, which duct the water to the nearby channels. Along the trace, where the road is cut with drains, there are envisaged two reinforced concrete pipe ducts with the diameter of 1000mm and one existing pipe duct.

The sub-project envisages setting horizontal and vertical signalling on the local road.

The construction of the bridge over the Monospitovski channel on the planned local road Monospitovo – Bansko is not a part of this project as it is a separate infrastructure project for which the Municipality of Bosilovo applied for a loan to WB MSIP Project, the Project Appraisal Document was prepared including the EMPs and it was approved for financing. This project includes the construction of local road Monospitovo – Bansko in length 1475 m only.

According the national legislation (Law on environment – Official Gazette No. 53/05, 81/05, 24/07, 159/08, 83/09, 124/10, 51/11, 123/12) and secondary legislation, the Project for reconstruction of the local roads belongs to the Annex I Chapter X – Infrastructural projects, Part 1: Construction of local roads and streets. For these types of projects the EIA Report should be prepared and the Report should be adopted by the Mayor of the municipality.

The EIA Report for the all three sub-projects in Bosilovo municipality was prepared and submitted to the municipality and the Decision on approval the EIA Report was issued.

The EIA Report describes the local characteristics of the environment, potential adverse impacts that are expected and measures that investor should apply. All these measures are fully incorporated in the following EMP.

Close to the local road Monospitovo-Bansko (2.5 – 3 km) there is a natural protected area – Monospitovsko blato (swamp) with 400 ha of area with III category IUCN protection and protected by the national Law on nature as a Monument of nature due to the plenty of flora, fauna species (more than 130 different type of birds – *Accipiter nisus, Ergetta garzetta, Anas Penelope, Ciconia nigra, etc , plants – Osmunda regalis, Marsilea quadrifolia, Tamarix smyrensis*, etc., fishes – *Esox Lucius*.

Figure 1 Monospitovo swamp

Although the planned project is not so close to the swamp, the proximity of the monument of nature should be taken into account during the construction works. The Monospitovo Channel/River Vodocnica has 14.1 km long river bed and it is right tributary to the River Strumica (presented on Figure 2).

Figure 2 Location of construction activities refer to Monospitovo swamp, Monospitovski Channel/River Vodocnica

The determination of the water quality status of the main surface watercourses is prescribed by the Law on Water (Official Gazette No. 87/08, 6 / 09, 161/09, 83/10, 51/11) and Decree on classification of waters and Degree of categorization of watercourse, lakes, accumulations and ground waters (Official Gazette No.18/99, 71/99).

According the regulation on classification of waters, the following indicators are relevant for the categorization: a) Organoleptic indicators (visible colour and colour, notable smell, turbidity and transparency, tasting of water sample-taste, colour, odour and feel); b) pH - acidity; c) Dissolved oxygen; d) Mineralization (Suspended matters, total dry residue after filtration, total dissolved solids); e) Eutrophication (Total phosphorus, total nitrogen, chlorophyll "a", primary production, saprobe index, level of biological productivity); f) Microbiological pollution (Most probable number of thermo-tolerant coli form bacteria); g) Radioactivity; and h) Hazardous substances (Metals and their compounds, other inorganic parameters, phenols, hydrocarbons, halogenated hydrocarbons, nitrated hydrocarbons, pesticides, other organic compounds). Based on these indicators, the surface waters are classified into five classes (Class I is the best quality water, Class V is the worst one).

The River Vodocnica / Monospitovski Channel has been classified as a water with Class III which means moderately eutrophic water, which in its natural state can be used for irrigation, and after usual purification methods (conditioning) for industries which do not require drinking water quality. Buffering capacity of the water is low, but it maintains the (pH value) acidity at a level still suitable for most fish. In hypolimnion occasionally oxygen deficit occurs. The level of primary production is considerable, and some changes in community structure, including fish species can be observed. The load of harmful substances is evident as well as microbial pollution. The concentration of the harmful substances varies from natural levels to levels of chronic toxicity for aquatic life.

Refer to the Law on waters (Official Gazette No. 87/08, 6 / 09, 161/09, 83/10, 51/11, 44/12) article 131 there is a prohibition (exception if the license is issued) to change the water flow direction, to extract sand, gravel from watercourse, to cut the trees and vegetation around the waterbed, to dispose different waste streams like industrial waste , municipal and inert waste in the vicinity of riverbed, or to perform other activities that are potential risk to the water quantity and quality. The river/coastal strip/bank for rivers outside the settlements is proposed to 50m.

The environmental impacts (from all three sub-projects) are expected to be short-term - during the construction period and the impacts will be with minor local significance. The good construction practice could cover almost all mitigation measures proposed mainly to overcome the OH&S risks and community risks that could appear as a result of urban area and surrounding of the project site.

The major impacts are expected as a result of improper waste management with different waste streams (mainly inert waste with a very small quantity of biodegradable waste), impact on biodiversity in Monospitovo swamp and noise from the outdoor equipment that could cause noise disturbance to the sensitive receptors - the families living in all villages along the construction sites.

In order to prevent the minor adverse environmental impact and to ensure regular transportation of goods and people across all villages in Bosilovo municipality and especially in village Petralinci, Radovo and between Monospitovo and Bansko, the preparation of the Traffic Management Plan is essential to be adopted prior the start of activities. The Plan should include the re-routing directions and time schedule. The Information note/Press release about the project activities (start, timeframe and re-routes) need to be prepared by the staff of Bosilovo municipality and announced via local TV and radio.

Other mitigation measures need to be applied before and during construction/reconstruction activities and they are included within the following Environmental Mitigation Plan. The main responsibility for implementation of the mitigation measures lay to the Sub-contractor and Supervisor (nominated by the municipality) on daily basis. Some of the measures should be applied by the municipality staff (announcement of the traffic regime, recording the waste quantities).

The Monitoring Plan proposes tasks mainly dedicated to the Supervisor and an Environmental inspector who need to control the implementation of the mitigation measures by Sub-contractor.

A. ENVIRONMENTAL MITIGATION PLAN

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
Marking out the route for construction of the streets in village Radovo and village Petralinci and local road between Bansko and Monospitovo villages	**Possible adverse social and health impacts to the population, drivers and workers due to:** - Lack of ensured safety measures at the start of reconstruction works - Injury passing near by the reconstruction sites - Not compliance with strict OH&S standards and work procedure - Inappropriate public access within the district	Local/within the villages where the construction activities are performed short term during the construction of the streets/road /major	• Preparation of the Traffic Management Plan together with the municipal staff • Provide the information via local radio/TV station about the reconstruction activities – start and finish of daily basis work, duration of activities and traffic access on other streets	• Contractor –Bidder • Supervisor • Municipality staff (Communal Inspector/Environmental Inspector/Traffic Engineer)
			• Ensure the appropriate marking out the construction site • Marking out the construction material near the street • Warning tapes and signage need to be provided • Forbidden of entrance of unemployed persons within the warning tapes • Information to the all workers should be provided about the importance and significance of the Monospitovsko blato (Monospitovo swamp) in order to take care during the work in the proximity of the swamp • Community and Worker's OH&S measures should be applied (first aid, protective clothes for the workers, appropriate machines and tools) • The street and surrounding area near the houses should be kept clean • Machines should be handled only by experienced and trained personnel, thus reducing the risk of accidents • Constant presence of firefighting devices should be ensured in case of fire or other damage • Flammable liquids may be placed and kept exclusively in vessels constructed for that purpose • Larger quantities of flammable liquids should not be kept on	• Contractor –Bidder • Supervisor

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
			the site along the construct street • 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 • Devices, equipment and fire extinguishers should be always functional, so in case of need they could be used rapidly and efficiently • The portable toilet should be placed on the construction site	
Construction of the streets and local road in Bosilovo Municipality	**Possible impacts on landscape and visual aspects**	Local/within the villages where the construction activities are performed short term during the construction of the streets/road /minor	• Minimization of the construction area as much as possible (carefully planning and design of the project activity according the Traffic Management Plan for a certain period of time) • All sites that should serve as temporary deposits for topsoil and raw materials have to be proposed by the designer and constructor in advance. These habitats should not serve as temporary deposits for raw material: Tamarisk communities Willow and poplar stands Wet and mesophilic meadows Beech forest Rivers and streams • Fully clean up of the construction site immediately after accomplishment of reconstruction activities section by section • Collection of the generated waste on daily basis, selection of waste, transportation and final disposal on appropriate places (according the type of waste – more details under Waste management issue)	• Contractor –Bidder • Supervisor

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
	Possible emissions by transportation vehicles and impact on air quality due to: - gases emissions of dust-suspended particulates - traffic congestion will be caused as well causing changes in existing traffic circulation especially because it is a living area with family houses along the street	Local/within the villages where the construction activities are performed short term during the construction of the streets/road /minor	• Reconstruction site, transportation routes and materials handling sites should be water-sprayed on dry and windy days; • Construction 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 seems to be appeared • Restriction of the vehicle speed within the construction location	• Contractor –Bidder • Supervisor
	Possible impact on the biodiversity	Local near the Monospitovo swamp during the construction of local road between Bansko and Monospitovo Short-term/major	• Avoiding the disturbance, breeding failure and specimens mortality • Carrying out the construction works after July when all phases of the reproductive cycles of the amphibians will have been finished.	• Contractor –Bidder • Supervisor
	Possible impact on water course due to improper waste management or soil erosion	Local/ short term/major	• The placing of any wet concrete in or close to watercourse (Vodocnica river/Monospitovski channel) should be controlled to minimize the risk of leakage of wet cement into the watercourse • No new concrete, wash water or chemicals used for concrete	• Contractor –Bidder • Supervisor

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
			treatment should be allowed to enter the watercourse River Vodocnica/Monospitovski Channel • The construction of drainage pipes should be carried out during the dry season • All areas requiring the clearing of vegetation need to be clearly delineated in the field at the start of the project (construction fencing, flagging tape), to ensure there is no unnecessary disturbance to the riparian vegetation • All debris from construction should be removed from the site • Minimize storage of substances harmful to waters (e.g. fuels for construction machinery) on the construction site. Organize their proper handling and storage. • The road should be kept clean and tidy to prevent the build-up of oil and dirt that may be washed into a watercourse or drain during heavy rainfall; • The machinery should be equipped with the emergency spill kits large enough to contain possible spills or leaks of oil, fuel, hydraulic fluid into the river or near the river bank • The bridge abutments should be located so they do not significantly encroach into waterway and thereby reduce the available waterway area • Abutments should also be located so as to avoid obstruction of movement of terrestrian fauna and to allow free movement of animals along the river banks	
	Possible noise disturbance as a result of outdoor equipment usage and transportation vehicles driving around the sites	Local/within the villages short term /minor	• As it is a urban residential are the level of noise should not exceed more than 55dB during the day and evening and below 45dB during the night • The construction work should be not permitted during the nights, the operations on site shall be restricted to the hours	• Contractor –Bidder • Supervisor

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
			7.00 -19.00	
	Possible adverse environmental impact and health effects could be occurred 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 villages and near Monospitovo swamp / short term/major	• Identification of the different waste types at the reconstruction site (soil, sand, asphalt, pieces of asphalt, road surfacing, 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 01 – Waste from concrete, bricks, 17 05 04 – Excavated soil, 17 09 04 – Mixed waste from construction site • Small amount of solid municipal waste could be found (food, beverages), as well as packaging waste (paper, bottles, glass, etc.)	• Contractor –Bidder • Supervisor
			• Transportation and final disposal of the inert and communal waste by the Public Communal Enterprise "Ograzden" • Fulfillment of the Annual Report for non-hazardous waste management by the Mayor of Bosilovo municipality and reporting to the Ministry of Environment and Physical Planning • The construction waste should be promptly removed from the site, should be re-used if it is possible • 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	• Municipality staff (Communal Inspector/ Environmental Inspector) • JKP "Ograzden" - Bosilovo
• ***No environmental impacts are expected during the Operational phase***				

B. MONITORING PLAN

What parameter is to be monitored?	**Where** is the parameter to be monitored?	**How** is the parameter to be monitored?	**When** is the parameter to be monitored (frequency of measurement)?	**Why** is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Construction of streets	Operations of the streets
Project stage: Startup of the construction work (site cleanup, and marking out the route and construction sites along the villages)								
The safety protection measures applied for the workers	On the construction site along the route	Visual checks	During the clean-up activities At the beginning of each working day during the project activities	To prevent health and safety risks – mechanical injuries To be in compliance with national communal health regulation and OH&S standards			Contractor - Bidder Supervisor Environmental Inspector /Inspector for communal work at the Bosilovo municipality	
Project stage: Construction of streets and local road in Bosilovo municipality								
Safety traffic flow through the villages	On the site	Visual monitoring	During the working day	To ensure the coordinated traffic flow through the villages in Bosilovo municipality			Environmental Officer at Bosilovo municipality together with the Traffic/Civil construction Engineer in the municipality	
Water quality within Vodocnica River and Monosipovski	Around the construction area where the raw	Water quality testing/pH,	During the construction period (once per month)	To ensure good status of water quality			Contractor - Bidder Accredited laboratory	

What parameter is to be monitored?	**Where** is the parameter to be monitored?	**How** is the parameter to be monitored?	**When** is the parameter to be monitored (frequency of measurement)?	**Why** is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Construction of streets	Operations of the streets
channel)	materials and wet concrete plant are placed	TSS, BOD,					sub-contracted by the Contractor	
Primary selection of the waste streams as they are generated at the spot	On the site	Review the documentation – identification of the waste type according the List of waste	At the beginning of work with new material/s	To separate hazardous from the non-hazardous waste as well as inert from biodegradable waste			Contractor – Bidder Supervisor	
Collection and transport as well storage of hazardous waste (if any occur).	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 (there is no municipal landfill)			Authorized Contractor for collection and transportation of hazardous waste (if there is any occur) subcontracted by the Contractor-Bidder Environmental inspector from Bosilovo municipality and PCE “Ograzden”	
Collection transportation and	On the site and around	Visual monitoring	After the collection and transportation of the solid waste	Not to leave the waste on the spot to			Contractor – Bidder who need to sign the	

What parameter is to be monitored?	**Where** is the parameter to be monitored?	**How** is the parameter to be monitored?	**When** is the parameter to be monitored (frequency of measurement)?	**Why** is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Construction of streets	Operations of the streets
final disposal of the solid waste (especially important during the decommissioning of the old bridge)	the site	and reviewing the transportation and disposal lists from the sub-contractor	on regular base each day	avoid the environmental and health impact on residents To have the real data for generated waste streams and to improve the waste management			contract with licensed company for collection, transportation and disposal of the solid waste Communal Enterprise "Ograzden"	
Fulfilled Annual Report for collection, transportation and disposal of waste	Local self-government administration	Review of documentation – Identification waste List	After the accomplishment the task of collection, transportation, temporary disposal and final disposal of waste	To improve the waste management on local and national level To be in compliance with national legal requirements			Mayor of Bosilovo municipality/ Ministry of Environment and Physical Planning	
The sensitive habitats: Tamarisk communities Willow and poplar stands Wet and mesophilic meadows Beech forest Hill pastures	On the site and around the site	Visual checks	On regular basis during the construction period	The waste material (concrete, iron, rocks etc.) accidentally deposited should be immediately removed from highly sensitive habitats.			Contractor – Bidder Supervisor	

What parameter is to be monitored?	**Where** is the parameter to be monitored?	**How** is the parameter to be monitored?	**When** is the parameter to be monitored (frequency of measurement)?	**Why** is the parameter to be monitored?	Cost		Responsibility	
					Construction	Operations	Construction of streets	Operations of the streets
Vodocnica River and Monospitovski channel								