PROJECT APPRAISAL DOCUMENT

KOCANI
CONSTRUCTION OF 10 LOCAL ROADS

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CONTENT

1. PROJECT DESCRIPTION

A. GENERAL INFORMATION ON MUNICIPALITY

1. Location map

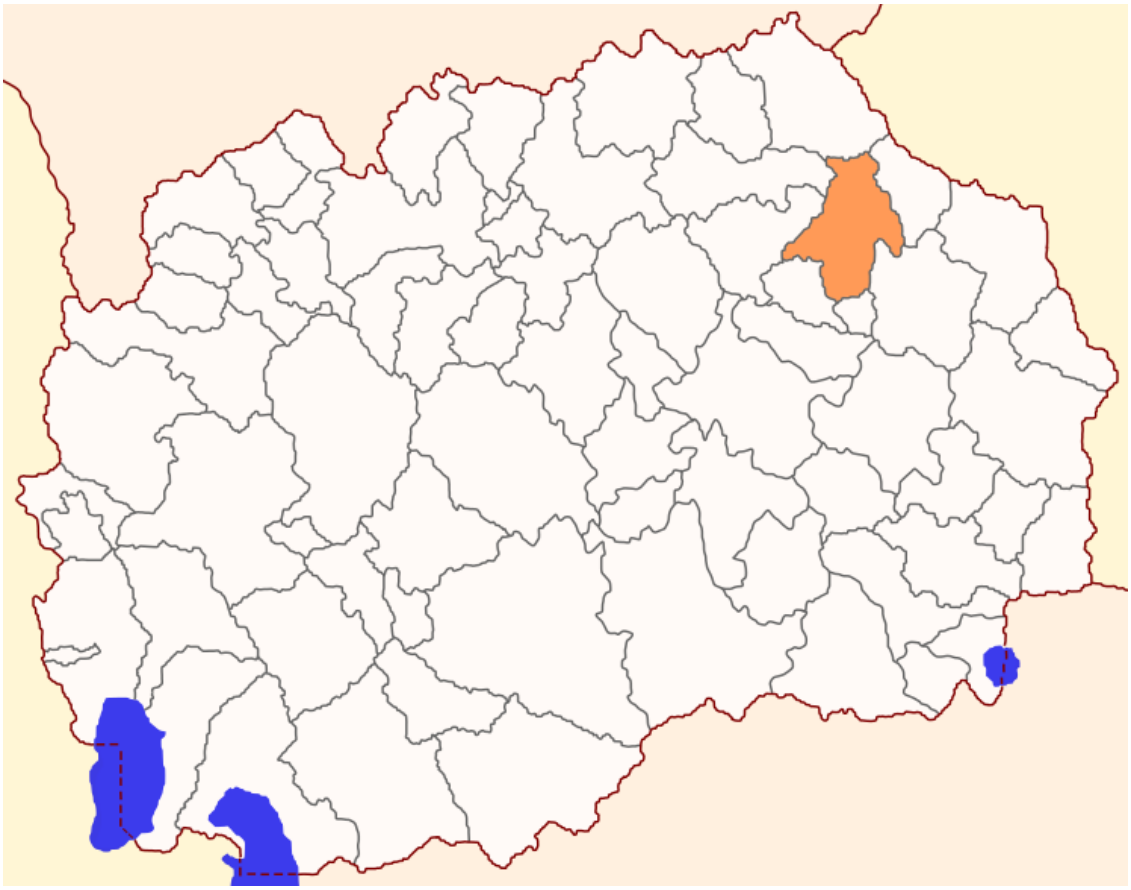

Figure 1: Map of Kocani and the Republic of Macedonia

2. Information[1]

Kocani is located 120 km away from Skopje, situated at the eastern part of Macedonia. The wider area of Kocani spreads across the Northern side of the Kocani valley, which valley is located along the river Bregalnica. More precisely, Kocani is located along the banks of the Kocani River, right where it leaves the mountain slopes and flows through the valley. North of the town, there is Osogovo mountain (2,252m/7,388ft) and 8km away to the south, the valley is closed by the mountain Plachkovica (1,754m/5,755ft). Kocani is 350-450m (1,150–1,480ft) above the sea level. Municipality of Kocani spreads over an area of 382km^2, with population of 38,092 and 28 settlements (by the census 2002), which makes it the third regional center in the eastern part of the country.

1 See more: http://www.kocani.gov.mk/English/uvod_en.htm.

Table 1: Population, households and dwellings by settlements

	SETTLEMENT	POPULATION	HOUSEHOLDS	DWELLINGS
1	Kocani	28,330	8,858	10,541
2	Beli	466	141	150
3	Gorni Podlog	704	191	207
4	Gorno Gradche	13	9	36
5	Grdovci	1,288	420	446
6	Dolni Podlog	476	151	161
7	Dolno Gradche			
8	Jastrebnik	48	23	34
9	Leshki	29	17	35
10	Mojanci	556	166	184
11	Nivichani	343	96	120
12	Pantelej	64	29	55
13	Pashidzakovo			27
14	Polaki	113	59	180
15	Pripor	1	1	10
16	Rajchani	33	17	17
17	Trkanje	1,225	389	440
18	Crvena Niva			11
19	Orizari	3,776	1,176	1,429
20	Bezikovo	8	4	13
21	Vranici	10	5	24
22	Glavovica	59	23	48
23	Kostin Dol	20	10	26
24	Nebojani	46	20	28
25	Novo Selo	15	4	16
26	Preseka	68	33	49
27	Pribachevo	388	131	150
28	Rechani	13	8	17
	Total	**38,092**	**11,981**	**14,464**

Source: Kocani municipality

The main road, which connects Kocani with Stip (30km), Veles (70km), and then links to Skopje-Gevgelija highway, goes through the town. This is the main link to central Macedonia. Kocani is a crossroad where many regional roads meet. The connection to the neighboring towns are: Vinica (10km), Makedonska Kamenica (30km), Delcevo (55km), Berovo (60km), the border with Bulgaria (65km) to the east and to Probistip (36km), and Kratovo (48km) to the west. There is also a railroad built in 1926, which connects Kocani to Stip, Veles and Skopje.

Municipality's economy is farming and agriculture, mainly because of the very favorable climate and rich soil of alluvial origin. Most of the field's irrigation comes from a very well planned and involved irrigation system of nearly 280km. Rice is the most represented agricultural product with a century-long tradition and supreme quality. Every year over 3,500ha of rice are cultivated in the Kocani area.

B. DEMOGRAPHIC AND ECONOMIC PROFILE

1. Demographic table

In the next table, we present basic demographic and economic data about Kocani.

Table 2: Basic demographic and economic data about Kocani

Demography			**Quality of life**	
Number of settlements	28		Infant mortality Kocani 2013	4
Area in km^2	382		Number of births Kocani 2013	280
Population census 2002	38,092		Age dependency Kocani 2002	0.41
Population density Kocani	100		Infant mortality Macedonia 2013	237
Population density Macedonia	82		Number of births Macedonia 2013	23,334
Number of dwellings	14,440		Age dependency Macedonia 2002	0.46
Number of households	11,981		**Economy**	
Average number per household	3.17		GDP per capita in US $ Kocani 2002	3,172
Infrastructure			Unemployment rate Kocani 2002	38.2
Total length of roads (of which asphalt) in km for 2013 Kocani	164 (50)		GDP PPP growth Kocani 2002/1998	-1.7
Total length of roads (of which asphalt) in km for 2013 Macedonia	9,471 (4,859)		GDP per capita in US $ Macedonia 2002	6,850
			Unemployment rate Macedonia 2002	38.1
			GDP PPP growth Macedonia 2002/1998	5.2

Source: State statistical office-SSO and expert estimation for the GDP

On average, the economy of Kocani was less than half the economy of Macedonia measured by the GDP per capita PPP in 2002. Compared to Macedonian average, the economic growth in Kocani was negative in the period 2002/1998 and the unemployment rate was almost the same as in Macedonia. The closed industrial capacities during transition are the reason for the weaker economy as measured also by the negative economic growth of almost -2% in the period 1998-2002 while in the same period the economy in Macedonia was growing by 5% in GDP PPP terms. The infant mortality in Kocani for 2013 is four while total in Macedonia for 2013 is 280 and population density is higher in Kocani than the average population density for Macedonia for 2002 when the last census was conducted.

2. Gender and age repartition

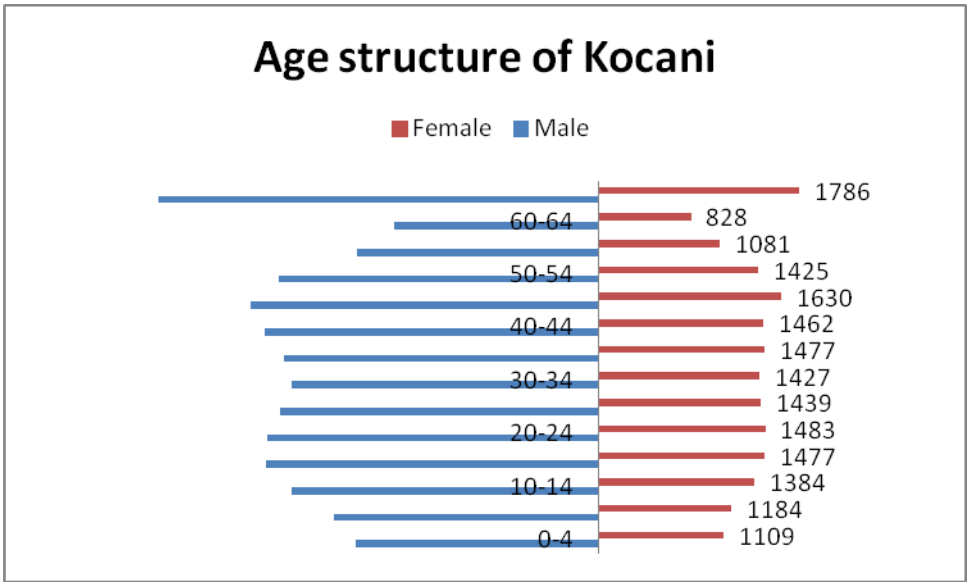

Figure 2. Age structure of Kocani

The age structure shows that 10.2% of the total Kocani population is more than 65 years old. This is lower then macedonian average (10.7%).

Table 3: Age distribution by sex

	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-
Total	38092	2143	2338	2718	2941	2937	2817	2716	2780	2953	3079	2831	2133	1804	3902
Male	19192	1109	1184	1384	1477	1483	1439	1427	1477	1462	1630	1425	1081	828	1786
Female	18900	1034	1154	1334	1464	1454	1378	1289	1303	1491	1449	1406	1052	976	2116

Source: SSO

3. Urban – rural repartition

Table 4: Urban/rural repartition

Urban/Rural	
Urban	Rural
74%	26%

Source: Municipality of Kocani

4. Minorities Repartition

Table 5: Population by ethnic groups

	Macedonians	Turks	Roma	Vlachs	Serbs	Other
Number	35,471	316	1,950	194	69	95
%	93.12	0.83	5.12	0.51	0.18	0.25

Source: Municipality of Kocani

5. Employment repartition

In Kocani 30,443 or 79.9% of the population is at age 15-79[2]. In 2002, total unemployment in Macedonia was 38% as was in Kocani. The age dependency rate (population over 65 over population of 15-64) in Kocani is 14% and in Macedonia is 16%.

Table 6: Unemployment by age and by gender in Kocani and in Macedonia on 30th of April 2014

Kocani	Total	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	More than 60
Total	3369	94	340	378	292	244	232	243	330	556	660
Female	1158	27	150	186	138	98	89	88	100	142	140
Macedonia	Total	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	More than 60
Total	103250	2140	11628	14188	10442	9086	8650	8958	9940	13401	14817
Female	43117	757	5204	7132	5207	4402	3908	3776	3841	5103	3787

Source: Employment agency of Macedonia:

6. Economy

Industry was the primary driver of the local economy of Kocani before the transition, and was concentrated in the big industrial capacities. The income from industrial related jobs accounted for the majority of the households' income. However, industrial development in this area has slowed. Factories have aged and many closed. The transformation from public to private ownership has been very painful. Today Kocani presents middle developed industrial- agriculture town in which many industrial capacities are located in industrial zone, in the east part of the town, along the road to Vinica.

From the next table we can see that in Kocani there are 1,403 active business legal entities, which is 2% of the total active business legal entities in Macedonia. It is obvious the domination of the micro businesses share of 70% in Macedonia and 73% in Kocani. Micro and small business legal entities in Macedonia and in Kocani are 99% of the total active business legal entities.

Table 7: Active business legal entities in Kocani and Macedonia in 2013

2012	Total	Micro	Small	Medium	Large
Macedonia	71,290	49,935	20,241	683	431
Kocani	1,403	1,021	370	11	1

Source: SSO

The number of SME by sector as per the municipality web page is presented in the next table.

Table 8: Number of SME by sector in Kocani

Sector	No. of SME
Agriculture	23
Hotels And Restaurants	28
Foodstuff	20
Trade	553
Textile	90
Construction	34

2 Working age population is between 15 and 79. See: http://www.stat.gov.mk/Publikacii/2.4.11.09.pdf

Traffic	50
Wood Industry	21
Metal	13
Publishing	10
Others	48
Total:	**890**

Source: Municipality of Kocani

Municipality's economy is traditionally linked with farming and agriculture, mainly because of the very favorable climate and rich soil of alluvial origin. Most of the field is irrigated from a very well planned irrigation system of nearly 280km. Rice is the most represented agricultural product with a century-long tradition and supreme quality. Every year over 3500ha of rice are cultivated in the area.

The employment by most important sectors in Kocani (as per the municipality profile) is illustrated in the next table.

Table 9: Employment by main sectors

Sector	Number of Employees
Agriculture	162
Hotels And Restaurants	76
Foodstuff	220
Trade	1,280
Textile	1,600
Construction	260
Traffic	140
Wood Industry	77
Metal	113
Publishing	67
Other	123
Total:	**4,118**

Source: www.kocani.gov.mk/English/industrija.htm

Legal entities mentioned in table 7 show that more than 50% of SME are in trade sector and employ 31% of total employees in Kocani (4,118). Thus, the driving force in Kocani economy is trade and textile with 72% of all SMEs that employ almost 70% of workers in Kocani.

7. Relevant extracts of the municipality's documents about the project

From the **LED strategy**[3] we can see that in the SWOT analysis it is mentioned that one of the weaknesses in Kocani are the bad transport connections. Furthermore, in the proper Action Plan (AP) roads are mentioned as priority projects. In the **LEAP from 2004** it is mentioned that in that time only 28% of the roads are asphalted and that is why in the implementation plan it is suggested that "*…better road network should be constructed…*". Mr Ratko Dimitrovski, Mayor of Kocani, in his **Election Program** from 2013 have identified 5 priorities for Kocani: construction of dam on Orizarska River, **separating storm-water from sewage network, asphalting streets,** better usage of geothermal energy in Kocani and building Ponikva - a winter tourist regional center. Thus, asphalting streets and constructing a storm water system is a priority for the municipal leadership.

In preparing the 2013 budget, in the **Plan of development programs,** streets were planned to be asphalted with credit from the World Bank. In 2014 **Program on construction and maintenance of local streets** it was mentioned that municipality of Kocani applied to World Bank for on-lending credit for asphalting local streets and if approved it will implement this development project.

This project will have multiplicative effects given also the implementation of the **Project on separating storm water from sanitary sewage system.** For that project, the Ministry of transport and communications has financed basic design dated February 2013. Namely, in Kocani the sewage system is mainly sanitary one and the storm water is connected to that sewage system. Thus, in particularly rainy incidents sewage water goes out of the shafts and floods the streets. Also, the mixed sewage water (storm and sanitary) are going to Kocanska and Orizarska River polluting the water and causing general environment pollution.

At the moment, as per the municipal's administration information, the project on separating storm water from sanitary sewage system is more or less 60% finished and by the end of this year major parts will be completed leaving only small part for separation in 2015 when the project's implementation will end.

On August 26, 2014, the administration of Kocani municipality organized a public hearing about this project. Mr. Ratko Dimitrovski, mayor of Kocani, presented the project, whereas technical details were presented by the head of the urbanism and environment issues Mr.Vlatko Dimitrov. Present were municipal administrative staff, representatives of local communities, councilors and citizens. The announcement on public hearing was announced in local media, web site of the municipality, city hall board and was disseminated to the presidents of the local communities. During the public hearing a constructive discussion followed by Q/A from citizens reflected how important this project is[4].

C. GENERAL DESCRIPTION OF PROJECT

1. General description

In general, this project assumes:

- Construction of ten streets;

3 See: http://www.kocani.gov.mk/English/Strategyi%20of%20led.htm.

4 For more about the public hearing please contact Ms Elena DImitrovska, Assistant Head in the finance department from the Kocani municipality: elena.dimitrovska@kocani.gov.mk.

- Construction of support walls;
- Construction of storm water system.

2. Area concerned by the project

This project includes construction of ten local streets and construction of retaining walls and storm-water network as presented in the next table. The streets are part of the Detailed Local Urban Plans (DLUPs) for the local communities, adopted by the municipal council. The DLUPs of the local communities were used as the base for preparation of the technical documentation and the detailed design.

Location of the streets is presented in the next figure. The streets are located at the periphery of the urban area of Kocani municipality. On the most left hand side is the street Janka Stoimenova that is in the rural settlement of Orizari and is expected to be an important part in the connection of Orizari with the urban area of Kocani.

Figure 3. Streets for construction in Kocani under this project

The next table presents detailed information on the streets and storm-water network.

Table 10: Construction of ten streets, support walls, storm-water network and sidewalks

Street	Support wall	Settlement	Length street (m)	Length storm-water (m)
Orce Nikolov right arm	No	Kocani	240	236
Fevruarski Pohod	Yes	Kocani	373.14+46.94=420.08	220+90+44.85=354.85
Janka Stoimenova	Yes	Orizari	299.5	305
554 Prokarka	Yes	Kocani	531.89	184.2+85=269.2
Gorce Petrov	Yes	Kocani	499.89	162.6+237=399.6
XIII Makedonska Brigada	No	Kocani	437.53	185+129+18+18=350
Dimitar Lazarov	Yes		218.4	154+92=246
Makedonska, Razlovecko Vostanie and XV Makedonski Korpus	Yes	Kocani	665.03	396+162=558
Pirinska	Yes	Kocani	389.13	112.35+186.2=298.55
Orce Nikolov left arm	No	Kocani	78.5	68+22.5=90.50
Total			**3,779.9**	**3,107.7**

3. Current situation

The nine streets and additional one in Orizari settlement, are located in the urban area in Kocani, and considering their current condition, construction is necessary. The streets are graveled but due to the luck of maintenance they are ruined and in bad condition. The wet weather conditions create bumpy terrain on the road surface, which causes unsafe traffic and affects the vehicles with higher depreciation, vehicle operation costs (VOC) and more maintenance needs. There is no storm water system and no sidewalks. The situation is illustrated below.

Figure 4. Current conditions of some of the streets subject to this project (Streets: Makedonska, Orce Nikolov, Pirinska and XIII Makedonska Brigada). Photos are courtesy of Municipality of Kocani

4. Goals

This project has the following goals:

- Construction of ten streets;
- Construction of retaining walls;
- Construction of storm-water system;
- Improving quality of life of the Kocani citizens;
- Directly, enabling balanced municipal development in the communal and infrastructure area in the Kocani municipality and possible wider Kocani region;
- Indirectly, improving economic standards of the Kocani citizens.

The implementation of the project is also expected to increase the property value of houses and other residential or commercial objects on the streets, thus increasing the growth of revenues from property taxes.

5. Project

All the necessarily technical calculations and project description are available at the basic design prepared by “Erkom Inzenering” in January 2013.

2. SOCIAL IMPACT OF THE PROJECT

A. SOCIOLOGICAL STUDY

1. Methodology

The methodological approach was based upon the methodological concept of the World Bank that requires exploration of five components: Social diversity and gender, Institutions, Rules and behavior, Stakeholders, Participation and Social Risk.

2. Social diversity and gender

In this section we will present statistical data as per the tables in the demographic section mostly. From the above demographic tables we can conclude the following:

- The population density is higher in Kocani municipality compared to Macedonian average;
- The age groups are showing younger population in Kocani than the Macedonian average;
- There is almost equal representation of male and female in the total population with small dominance of male (50.4%);
- The prevailing population is the urban one, encompassing about 74% of the total population in the municipality;
- In relation to their ethnic affiliation, the prevailing population in the municipality of Kocani is Macedonians (93%) and Roma (5%).

The direct beneficiaries of this project are urban inhabitants of Kocani city and the rural settlement Orizari but given the position of this urban center the wider Kocani region will benefit from this project as well.

3. Institutions, rules and behavior

The nine roads connect people of Kocani with the city center. Thus, they are frequently used to commute for work, trade, culture, sport and other purposes and connect with institutions and organizations. The road in Orizari settlement also connects people with urban part of Kocani. For this reasons it is expected the construction to be in favor not only of citizens but institutions and its employees.

Street 554 Prokarka for example will also make better connections for citizens to the regional road connecting Kocani and Stip municipalities. Street Dimitar Lazarov will connect better Kocani with the tourist center Ponikva. Streets Orce Nikolov, Pirinska, 554 Prokarka, Fevruarski Pohod, XIII Makedonska Brigada gravitate in the industrial peripheral urban part of Kocani and thus, larger share of Kocani citizens will use it as an access to the industrial part.

It is expected the improved environment and local services with the construction of this local road to motivate citizens to change their perception and attitudes toward the local government as well.

By discussing with Ms. Elena Dimitrovska from the finance department she was clear that this project is of high priority because "*…it was neglected more than 10 years…*".

Mr. Vlatko Dimitrov, Head of the urban department says that the administration and mayors were constantly receiving complaints from citizens about the inertia in solving the problems with bad roads and that is why this project was on high priority in the last years. Mr. Dimitrov said that there can be multi-positive effects of this project if we also take into account that there will be constructed a collector of storm-water from transfers from the central budget through the Ministry of Transport and Communications. Next steps after this project will be construction of six more roads. He also mentioned that with this project there will be no need for resettlement of citizens.

Mr. Jordan Dimitrov, President of the municipal Council, expressed satisfaction from the citizen's response and the reached consensus on this project. On the other side he said, that this does not come as a surprise given the bad conditions in which these roads are for years. On the question how they set priority roads for this project he mentioned that there is a commission established for communal issues comprising not only municipal staff but also citizens and external experts that sets the priority actions as well. In addition, they analyze the requests from citizens during the open hours each Tuesday and Friday.

Moreover, administration of Kocani municipality organized a public hearing about this project on 26th of August 2014. Mr Ratko Dimitrovski, Mayor of Kocani, presented the project. Technical details about the project were presented by the Head of the urban and environment issues Mr. Vlatko Dimitrov. Present were administrative staff from the municipality administration, representatives from communities and councilors and citizens. The Decision about the public hearing was announced in local media, web site of the municipality, city hall board and was disseminated to the presidents of the local communities. During the public hearing a discussion followed by Q/A from citizens reflected how important this project is[5].

4. Stakeholders

There are several important stakeholders of the project. The most influential participants in the process of decision making at the municipal level are the mayor and political parties comprised in the municipal Council.

Probably the most important stakeholder is the mayor. The success of this project for the general interest will improve his reputation and prestige among the future voters, especially as this project was part of his election program pointed as priority.

The political parties are the second influential stakeholder because their members are represented in the Council, but the political parties are not unanimous and have different and sometime opposing interests, what weakens their positions as a whole. The good news here is that for this project (as per the municipal staff) there is a political consensus already achieved.

The non-governmental organizations have some influence, and since this project should promote better municipal infrastructure, it is expected they will be in favor of the project.

5. Participation

It is decided that the loan will be covered and repaid from the municipal budget in the subsequent years. The project does not require it, and should not require additional financial contribution from the citizens.

6. Social risks

High socials risks for carrying out of this project cannot be perceived. This project is about construction of local roads, the development of communal infrastructure and improving the quality of life. High participation rate has been secured with inclusion of the local communities ("*mesni zaednici*") approval as well as the nature of the project brings social cohesion for approval.

The project does not bear high financial burden in comparison to the budget, and the population is not put into a position to contribute financially, so there is no cause for conflict on this point.

5 For more about the public hearing please contact Ms Elena Dimitrovska, Assistant Head in the finance department from the Kocani municipality: elena.dimitrovska@kocani.gov.mk.

B. RESETTLEMENT ISSUES

This project is not subject to resettlement issues.

C. CONCLUSION ON THE PROJECT POTENTIAL SUCCESS

The project should be socially successful for the following reasons:

- The project is useful because it provides complete construction of the local roads, and construction of new storm water system;
- The project can at the margin provide inclusion of disabled persons to this part of the city given the fact it is important connection to city center, institutions and organizations;
- There is political and social consensus on this project;
- The project can provide for more balanced municipal development;
- The project improves overall quality of life of the Kocani citizens;
- The project indirectly can improve economic standards through enabling environment for better road commutation in Kocani;
- The project can motivate for social cohesion in the municipality of Kocani and improve citizen's perception toward the local administration.

3. ENVIRONMENTAL IMPACT OF THE PROJECT

The project assumes construction of ten local streets in Kocani municipality, construction of retaining walls and storm-water network. The construction activities will include:

- **Construction of streets -** construction of 10 not asphalted streets (nine streets in City of Kocani and one street in settlement Orizari). Total length of all streets is 3,779.9m;
- **Construction of retaining walls along** several streets in order to ensure better community and traffic safety;
- **Construction of storm water network -** placing storm water system on the streets that will be reconstructed. Total length of storm water network is 3,107.7m.

The sub-projects will improve the existing infrastructure in the municipality taking into account that approximately 20% of the streets in the City of Kocani are not paved with asphalt. Around 50% of these streets will be asphalted with completion of this project providing better conditions for transport of goods and people. The City of Kocani is in the process of implementing a project for construction of storm water system in one part of the town. Due to this, the streets that have been selected for this sub-project are the ones that can be connected to this newly constructed system, which was one of the criteria for street selection apart from their degree of surface deterioration. The project, besides other improvements indirectly will contribute to environmental improvement based on separation of storm water and urban wastewaters.

A. LOCATION OF SUB-PROJECTS

The project on construction of streets includes nine streets (presented in Figure 5) which are located in the urban area in City of Kocani, the tenth one is located in rural area in settlement Orizari connecting settlement Orizari with City of Kocani. All project locations for construction are nearby family houses, but all citizens use those streets very frequently for many purposes within city center. The total length of all streets is 3,779.9m and all will be built with new carriageway structure including all required elements. Main characteristics (including name of streets, length and activities needed to be done during construction) of these streets are presented in Table 11.

Figure 5: Streets in Municipality of Kocani that will be reconstructed

B. MAIN SUB-PROJECT ACTIVITIES WITH ENVIRONMENTAL IMPACT

The project activities include 3 phases: preparatory works, constructive phase and operational phase.

The preparatory phase is a short-term activity and comprises organization of the site, clearing the site including cutting vegetation and trees, marking the construction site and signing the site and ensuring the implementation of OH&S standards (e.g., mobile toilets for the workers, first aid boxes, containers for tools and equipment, etc., as well as adequate containers for waste collection).

The construction phase of a few of the proposed streets requires construction of retaining walls and drainage system installed along the walls to collect and discharge the water from the soil in order to reduce the additional pressure. The construction of the streets will include removal of organic material, digging of additional soil, compaction, embedding of crushed stone material with leveling and compaction, placement of concrete curbs, and placing one layer of bituminous asphalt mixture that has both, bearing and wearing characteristics.

Operation phase will include daily use of local streets and good acceptance of storm water by new storm water system.

The main types of activities during implementation of sub-projects in Municipality of Kocani are provided in the table below.

Table 11: Main activities during the construction

No*	Name of the street	Length street (m)	Length of stormwater network (m)	Type of activities
City of Kocani				Removal of organic material; Digging of additional soil; Compaction; Embedding of crushed stone material; Placement of concrete curbs and Placing one layer of bituminous asphalt
1	Orce Nikolov left arm	78.50	90.50	
2	Orce Nikolov right arm	240.00	236.00	
3	Fevruarski Pohod	420.08	354.85	
4	XIII Makedonska Brigada	437.53	350.00	
5	554 Prokarka	531.89	269.20	
6	Pirinska	389.13	298.55	
7	Gorce Petrov	499.89	399.60	
8	Dimitar Lazarov	218.40	246.00	
9	Makedonska, Razlovecko Vostanie and XV Makedonski Korpus	665.03	558.00	
Settlement Orizari				
10	JankaStoimenova	299.50	305.00	
Total		**3,779.9**	**3,107.7**	

*Numbers indicate the respective street presented in Figure 5.

C. MAIN ENVIRONMENTAL IMPACTS AND SENSITIVE RECEPTORS

All sub-project activities are located in Municipality of Kocani precisely nine streets in urban area in City of Kocani and one street in rural area in settlement Orizari.
The environmental impacts are expected on short-term basis, during the construction period and the impacts will be with minor local significance. The good construction practice and associated measures could prevent and/or mitigate the short-term adverse impacts. The main risks are safety and health for workers and community risks that could appear in the urban area in the City of

Kocani. The major impact is expected due to traffic disturbance during the construction period, improper waste management with different waste streams, noise from the outdoor equipment (especially near schools, family houses and public institutions) and pollution of ambient air.

Air emissions that may occur during the implementation of sub-projects are from the phase of construction of the streets and construction of the storm water system and emissions from mobile sources of pollution - vehicles in the phase of streets use. In the construction phase of the streets, sources of air pollution are construction machinery (trucks and excavators), which will be used for supply of raw material (pipes, excavation of soil, crushed stone material etc.) The dust management measures should be implemented as well in order to reduce the PM (particulate matters – dust) emissions.

Impact on the quality of soil during the preparatory and the constructive phases can be expected in case of leaks of fuels and lubricants from construction machinery, which are used in construction work. In the operational phase, there will be no degradation of the soil and soil vegetation.

The sensitive receptors of the planned project activities are citizens living and working near the project locations. According to the Law on noise sensitive protection (Official Gazette No. 79/07, 120/08, 1/09) all project locations have been identified to the area with second degree of noise protection and the maximum allowed noise level should be 45dBA for night and 55dBA for evening and day.

Different waste streams could be found on the construction sites, so the compliance with the waste hierarchy principles is essential. The Contractor needs to communicate with the municipal staff at the beginning of the project in order to get instructions where to dispose the waste streams as well as to keep records of temporary and final disposal of waste. The different waste streams that could be generated during sub-projects implementation are presented in Table 12. The source of expected waste data and information are presented in EIA Reports prepared for all sub-projects.

The main responsibility for regular collection, transportation and final disposal of inert waste and municipal waste lays on CSE "Vodovod" from Kocani.

Table 12: Different type of waste generated during implementation

No.	Name of the street	Type of waste			
		Waste from soil excavation during construction of street (m^3)	Waste from soil excavation during construction of sidewalks (m^3)	Inert waste from cement slabs (m^3)	Waste from soil excavation during construction of storm water system (m^3)
City of Kocani					
1.	OrceNikolov left arm	100	50	6	120
2.	OrceNikolov right arm	200	100	12	280
3.	FevruarskiPohod	150	120	25	500
4.	XIII Makedonska bigada	382	190	15	/
5.	554 Prokarka	700	200	20	200
6.	Pirinska	250	100	20	480
7.	Gorce Petrov	840	15	/	/
8.	Dimitar Lazarov	218	133	15	/
9.	Makedonska, RazloveckoVostanie and XV Makedonski Korpus	200	150	40	800
Settlement Orizari					
10.	JankaStoimenova	350	80	30	400

Near the sub-project locations passes the Kocanska, Orizarska and Bregalnica Rivers. The Kocanska and Orizarska Rivers are right tributaries of Bregalnica River. The water characterization of these rivers, according to the national legislation, Regulation of classification of water streams, lakes, water accumulations and underground water (Official Gazette No. 18/99) is II and III class (I-V classes are defined, the I class is the best quality and the V class is the worst quality). The II class indicated water with low level of pollution and organic load (mesotrophic), which can be used for bathing and recreation, water sports, fish growing and drinking (with usage of usual methods of treatment – filtration, disinfection, coagulation, etc.). The III class indicated water with hypertrophy status, with large organic load (low degree of self-purification) which cannot be used for drinking, bathing, recreation, water sports and fish growing. The proper waste management could prevent the additional pollution of rivers Kocanska, Orizarska and Bregalnica initiated by the sub-projects. The disposal of inert waste near the riverbank is forbidden.

Wastewater from construction activities will be produced by the use of mobile toilets and maintaining hygiene by workers (hand washing) and refreshments.

Near the project location, there are no registered endemic, protected and endangered animal or plant species or protected areas and habitats that will be affected by the construction activities.

In order to minimize the negative impacts on the safety of workers and the population living near the construction sites, the Contractor should compulsory provide fencing, marking and putting signs on the construction sites and should also provide use of personal protective equipment for workers in accordance with the good construction practice. The Traffic Management Plan and The Information note/Press are also very important before starting with the project activities. The first one should be prepared in order to prevent adverse environmental impacts and to ensure regular transportation of goods and people across the City of Kocani and settlement Orizari. In the Information note/Press should be described the project activities (start, timeframe and re-routes of traffic). It need to be prepared by the Municipality of Kocani staff and announced via municipality board, web page or municipality newspaper just in time.

According the national legislation, the Environmental Impact Assessment Reports for all sub-projects were prepared in 2012 by Municipality of Kocani. The adoption of the Reports was performed by the Mayor of the Municipality of Kocani, Mr. RatkoDimitrovski. The Reports contain the main project goals, project activities, photos of the existing condition of streets and proposed general environmental mitigation measures.

The detailed relevant Environmental Mitigation Plan and Monitoring Plan for all sub-projects are presented in the following Tables.

D. MITIGATION PLAN

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
Construction of 10 streets and construction of water storm system on local streets in the Municipality of Kocani				

Preparation activities before construction works start
 	
Marking out the route and construction of 10 streets and construction of water storm system at the streets in the Municipality of Kocani
	Possible adverse social and health impacts to the population, drivers and workers due to:
	– Lack of ensured safety measures at the start of construction works
	– Injury passing near by the construction sites and open trench and manholes
	– Not compliance with strict OH&S standards and work procedure
	– Inappropriate public access within the district
		Local/ within the streets in City of Kocani: OrceNikolov right arm, OrceNikolov left arm, FevruarskiPohod, 554 Prokarka, Gorce Petrov, XIII Makedonska Brigada, Dimitar Lazarov, Makedonska, RazloveckoVostanie, XV Makedonski Korpus, Pirinska and street JankaStoimenova in settlement Orizari
		
		Short term during the construction period (different lengths – from 78.5m up to 665.03m)
		
		Significance - major
			• Preparation of the Traffic Management Plan together with the municipal staff prior start up activities;
			• Provision of the information via municipal newspaper (Info Kocani) and municipality board about the construction activities – start and finish of work for each day and location of activities, duration of work and traffic access on other streets;
			• Application of good construction practice for marking out the construction site including:
			  • Ensure the appropriate marking out the construction site/section by section along the streets;
			  • Placement of attention signs especially for limitation of speed driving near the streets under construction;
			  • Warning tapes and signage need to be provided;
			  • Installation of Notice board with general information about the project, Contractor and Supervisor at each street/sub-project;
			  • 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);
			  • The street and around sidewalks/ small roads should be kept clean;
			  • The mobile toilet should be placed on the construction sites;
			  • Machines should be handled only by experienced and trained personnel, thus reducing the risk of accidents;
				• Contractor –Bidder
				• Supervisor
				• Municipality staff (Communal Inspector and Environmental Inspector)

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
			• 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 construction streets.	
	Possible impacts on landscape and visual aspects	Local/within the the Municipality of Kocani short term /minor	• Good construction practices have to be implemented – including fencing and protection of construction site according to national legislation; • Minimization of the construction area as much as possible (careful planning and designing of the project activities according to the Traffic Management Plan for a certain period of time); • Full clean-up of the construction sites immediately after accomplishment of construction activities (section by section); • Collection of the generated waste on daily basis, selection of waste, transportation and final disposal on appropriate places (according to the type of waste – more details under Waste management issue).	• Contractor –Bidder • Supervisor
	Possible emissions by transportation vehicles and impact on air quality in the Municipality of Kocani due to: – Gases emissions of dust-suspended particulates – Traffic congestion	Local/ within the 10 local streets in the Municipality of Kocani short term/ major	• Construction 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 appears; • Restriction of the vehicle speed within the construction location; • Perform regular maintenance of the vehicles and construction machinery in order	• Contractor –Bidder • Supervisor

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
	will be caused as well causing changes in existing traffic circulation		to reduce the leakages of motor oils, emissions and dispersion of pollution; • Burning of debris from ground clearance not permitted.	
	Possible noise disturbance as a result of outdoor equipment usage and transportation vehicles driving around the site	Local/ within the10 local streets in the Municipality of Kocani short term /minor	• Whole noise protection area is residential and belong to the area with second degree of noise protection and the maximum allowed noise level should be 45dBA for night and 55dBA for evening and day; • The construction work should not be permitted during the nights; the operations on site shall be restricted to the hours 7.00 -19.00.	• Contractor –Bidder • Supervisor
	Possible impact on water courses – river Kocanska and river Orizarska near the project site in the Municipality of Kocani	Local/ short term/ minor due to the distance from the project site	• Minimize storage or disposal of substances harmful to water – river Kocanska and river Orizarska (e.g. fuels for construction machinery) on the construction site; Organize 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.	• 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 Municipality of Kocani short term/ major	• Identification of the different waste types at the construction site (soil, sand, asphalt, 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
			• Collection, transportation and final disposal of the inert and communal waste by	• Municipality staff (Communal

Project activity	Potential impact	Impact scale	Proposed mitigation measures	Responsibility
			the CSE "Vodovod" Kocani ; • 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 construction waste should be prohibited.	Inspector) • Mayor of the Municipality of Kocani • CSE" "Vodovod" Kocani.
• ***No environmental impacts are expected during the Operational phase*** • The main responsibility for regular maintenance of the storm water system and is on the Municipality of Kocani and CSE "Vodovod" Kocani. The CSE "Vodovod" Kocani needs to establish routine maintenance program based on regular inspection of the condition of storm water pipelines, pipelines ruptures and blockages, etc. The regular clean up and maintenance of the streets, horizontal and vertical signalization signs is essential as well.				

E. 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	
					Construction	Operations	Construction of local roads and construction of storm water system in the Municipality of Kocani	Operations of the local streets in the Municipality of Kocani
Project stage: Preparatory activities/ Startup of the construction and construction work (site cleanup, and marking out the route and construction sites along the settlements)								
The safety protection measures applied for the workers	On the construction sites	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 Communal Inspector at the Municipality of Kocani	
Project stage: Construction of streets and construction of storm water system in the Municipality of Kocani								
Safety traffic flow through the construction site in city of Kocani and settlement Orizari	On the site	Visual monitoring	During the working day	To ensure the coordinated traffic flow through the City of Kocani and settlement Orizari			Contractor - Bidder Supervisor Communal Inspector at the Municipality of Kocani	
Disposal of the waste streams (solid and liquid) near the river Kocanska and/ or river Orizarska as potential pollution of good ecological status of water course	In Kocani near the project areas	Visual check if the waste is disposed near the Kocanska river and Orizarska river	During the construction period (once per week)	To ensure good status of water quality			Contractor - Bidder Supervisor	
Primary selection of the waste streams as they are generated at the spots	On the site	Review the documentation	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	

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	
					Construction	Operations	Construction of local roads and construction of storm water system in the Municipality of Kocani	Operations of the local streets in the Municipality of Kocani
Collection and transport as well storage 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			Authorized Contractor for collection and transportation of hazardous waste (if any occurs)	
Collection transportation and final disposal of the solid waste	On the sites and around the sites in all three districts	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 the waste on the spot to avoid the environmental and health impact on residents To have the real data for generated waste streams and to improve the waste management			Contractor – Bidder Supervisor and CSE "Vodovod" Kocani	
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 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 Municipality of Kocani/ Ministry of Environment and Physical Planning	
Temporary noise protection barriers installed around the schools and kindergarten	Around the schools	Visual check	Before the construction work start at the site near the schools and faculty	To minimize the noise disturbance of the sensitive group of people			Supervisor/ Communal inspector	