

GRCF - VARNA CLIMATE RESILIENCE INFRASTRUCTURE PROJECT

ENVIRONMENTAL AND SOCIAL DUE DILIGENCE

NON-TECHNICAL EXECUTIVE SUMMARY

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Abbreviations

EBRD	European Bank for Reconstruction and Development
EHS	Environment Protection & Health and Safety
OP	Operational Programme
EIA	Environmental Impact Assessment
AA	Appropriate Assessment
WMO	World Meteorological Organization
WSS	Water supply and sewerage
WSSC	Water supply and sewerage company
ESDD	Environmental and Social Due Diligence
ESAP	Environmental and Social Action Plan
SEP	Stakeholder Engagement Plan

1.0 Project Description

1.1 PROJECT DESCRIPTION

In the 2007-2013 Programming period, Municipality of Varna executed 2 projects related to the provision of public transport service:

- Project "Varna Integrated Urban Transport", funded by the Operational Programme (OP) "Regional development" 2007-2013;
- Project "Applying of measures to improve the quality of life in the cities of Burgas, Varna, Stara Zagora and Pleven", funded under OP "Environment 2007-2013".

Within the framework of the project for an integrated urban transport, 10 components were implemented. In order to upgrade these components and the selected alternative in the feasibility study within the framework of this project proposal are included 3 components that are interrelated:

- Component 1: Expansion and reconstruction of the street arteries, related to optimization of mass urban public transport (MUPT);
- Component 2: New vehicles for MUPT;
- Component 3: Intelligent transport systems.

An integrated territorial approach was used in the development of the project. The system of interrelated actions aims on sustainable improvement of the economic, social and environmental status of the municipality. To complete all actions and interventions within the project are also included rehabilitation activities of streets (encompassing and pedestrian underpasses, pedestrian traffic lights, accessibility, cycle paths, etc.), in which there is heavy traffic and lines of urban public transport.

The work on the above improvements continues with Project "Integrated public transport of Varna – Phase two" and Project "Aestheticization and Modernization of the Urban Environment in Varna".

The project "Aestheticization and Modernization of the Urban Environment in Varna" represents an investment in the physical and living environment of Varna. It will contribute to the implementation of the Integrated Plan for Urban Regeneration and Development of Varna (IPURB), through realization of projects of the Investment Program. Three zones of influence are defined in IPURB, two of them with a concentration of residential neighbourhoods, public, educational and cultural institutions and other functions of public importance. The objects of intervention within the project are located in the "Zone with predominantly social nature" and the "Zone with public functions." Both areas are characterized by infrastructure, for the most part highly depreciated, with insufficient functionality, inadequate aesthetics and environmental performance. Thus, the project activities are focused on reconstruction, modernization and aestheticization of urban spaces and creation of accessible environment. Their Implementation will contribute to improvement of quality of life, access to basic services for the population, improvement of the ecological environment and the development of the whole region. The project is oriented towards satisfying the needs of the target groups - the population of the Municipality of Varna and the region, as well as visitors, guests and tourists in the region. The results of the project implementation will provide for an increase in the investment attractiveness and support of a balanced economic development of the city and the region and will have a beneficial social impact. Planned interventions for the objectives' achievement include: Reconstruction and rehabilitation of spaces, street network, public recreation areas, including street furniture and landscaping; energy efficient street lighting; construction of bicycle lanes; accessible architectural environment connected with

the above objectives. All planned activities follow a single concept for a safe, sustainable urban area of high environmental and aesthetic quality.

As the rehabilitation of water and sewer network and construction of rainwater sewers along the streets foreseen for reconstruction under the above two projects is not eligible for financing via the abovementioned two operational programmes, the City of Varna will take a loan from EBRD to finance it (**The Project**). It should be noted that the owner of the water and sewer infrastructure is the City of Varna, while Water Supply and Sewerage Company Varna (WSSC Varna) is only operator of the water and sewer infrastructure.

Below is a list with the project components for which the City of Varna requires a loan from EBRD to finance the reconstruction of water and sewer network and construction of rainwater sewers:

Project Component No.	Project Component Description
1	Overhaul of Primorski Boulevard (section between Stefan Stambolov street and Tsar Osvoboditel bldv.) and the an adjoining facility (auto subway) as per the plan of Micro-region III, Odesos Region
2	Overhaul of Tsar Osvoboditel Blvd. (section between Primorski Blvd and Knyaz Boris Blvd) as per the Plan of Micro-region III, Odesos Region
3	Overhaul of Parvi Mai Blvd. (section between Mara Taseva Street and junction VAR1087-/I-9/ Asparuhovo Residential District and Galata Residential District- as per the plan of 29 micro-region, Asparuhovo Region
4	Reconstruction of Vasil Levski Blvd. (between Podvis and OsmiPrimorski Polk Blvd.)
5	Reconstruction of Osmi Primorski Polk Blvd. (section between Vasil Levski Street and Hristo Smirnenski Blvd.)
6	Reconstruction of Saborni Street (section between Vladislav Varnenchik Blvd and Slivnitsa Blvd), including activities for accessibility improvement
7	Reconstruction of Narodni Buditeli Blvd. (sections between Mara Taseva Street and Narva Street and between Narva Street and Sts. Kiril and Metodii street)
8	Reconstruction of Mara Taseva street (section between Parvi Mai Blvd. and Narodni Buditeli Blvd.)
9	Overhaul of Yanko Mustakov Street (section between Konstanin and Fruzhin Blvd. and St Elena street)
10	Overhaul of Georgi Benkovski street (section between Slivnitsa Blvd and Krakra Street)
11	Overhaul of Tsar Simeon Street
12	Overhaul of Mihail Koloni Street
13	Overhaul of Ana Felixova Street, Petar Alipiev Street and Treti Mart Boulevard (separate sections of these streets)

The Project is categorised B under the EBRD's Environmental and Social Policy, 2014. The Environmental and Social Due Diligence (ESDD) has been carried out by external

independent consultants, and a corrective ESAP and SEP have been developed for the project. ESDD has also concluded that no additional studies, e.g. in relation to resettlement, livelihood, retrenchment, biodiversity, etc. would be necessary for the Project.

Water Supply and Sewerage Company Varna has provided recommendations with regards to the materials and diameters of the new pipes that will be installed for each Project Component. However, the designers of the Contractors will determine these on the basis of their calculations, as per the applicable Bulgarian design standards.

1.2 PROPOSED WORKS AND SUBSEQUENT MAINTENANCE/OPERATION

Project Component 1 - Overhaul of Primorski Boulevard (section between Stefan Stambolov street and Tsar Osvoboditel Boulevard) and the an adjoining facility (auto subway) as per the plan of Micro-region III, Odesos Region

The project component is included in a bigger Project “Integrated public transport of Varna – Phase two”.

There is an investment design documentation (Technical Design) elaborated for this project component. At the moment there is an ongoing public procurement procedure for selection of Construction Contractor.

The improvement of the water supply and sewerage infrastructure as part of the project component aims on improvement of the draining of the road surface. The total length of the street section under which the water supply and sewerage infrastructure will be rehabilitated is approximately 800 m.

The planned works will include:

- Works related to draining of the road surface – construction of new diversions from the rainwater reception chambers to the street sewer system;
- Increase of the capacity of domestic sewers – the existing pipes are with insufficient diameter. That is why they will be replaced with PVC pipes with diameter 315 mm with total length of 90 m that will lead to the existing sewer on Macedonia Street. The new sewer will replace the existing pipes at their present location;
- Water supply pipes – The existing depreciated pipes will be replaced with HDPE pipes with diameter 110 mm with total length of 130 m and HDPE pipes with diameter 315 mm with total length of 230 m.

Project Component 2 - Overhaul of Tsar Osvoboditel Blvd. (section between Primorski Blvd and Knyaz Boris Blvd.) as per the Plan of Micro-region III, Odesos Region

The project component is included in a bigger Project “Integrated public transport of Varna – Phase two”.

There is an investment design documentation (Technical Design) elaborated for this project component. At the moment there is an ongoing public procurement procedure for selection of Construction Contractor.

The improvement of the water supply and sewerage infrastructure as part of the project component aims on improvement of the draining of the road surface of Tsar Osvoboditel

Street. The total length of the street section under which the water supply and sewerage infrastructure will be rehabilitated is approximately 300 m.

The planned works will include:

- Works related to draining of the road surface – the existing rainwater reception chambers are clogged which leads to forming of rainwater layer on the road surface. That is why the project component foresees construction of new rainwater sewer system. It will be made of PVC pipes with diameter 500 mm with a total length of 250 m. The rainwater sewer will discharge into an existing rainwater recipient. The rainwater collection system will also comprise 60 m of drainage grids;
- Increase of the capacity of domestic sewers – the existing pipes are with insufficient diameter. That is why they will be replaced with PVC pipes with diameter 315 mm with total length of 290 m that will lead to the existing sewer. The new sewer will replace the existing pipes at their present location;
- Water supply pipes – The existing depreciated pipes will be replaced with HDPE pipes with diameter 110 mm with total length of 300 m.

Project Component 3 - Overhaul of Parvi Mai Blvd. (section between Mara Taseva Street and junction VAR1087-/I-9/ Asparuhovo Residential District and Galata Residential District - as per the plan of 29 micro-region, Asparuhovo Region

The project component is included in a bigger Project “Integrated public transport of Varna – Phase two”.

There is an investment design documentation (Technical Design) elaborated for this project component. At the moment there is an ongoing public procurement procedure for selection of Construction Contractor.

The planned works will include:

- Water supply pipes – The existing depreciated asbestos-cement and steel pipes will be replaced with HDPE pipes with larger diameters;
- Installation of linear drainage system for reception of rainwater with rainwater manholes;
- Replacement of the rainwater sewer with PVC pipes.

Project Component 4 - Reconstruction of Vasil Levski Blvd. (between Podvis and Osmi Primorski Polk Blvd.)

The project component is included in a bigger Project “Integrated public transport of Varna – Phase two”.

At the moment there is an ongoing public procurement procedure for Engineering Services for the project component (elaboration of Technical Design and Construction).

The specific technical solutions with regards to the rehabilitation of the water and sewer network and construction of rainwater sewers along Vasil Levski Boulevard will be

elaborated by the Contractor and presented in the design documentation. The Terms of Reference requires the contractor to provide for drainage system made of hollow curbs, dimensioned for rainwater quantities with repetitiveness 1:50.

The planned works will include:

- Water supply pipes – The existing depreciated asbestos-cement and steel pipes will be replaced with HDPE pipes with larger diameters.
- Replacement of the rainwater sewer for Bazar Levski underpass with PVC pipes with diameter 500 mm;
- Extension of the sewer from Breza Street to Madara Street with PVC pipes with diameter 315 mm;
- Replacement of the domestic sewer from Druzhba Street through Vasil Levski Boulevard with PVC pipes with diameter 315 mm;
- Replacement of the rainwater sewer for drainage of the crossroads of Druzhba Street and Vasil Levski Boulevard with PVC pipes with diameter 500 mm.

Project Component 5 - Reconstruction of Osmi Primorski Polk Blvd. (section between Vasil Levski Street and Hristo Smirnenski Blvd.)

The project component is included in a bigger Project “Integrated public transport of Varna – Phase two”.

At the moment there is an ongoing public procurement procedure for Engineering Services for the project component (elaboration of Technical Design and Construction).

The specific technical solutions with regards to the rehabilitation of the water and sewer network and construction of rainwater sewers along Osmi Primorski Polk Boulevard will be elaborated by the Contractor and presented in the design documentation. The Terms of Reference requires the contractor to provide for drainage system made of hollow curbs, dimensioned for rainwater quantities with repetitiveness 1:50.

The planned works will include:

- Water supply pipes – The existing depreciated asbestos-cement and steel pipes will be replaced with HDPE pipes with larger diameters.

Project Component 6 - Reconstruction of Saborni Street (section between Vladislav Varnenchik Blvd and Slivnitsa Blvd), including activities for accessibility improvement

The project component is included in a bigger Project “Integrated public transport of Varna – Phase two”.

At the moment there is an ongoing public procurement procedure for Engineering Services for the project component (elaboration of Technical Design and Construction).

The specific technical solutions with regards to the rehabilitation of the water and sewer network and construction of rainwater sewers along Saborni Street will be elaborated by the Contractor and presented in the design documentation. The Terms of Reference requires the

contractor to provide for drainage system made of hollow curbs, dimensioned for rainwater quantities with repetitiveness 1:50.

The planned works will include:

- Increase of the capacity of the sewers – the existing pipes are with insufficient diameter. That is why they will be replaced with PVC pipes with diameter 315 mm in the section Antim I Street – Tsar Petar Street;
- Water supply pipes – The existing depreciated pipes will be replaced with HDPE pipes with diameter 110 mm in the section Vladislav Varnenchik Boulevard – Slivnitsa Boulevard.

Project Component 7 - Reconstruction of Narodni Buditeli Blvd. (sections between Mara Taseva Street and Narva Street and between Narva Street and Sts. Kiril and Metodiy street)

The project component is included in a bigger Project “Integrated public transport of Varna – Phase two”.

At the moment there is an ongoing public procurement procedure for Engineering Services for the project component (elaboration of Technical Design and Construction).

The specific technical solutions with regards to the rehabilitation of the water and sewer network and construction of rainwater sewers along Narodni Buditeli Boulevard will be elaborated by the Contractor and presented in the design documentation. The Terms of Reference requires the contractor to provide for drainage system made of hollow curbs, dimensioned for rainwater quantities with repetitiveness 1:50.

The planned works will include:

- Relocation of two water supply pipes sections with diameter 315 mm due to planned construction of new underpasses;
- Water supply pipes – The existing depreciated asbestos-cement pipes will be replaced with HDPE pipes with larger diameters;
- Replacement of existing concrete sewer pipes with PVC pipes with diameter 400 mm.

Project Component 8 - Reconstruction of Mara Taseva street (section between Parvi Mai Blvd. and Narodni Buditeli Blvd.)

The project component is included in a bigger Project “Aestheticization and modernization of the urban environment in Varna”.

There is an investment design documentation (Technical Design) elaborated for this project component. At the moment the project component is at construction phase. Construction works have officially started on 4 August 2017.

The planned works include:

- Water supply pipes – The existing depreciated asbestos-cement pipes will be replaced with HDPE pipes with larger diameters;

- Replacement of existing concrete sewer pipes for domestic waters with PVC pipes;
- Construction of new rainwater sewer with PVC pipes.

Project Component 9 - Overhaul of Yanko Mustakov Street (section between Konstanin and Fruzhin Blvd. and St. Elena street)

The project component is included in a bigger Project “Aestheticization and modernization of the urban environment in Varna”.

At the moment there is an ongoing public procurement procedure for Engineering Services for the project component (elaboration of Technical Design and Construction).

The specific technical solutions with regards to the rehabilitation of the water and sewer network and construction of rainwater sewers along Yanko Mustakov Street will be elaborated by the Contractor and presented in the design documentation. The Terms of Reference requires the contractor to provide for drainage system made of hollow curbs, dimensioned for rainwater quantities with repetitiveness 1:50.

The planned works will include:

- Water supply pipes – The existing depreciated asbestos-cement and steel pipes will be replaced with HDPE pipes with larger diameters in order to meet the increased water demand.

Project Component 10 - Overhaul of Georgi Benkovski street (section between Slivnitsa Blvd and Krakra Street)

The project component is included in a bigger Project “Aestheticization and modernization of the urban environment in Varna”.

At the moment there is an ongoing public procurement procedure for Engineering Services for the project component (elaboration of Technical Design and Construction).

The specific technical solutions with regards to the rehabilitation of the water and sewer network and construction of rainwater sewers along Y Georgi Benkovski Street will be elaborated by the Contractor and presented in the design documentation. The Terms of Reference requires the contractor to provide for drainage system made of hollow curbs, dimensioned for rainwater quantities with repetitiveness 1:50.

The planned works will include:

- Water supply pipes – The existing depreciated pipes will be replaced with HDPE pipes with diameter 110 mm in the section Krakra Street – Bladislav Varnenchik Boulevard; The existing depreciated pipes will be replaced with HDPE pipes with diameter 200 mm in the section Nikola Daskalov Street – Doctor Piskyulev Street; The existing depreciated pipes will be replaced with HDPE pipes with diameter 200 mm in the section Vladislav Varnenchik Boulevard – Alexander Rachinski Street.

Project Component 11 - Overhaul of Tsar Simeon Street

The project component is included in a bigger Project “Aestheticization and modernization of the urban environment in Varna”.

At the moment there is an ongoing public procurement procedure for Engineering Services for the project component (elaboration of Technical Design and Construction).

The specific technical solutions with regards to the rehabilitation of the water and sewer network and construction of rainwater sewers along Tsar Simeon Street will be elaborated by the Contractor and presented in the design documentation. The Terms of Reference requires the contractor to provide for drainage system made of hollow curbs, dimensioned for rainwater quantities with repetitiveness 1:50.

The planned works will include:

- Water supply pipes – The existing depreciated pipes will be replaced with HDPE pipes with diameter 160 mm.

Project Component 12 - Overhaul of Mihail Koloni Street

The project component is included in a bigger Project “Aestheticization and modernization of the urban environment in Varna”.

At the moment there is an ongoing public procurement procedure for Engineering Services for the project component (elaboration of Technical Design and Construction).

The specific technical solutions with regards to the rehabilitation of the water and sewer network and construction of rainwater sewers along Mihail Koloni Street will be elaborated by the Contractor and presented in the design documentation. The Terms of Reference requires the contractor to provide for drainage system made of hollow curbs, dimensioned for rainwater quantities with repetitiveness 1:50.

The planned works will include:

- Increase of the capacity of domestic sewers – the existing pipes are with insufficient diameter. That is why they will be replaced with PVC pipes with diameter 315 mm in the section Stefan Karadzha Street – Primorski Boulevard;
- Water supply pipes – The existing depreciated pipes (iron 80 mm, asbestos-cement 250 mm, asbestos-cement 100 mm and asbestos-cement 150 mm) will be replaced with HDPE pipes with diameter 110 mm, 315 mm, 160 mm and 200 mm, respectively.

Project Component 13 - Overhaul of Ana Felixova Street, Petar Alipiev Street and Treti Mart Boulevard (separate sections of these streets)

The project component is included in a bigger Project “Aestheticization and modernization of the urban environment in Varna”.

At the moment there is an ongoing public procurement procedure for Engineering Services for the project component (elaboration of Technical Design and Construction).

The specific technical solutions with regards to the rehabilitation of the water and sewer network and construction of rainwater sewers along the streets will be elaborated by the Contractor and presented in the design documentation. The Terms of Reference requires the contractor to provide for drainage system made of hollow curbs, dimensioned for rainwater quantities with repetitiveness 1:50.

The planned works will include:

- Increase of the capacity of domestic sewers – the existing PVC pipes are with insufficient diameter (200 mm). That is why they will be replaced with PVC pipes with diameter 400 mm;
- Water supply pipes – The existing depreciated asbestos-cement pipes will be replaced with HDPE pipes with larger diameters in order to meet the increased water demand.

All Project components will be handed over for operation and maintenance to WSSC Varna after the construction works are complete.

1.3 SCHEME MAP

An overview of the locations of the project components is provided in Figure 1-3 below.

Figure 1-3: Overview of the locations of the project components



2.0 Background

2.1 RATIONALE OF THE PROJECT, THE NEED FOR THE PROJECT AND PROJECT OBJECTIVES

The City initiated the Project and requested financing of the rehabilitation of certain streets due to poor condition of their road surface and sidewalks. The City also recognizes that from general perspective it would be much more efficient to rehabilitate the underground infrastructure together with the reconstruction of the streets than to reconstruct the streets and after a couple of years to excavate them again in order to rehabilitate the underground infrastructure. For that reason the City initiated discussions with WSSC Varna and it became clear that the rehabilitation of the water and sewer infrastructure along these streets is necessary to address the existing water losses and insufficient capacities of the water supply and sewer systems along most of these streets. WSSC Varna agreed with the opportunistic approach for rehabilitation of the underground WSS infrastructure, together with the rehabilitation of the streets.

The objectives of the Project are improvement of the existing water supply and sewerage infrastructure through:

- Replacement of depreciated water supply pipelines with contemporary pipes with larger diameters to meet the increased water demand;
- Replacement of depreciated sewer pipelines with contemporary pipes with larger diameters to meet the increased discharged water quantities;
- Physical separation of rainwater and domestic wastewater pipelines in order to reduce risks from flooding due to heavy rains.

2.2 LEGAL ASPECTS AND COMPLIANCE WITH RELEVANT ENVIRONMENTAL AND SOCIAL LAWS

The Project has to comply with Bulgarian and EU ordinances, regulations and requirements. The activities of the municipality, as well as all activities taking place within the city and districts are subject to local and regional ordinances and institutional oversight. In order to guarantee financing for the project, the Municipality has voluntarily accepted to comply with the Bank's requirements and international standards.

The Project design documentation is prepared in accordance with the applicable legislation. The pipes will be dimensioned as per the design norms for such infrastructure projects. The works associated with the Project will be implemented in compliance with all relevant environmental, social and other applicable legislative documents and standards.

2.3 CURRENT ENVIRONMENTAL AND SOCIAL SITUATION AND CONSIDERATIONS

2.3.1 Land use

All Project components are located on municipal land, used for streets, boulevards and adjacent sidewalks and other public amenities.

2.3.2 Water resources

Public water supply in Varna Municipality is secured mostly from water sources located outside the municipal territory. The share of water losses in the water supply system is quite high. Water consumption significantly increases in summer especially in the recreational and touristic zones. Consumption is increasing through the years because of the expansion of the settlements and construction of new buildings sometimes in areas where the existing water supply systems are not capable of coping with the additional water demand. Generally,

drinking water in the territory of Varna municipality complies with the applicable water quality standards. It should be mentioned that a number of the controlled parameters (chlorides, nitrates, phosphates, heavy metals) show concentrations significantly lower than the thresholds. Concentrations of iron, manganese, residual active chlorine, oxidisability and pH are within the standards.

About 90% of properties in Varna are connected to the sewerage system. Some of the sewer pipelines need rehabilitation due to their age, poor condition and insufficient capacity. Varna has a municipal wastewater treatment plant which treats significant part of wastewaters collected in the sewer system. Some of the sources of groundwater pollution in Varna municipality include infiltration of precipitation through agricultural land, villa areas to the south of Varna Lake, irrigated areas, farms and lands treated with fertilizers and leaks (exfiltration) from the sewerage systems.

2.3.3 Habitats, ecology (flora and fauna) and nature conservation

The biological and ecological resources pertaining to the Project area are typical for urbanised environment.

The animal species in the Project area are synanthropes. No domesticated animals are bred in the living quarters.

The Project area comprises the green system in the urban environment, mainly consisting of small parks, some patches of greenery among the buildings, and green strips along the streets.

Since the Project is taking place on an urban territory, it is not expected to affect directly any rare or endangered plant or animal species.

However, there are four Natura 2000 sites near the project area:

- SCI Galata (site code BG0000103) designated under the Habitats Directive;
- SPA Galata (site code BG0002060) designated under the Birds Directive;
- SPA Batova (site code BG0002082) designated under the Birds Directive; and
- SPA Varna-Beloslav Lake (site code BG0000191) designated under the Birds Directive.

Three of the Project components are in the immediate vicinity of Natura 2000 sites: components 3, 7 and 8. Actually, project component 3 is tangential to the outline of SPA Galata, while project components 7 and 8 are adjacent to SPA Varna-Beloslav Lake.

There are no critical habitats within the Project implementation area.

The ecosystems in the urban environment have anthropogenic origin and include the green systems described above.

2.3.4 Landscape and visual aspects

The city of Varna is located within the Devnensko-Varnenski area of the Popovsko-Shumenska-Frangenska sub-region of North-Bulgarian zonal area of Danube River.

The relief of the municipality of Varna is diverse, and its main part is located in the Danube plain and southwestern falls within the Sub-Balkans. Varna Lake and artificial channel "lake-sea bay" divide the municipality into North and South parts. Around them is formed

extensive lowland. The terrain is almost flat with scarce hills. The average elevation is 20-40 meters above sea level.

The Old town of Varna is located on a flat terrain and rises in tiers toward the residential areas. At the western part of the municipality is located Varna Lake connected with the western part of Varna bay through two artificial channels. The total length of the lake is 13 km, of which 8.5 kilometres are within the municipality borders.

2.3.5 Air quality

Varna Municipality has elaborated a programme for improvement of air quality in order to achieve the legislatively set requirements. The programme is periodically updated according to the requirements of the environmental legislation in Bulgaria.

The breeze circulation, which is typical for the coastal zones, contributes for repeatedly passing and accumulation of pollutants in the air. In days with breeze the typical for the flat areas midday decrease of concentrations of pollutants in the lowest atmospheric layer is not observed. On the contrary, air pollutants concentrations in the afternoon remain high, which leads to higher average daily concentrations.

Predominant for Varna Municipality wind directions, with different frequency in the respective seasons, combined with well-defined negative relief forms are unfavourable for diffusion of pollutants in the atmosphere. The typical for the region moderate and strong winds are favourable for dispelling the pollutants in the air.

The performed analyses and assessments in terms of air quality in Varna indicate that the main problems result from the excessive concentrations of particulate matter (PM₁₀) -the recorded exceedances of the norms for this parameter are the most frequent in comparison with all other monitored pollutants.

2.3.6 Noise and vibrations

Noise pollution is one of the most serious environmental concerns for large and congested urban settlements such as the city of Varna. Noise from transport is particularly prevalent in Varna, which is the intersection of several national and international transit corridors and routes.

A Strategic Noise Map for Varna agglomeration has been developed in September 2008 according to EU Directive 2002/49 and officially approved by the Municipal Council. Data collected for the noise levels in the city proves that the main source of noise to which the population is exposed is the road traffic, which forms nearly 80% of the noise pollution in the town. Varna has developed and implemented an Action Plan related to the Strategic Noise Map from 2008, including a set of 23 measures for the reduction of unwanted abnormal noise pollution in urban areas with an emphasis on problem areas, accounting for the highest noise levels.

The City of Varna implements the measures included in the Action Plan and successfully contributes to the reduction of the overall noise levels within the city.

2.3.7 Waste management

The City develops and periodically amends a Waste Management Program. The latest Waste Management Program is for the period 2015-2020. The overall goal of the Program is to contribute to sustainable development of Varna Municipality through implementation of

integrated waste management system, which will result in reduced environmental impact, caused by waste generation, improved efficiency of use of waste as resource, increased responsibilities of the polluters and stimulation of innovations in the field of waste management.

2.3.8 Traffic management

As a result of the implementation of "Varna Integrated Urban Transport" Project, the traffic in the city of Varna has improved and the City continues to develop and implement measures in this field. Some of the ongoing measures include maintenance and prompt repairs of the traffic lights, optimization of the regimes of the traffic lights, depending on the traffic loads.

2.3.9 Geomorphology and geology

Geomorphology of Varna municipality is a result of exogenic physical-geological processes, additionally influenced by pre-Quaternary tectonic impacts. This combination formed quite a diverse relief forms. The most distinctive geomorphological feature is the valley of Varna Lake. It borders Frangensko Plateau in north direction and with Avrensko Plateau to the south. The transition from Frangensko Plateau to the valley represents a plain inclined form north to south and from west to east. This plain is scarred with gullies and the transition towards the Black Sea is affected by landslides. The north slopes of Avrensko Plateau are very steep towards Varna Lake. The eastern and north slopes of the plateau suffer from significant landslides and gullies.

Landslides along Black Sea coast in the area of Varna cover approximately 54% of the coastal line length. 46% of the landslides (17% of the coastal line length) are active, while the remaining are conditionally consolidated. Geological layers composition and their spatial distribution create favourable conditions for large scale landslides.

2.3.10 Soil

Almost the whole territory of the city of Varna is covered with anthropogenic soils. The main sources of contamination are the industry, construction works, transport, fuel retailing stations, de-icing of roads and household waste. The main pathways for contamination include aerosol emissions, transportation of wastes, contaminated water flows.

2.3.11 Socio-economic status of the local population and other social issues

General social trends

According City Directorate "Information and administration services" the population of the City of Varna counts 343 991 citizens by the end of 2016 (only in the City).

The project components, related to the rehabilitation of the underground water infrastructure are located in the following areas of the City of Varna: Odessos (components 1, 2, 6, 10, 11, 12), Asparuhovo (3, 7, 8), Primorski (4, 5), Vladislavovo (9) and Mladost (13).

According the data of the City, the number of the citizens in these areas in average values is as follows¹:

¹Data provided by the Municipality of Varna: Health care directorate

Varna Municipality		
Area	Number of citizens	Relative share (%)
Odessos	87 910	23.55
Asparuhovo	28 092	7.52
Primorski	108 945	29.18
Vladislavovo	49 237	13.19
Mladost	90 703	24.30

In 2016² the main employment parameters of the region of Varna are better than these of the other regions in the Country as whole. The employment rate shows a decrease after a three years growing period, however the employment ratio is still above the average rate for Bulgaria – 65,6% for Varna versus 63,4% for Bulgaria. The unemployment rates are also more favorable for the average national values 7,1% (from 5,7% in 2015) versus 7,7% for Bulgaria.

The GDP growth per capita for 2016 in the region of Varna is lower than the average for the Country. However its net amount is still higher than the average national amount - with BGN 12 589 per capita with respect to BGN 12 339 per capita in the Country. Gross incomes from salaries were growing and exceeding the amount of BGN 10 000 in 2015 – this positioned Varna at 5th place in the Country per high incomes. In 2016 the net incomes per capita in a household decreased, as a consequence of salaries decrease. On this way, in 2016, Varna remains below the average income rate for the country for the first time since 2013.

The share of the local population living below the country's poverty line increases to 26.9% in 2015, compared to 22.9% for the country.

It could be summarized that the positive trend for growing incomes starting in 2013 is turned in 2016 with slight decrease in the main indicators. However, in terms of employment, the indicators of Varna are still more favourable than these at national level.

Social aspects associated with the Project components

During Consultant field trip and project components site's investigation a rough counting of the number of residents and households that would be affected by the realization of the project components³ was carried out.

According to the observations made during the field trip total number of the affected residential buildings is estimated to 307. Consultant's assumption is that the total number of residents directly affected by the project will be at least 29 786 residents.

During the field trip were counted 321 business premises and facilities that could be considered as directly affected from the project realization. These are small offices, repair ateliers, cafeterias, shops, warehouses for construction materials, car washes, supermarket,

²Data from Institute for market economy: <http://www.regionalprofiles.bg/bg/regions/varna/>

³There was no available data at the City for the number of citizens, business and administrative units located in the areas of the project components.

fuel retailing stations, furniture shops, small restaurants, 2 hotels, 1 commercial mall, tire services and bank offices.

There are also 16 affected administrative buildings located alongside the streets.

Vulnerable groups

The number of disabled people⁴ living in the City of Varna (above 18 years) is 23 814. The number of the disabled children (0-18 years) is 1 047. According to the representatives from the City, there are no citizens from minority groups living in the vicinity of the project components.

Other issues of relevance – gender equality

Bulgaria ranks among the five most gender-balanced countries worldwide. According to the National Statistical Institute (NSI) of Bulgaria, in 2015 the unemployment rate of Bulgarian women was at 8.4%, which is 1.4% lower than the male unemployment rate. The female unemployment rate has been steadily decreasing over the past couple of years. This data at national level implies that male and female residents living in the vicinity of the project components area will have equal access to social assistance, trainings, financing and job opportunities that might mitigate any negative short-term impacts on the local population resulting from the Project. Moreover, the specifics of this project – rehabilitation of underground water infrastructure predispose equal opportunities to both genders to benefit from water services.

2.4 HISTORY OF THE PROJECT DEVELOPMENT AND PLANNING, INCLUDING AN OUTLINE OF THE MAIN ALTERNATIVES

As the City is a beneficiary of EU financing for rehabilitation of the road infrastructure of the 13 Project components, the City initiated an additional project for rehabilitation of the existing water supply and sewer infrastructure along these streets (more information is provided in Section 2.1 above).

As the Municipality is considering only one alternative for development, i.e. rehabilitation of the water and sewer infrastructure along the streets in subject, this alternative has been compared here with the do-nothing alternative, where the water and sewer infrastructure is not rehabilitated. A comparison of the expected impact from the two alternatives is provided below in *Table 2-1*:

- Alternative 1 – Rehabilitation of the water and sewer infrastructure
- Alternative 2 – Do-Nothing alternative

Table 2-1 Comparison of the impact from the considered alternatives

EHS Factor	Alternative 1: Rehabilitation of the water and sewer infrastructure	Alternative 2: Do-Nothing alternative
Air Quality	Increased air pollution during construction works associated with rehabilitation of the water and sewer infrastructure (medium negative)	Gradual increase in air-borne dust, resulting from dried mud and other debris left on the streets due to the missing, clogged or with insufficient capacity drainage system (medium negative)

⁴Data provided from Social services Directorate in Varna Municipality

EHS Factor	Alternative 1: Rehabilitation of the water and sewer infrastructure	Alternative 2: Do-Nothing alternative
	Significant reduction in air-borne dust, resulting from dried mud and other debris left on the streets due to the missing, clogged or with insufficient capacity drainage system (medium positive)	negative)
Climate change resilience	No impact on global climate ⁵ ; slight positive impact on the microclimate of individual parts of the city and its surroundings: -decrease versus the baseline (before the project) in percentage of dwellings damaged by the most intense flooding as a direct result of the project interventions; -slight decrease in the CO ₂ emissions versus the baseline (before the project) could occur due to the reduced electricity consumption and decreased repair works as a direct result of project interventions. (minor positive)	No impact on global climate; negative impact on the microclimate of individual parts of the city and its surroundings: -slight increase in the CO ₂ emissions versus the baseline (before the project) could occur due to the increased electricity consumption and increased repair works as a direct result of inadequate rehabilitation of the existing water supply and sewerage pipes. (minor negative)
Water Quality	Insignificant effects during construction Significant reduction of the potential for contamination of groundwater due to exfiltration of sewer water. (medium positive)	Gradual increase of the potential for contamination of groundwater due to exfiltration of sewer water. (medium negative)
Soil Quality	Soil disturbance and potential infiltration of pollutants in the soils during construction works. (minor negative) Significant reduction of the potential for contamination of soil due to exfiltration of sewer water. (medium positive)	Gradual increase of the potential for contamination of soil due to exfiltration of sewer water. (medium negative)

⁵Climate is the average weather usually calculated over a 30-year time period for a particular region and time period. The World Meteorological Organization determines the years over which comparative analyses and assessments of the climate of a given region can be made. The World Meteorological Organization (WMO) has defined the climatic norm as the average value of a given climatic element for a fixed base period of 30 years. The base periods adopted so far are 1901-1930, 1931-1960, 1961-1990.

EHS Factor	Alternative 1: Rehabilitation of the water and sewer infrastructure	Alternative 2: Do-Nothing alternative
Biological Diversity	<p>Temporary disturbance of species during the construction phase (minor negative)</p> <p>Improvement of urban habitats as a result of the rehabilitation. (minor positive)</p>	Risk of storm water flood. (medium negative)
Natura 2000 and other protected sites	The Project will not impact nationally designated sites and is unlikely to impact Natura 2000 species. (no impact)	Risk of storm water flood. (medium negative)
Landscape	<p>Disturbed urban landscape during the rehabilitation works (medium negative)</p> <p>Project implementation will result in improved urban landscape and environment. (medium positive)</p>	Continuing unpleasant look of the urban landscape and environment along the streets, due to their poor structural and visual condition. (medium negative)
Health and Safety	<p>Increased health and safety risks for the community during construction works (medium negative)</p> <p>Reduction of flood risk (medium positive)</p> <p>Reduction of risks associated with cuts of water supply, spreading of diseases caused by poor hygiene (medium positive)</p>	Gradual increase of the failures of the WSS infrastructure, increased risk for the workers engaged with repair works. Increased health and safety risks for the community during repair works. Frequent cuts of water supply, which increases the risk of spreading of diseases caused by poor hygiene. Increased flood risk. (medium negative)
Noise and vibrations	<p>Increased noise and vibrations during the rehabilitation works (major negative)</p> <p>Decrease of noise and vibrations due to the rehabilitated the street surface (medium positive)</p>	Gradual increase of noise and vibrations due to deterioration of the street surface (medium negative)
Social Aspects	<p>The project will improve the access of the children and their parents to the nurseries, kindergartens and schools (medium positive)</p> <p>Now the disadvantaged individuals</p>	<p>The access of the children and their parents to the nurseries, kindergartens and schools will stay at the existing level without improvements (minor negative)</p> <p>The disadvantaged individuals will</p>

EHS Factor	Alternative 1: Rehabilitation of the water and sewer infrastructure	Alternative 2: Do-Nothing alternative
	<p>meet difficulties to move and to access public institutions, city centres, cultural events and hospitals. The project will facilitate their free movement and their access to the different institutions and events (major positive)</p> <p>The rehabilitation of the streets will shorten the time necessary for the citizens and guests of the City to move from one place to another. In addition, the rehabilitation of the streets will shorten the time necessary for the ambulances to reach the people in need (minor positive)</p> <p>The Project will facilitate and speed up the access to the recreational facilities, sites for children, institutions, touristic and cultural centres for the citizens of the Municipality and for the tourists (medium positive)</p> <p>The underground water infrastructures is too old and depreciated (water supply pipes are 44-46 years old and sewerage pipes are older than 45 years). The replacement of the existing infrastructure with new one will decrease the healthy risk for the citizens (major positive)</p>	<p>meet same difficulties to access public institutions, city centres, cultural events and hospitals (major negative)</p> <p>The time necessary for the citizens and guests of the City to move from one place to another will remain the same (minor negative)</p> <p>The time necessary for the ambulances to reach the people in need will stay the same (medium negative)</p> <p>The old and depreciate water infrastructure is a risk factor for the health status of the population in the area of the project components (major negative)</p>

Overall, it is clear that from an environmental and social standpoint the choice of Alternative 1 will lead to positive impact after the rehabilitation of the streets and the water and sewer infrastructure, while the do-nothing alternative will result in continuous increase of the health, safety and environmental risk. For sure Alternative 1 will have some negative environmental and social impacts during the rehabilitation works. However, these impacts will be temporary and can be reduced to acceptable levels by implementation of appropriate mitigation measures.

In conclusion it can be stated that from an environmental and social standpoint the choice of Alternative 1 will bring significant positive and long-term effects, while the do-nothing alternative will lead to continuing worsening of the negative environmental and social impacts.

3.0 Process

3.1 ESIA PROCESS CARRIED OUT AND INTEGRATION WITH DESIGN

According to the national regulations in force, the Project is subject to the screening stage of the Environmental Impact Assessment (EIA) procedure and the Appropriate Assessment (AA) procedures (harmonised with the EU legislation).

The Competent Authority (Regional Inspectorate of Environment and Water – Varna) has issued statements to the effect that no EIA / AA is required for the Project components under consideration. No other environmental permitting is required for the Project components apart from these statements.

3.2 COMPLIANCE OF THE NATIONAL EIA PROCESS WITH THE EU EIA DIRECTIVE

The national EIA process is in compliance with the EU EIA Directive.

3.3 PUBLIC CONSULTATIONS AND DISCLOSURE AND DEALING WITH OBJECTIONS

As part of the mandatory Notification process, the Municipality notifies the public of its proposals via mass media, Municipal website and a daily newspaper.

Apart of the mandatory information disclosure process, the City organized project meetings with the public in the community centre of the City in February 2017, with the purpose to inform the residents for the planned activities and investments and to receive a feedback from them for the details of the project execution. The demonstrated interest from the residents in that period was low (only three residents participated).

On Nov 14th 2017 additional public hearing related with the current project and its components was made. On this meeting many residents were presented and expressed their support or concerns with regard to project execution. As all expressed public concerns were associated with the design solutions, the City took the responsibility to inform the Contractors on the received comments during the public meetings.

4.0 Environmental Benefits Adverse Impacts and Mitigation Measures

4.1 LAND USE PLANNING AND CHANGES

All Project components are located on municipal land, used for streets, boulevards and adjacent sidewalks and other public amenities. The implementation of the Project will not result in changes of the land use.

4.2 WATER RESOURCES, IMPACTS AND MANAGEMENT MEASURES

Insignificant effects are expected on **Water Quality** during construction. The rehabilitated sewers will lead to significant reduction of the potential for contamination of groundwater due to exfiltration of sewer water.

4.3 HABITATS, ECOLOGY (FLORA AND FAUNA) AND NATURE CONSERVATION, IMPACTS AND MANAGEMENT MEASURES

The impacts on **Biodiversity** are likely to be insignificant, mainly related with temporary disturbance of species during construction works. The Project activities will be carried out over the existing street lanes and pavements. The only exception will be some green strips alongside which host common and wide-spread plant species but these can be reinstated and are likely to restore quickly. Associated animal species are synanthropes and will easily adapt to nearby locations.

The Project area is not within the boundaries of Natura 2000 sites and is unlikely to have a significant adverse impact on habitats and species subject to conservation within these sites. The Project will cause no habitat fragmentation.

4.4 LANDSCAPE AND VISUAL ASPECTS, IMPACTS AND MANAGEMENT MEASURES

Impacts on **Landscape** will include some disturbances of urban landscape during the rehabilitation works. However, Project implementation will result in harmonised urban landscape and environment along the rehabilitated streets during the operational phase.

4.5 AIR QUALITY, IMPACTS AND MANAGEMENT MEASURES

Air Quality will be negatively impacted on local level during the construction, due to the increased emissions of dust and exhaust gases from the machines during construction works associated with rehabilitation of the streets and the water supply and sewerage infrastructure. These impacts will stop with the completion of construction works and the rehabilitated streets and the water supply and sewerage infrastructure will cause significant reduction in air-borne dust, resulting from dried mud and other debris left on the streets due to the missing, clogged or with insufficient capacity drainage system during the operational phase.

4.6 IMPACT ON CLIMATE CHANGE

The Project interventions include rehabilitation/construction of storm water sewers, which are considered as climate resilience infrastructure. The insignificant emissions of greenhouse gases, which will be generated as a result of the transport activities during the construction period, could only insignificantly affect the microclimate of individual parts of the city and its surroundings. The construction activities are limited in the time and scope and they would not contribute to any changes in the main climate change factors.

The operational phase of the Project will be associated with decrease versus the baseline (before the project) in percentage of dwellings damaged by the most intense flooding as a direct result of the project interventions, notably of the introduced separate storm water sewerage. Also decreased CO₂ emissions, compared to the baseline, are expected as a result of the decreased transport activities associated with reduced need of repair works and reduced energy consumptions due to reduced water quantities to be pumped.

In sum, no significant impact on global climate is expected as a result of the Project, irrespective of the fact that the Project is to generate some positive (minor, long-term, local, direct) impact on the microclimate in the Project area.

4.7 FLOOD RISK

The main goal of the planned Project interventions is to minimize the risk of future flooding in the Project area, including through the introduction of separate storm water sewerage and the rehabilitation of the existing urban wastewater infrastructure. In this context, the construction of Project components 3, 7 and 8 is set as a higher priority as those components are situated in the Asparuhovo neighbourhood, which has been recently severely flooded.

The analysis of the flood risk in the Project area is based on two Climate Change Scenarios, as per the last *Fifth Evaluation Report* of IPCC (AR5, 2013/2014)⁶, namely:

- the most pessimistic **RCP 8.5** scenario or so called "**business-as-usual scenario**", with increasing emissions and concentrations of greenhouse; and
- the optimistic **RCP 4.5** scenario, which stipulates **faster realization of adequate measures for limiting the emissions**.

For the Black Sea region, in the both scenarios, the Annual Average Temperature and Precipitation are expected to increase, where the expected increase in the intensity of the precipitation is 3.39% under the RCP4.5 (optimistic) scenario, and 6.43% under the RCP8.5 (pessimistic) scenario.

The project is designed to ensure adequate reserve for meeting the provisions of both Climate Change Scenarios in the Project area; hence its implementation is expected to reduce the flood risk in the Project area, and the Project is assessed to have a significant, long-term, direct, local positive impact.

4.8 NOISE AND VIBRATIONS

Noise and vibrations will be increased during the Project construction phase. The impact is expected to be significant for the local residents due to the close proximity to residential buildings. However, the duration of these nuisances for any individual location will be short and after the completion of the Project there will be no or only insignificant noise and vibrations effects during the operational phase.

4.9 WASTE MANAGEMENT

The generated construction waste (mainly excavated soils, demolished concrete and pavements) will be deposited to the landfill for construction wastes. Generated waste packaging of raw materials will be treated by licensed companies. The municipal waste from the workers will be deposited to the landfill.

4.10 ROAD SAFETY, IMPACTS AND MANAGEMENT MEASURES

Each investment design at technical design phase includes Plan for temporary traffic management and traffic safety during construction. These Plans are approved by the traffic

⁶ Source: IPCC, Fifth Assessment Report (AR5) (www.ipcc.ch/report/ar5/wg1/)

police prior to their implementation. The Contractors are obliged to restore the traffic management after the completion of the construction works.

4.11 GEOMORPHOLOGY AND GEOLOGY

Implementation of the Project will contribute to reduction of leaks from the water and sewerage infrastructure which will reduce the risks of landsliding and terrain/street/sidewalks subsidence caused by water.

4.12 SOIL

Soil Quality will be negatively impacted due to compacting and soil structure disturbance during construction works. The rehabilitated sewers will lead to significant reduction of the potential for contamination of soil due to exfiltration of sewer water

4.13 ASSOCIATED INFRASTRUCTURE IMPACTS AND MANAGEMENT MEASURES

The Project is focused on rehabilitation of the existing water supply and sewerage infrastructure, therefore the impacts on the infrastructure will be positive.

4.14 CUMULATIVE IMPACTS

No cumulative impacts are expected as there are no other projects foreseen in the Project areas.

4.15 INDUCED (INDIRECTLY CONSEQUENTIAL) IMPACTS

No induced negative impacts are expected in relation with the Project.

4.16 OCCUPATIONAL HEALTH AND SAFETY ISSUES; INCLUDING EXPLOSIVES SAFETY

Employees of the City are not directly involved in the construction works related to rehabilitation of the streets and the associated water supply and sewerage infrastructure. These activities are performed by Construction Contractors. According to the applicable legislation and the contracts between the City and the Contractors, the Contractors are obliged to adhere to all legal requirements related to employment and provision of health and safety working conditions. No explosives will be used at any phase of the Project.

4.17 DISRUPTION, HEALTH AND SAFETY DURING CONSTRUCTION

According to the contracts between the City and the Contractors and the technical specifications, the Contractors are responsible for the safety of all activities performed as part of the Project. The Contractors are obliged to perform construction in a way that does not prevent access to and use of properties; to ensure safety of the population by installing of warning signs, signalled traffic diversions, lights, etc. The Design documentation also is required to include Health and Safety Plan, comprising additional measures for securing of safe construction sites for both public and contractor workers.

4.18 CONSISTENCY WITH POLICY, LAW AND OTHER PLANS

The Project is consistent with the policy of the City for provision of appropriate urban environment and continues the good work done in the last years. It also complements the works foreseen in Projects “Integrated public transport of Varna – Phase two” and “Aestheticization and Modernization of the Urban Environment in Varna”. The Project is structured in compliance with all applicable laws.

4.19 ENVIRONMENTAL MANAGEMENT PLANS, MITIGATION MEASURES AND COMPENSATORY MEASURES

No environmental management plans or compensatory measures would be required for the Project.

In order to address issues identified during this Environmental and Social Assessment, an Environmental and Social Action Plan (ESAP) was developed as a separate document. The ESAP is focused on those issues that are required to bring the operations into compliance with the EBRD’s requirements, best practice and legal requirements.

4.18.1 Mitigation measures during construction

In order to avoid or minimize the potential negative impacts and issues during construction, Consultants propose the following additional mitigation measures to be implemented during the construction phase:

- Construction works should be undertaken outside the breeding season of the majority of the animal species, which is from April to June, in order to minimise their disturbance. Most appropriate would be if the construction works commence early in spring (February – March) or in autumn (September – October) when the birds and the rest of the animals have not yet occupied nesting or breeding areas.
- Construction works should be undertaken only during the daytime in order to avoid potential disturbance of species from the bat fauna.
- Project-generated construction, domestic and food waste should be properly treated and regularly removed from construction sites.
- Any spills of fuels and lubricating materials from the construction machines should be prevented.
- Dust suppression measures should be applied as appropriate.
- No noisy construction activities shall be carried out in the periods 14:00-16:00 and 20:00-08:00.
- Representatives of the City and/or Construction supervision to allow noisier construction activities to be conducted only at certain times of the day.
- Foundations of the buildings shall be preserved and no excavation under the foundations shall be allowed.
- During rains and intrusion of water inside the excavation pits/trenches, the water shall be pumped out immediately.
- Backfilling shall be done with clean soil at 20 cm layers and compacting shall be done with manual compactors (no heavy compacting machines shall be used).
- In case excavations reveal unstable soil conditions, immediate measures shall be taken to stabilise the soil.

4.18.2 Mitigation measures during operation and maintenance

Measures to minimise adverse impacts during future maintenance/repair works are the same as those prescribed for the construction phase, except that maintenance/repair will be undertaken very rarely (only when needed).

5.0 Social Benefits, Adverse Impacts and Mitigation Measures

5.1 SOCIO-ECONOMIC IMPACTS; INCLUDING GENDER AND MANAGEMENT MEASURES

5.1.1 Impacts associated with construction

The construction phase of the Project will create difficulties for access of residential buildings, business and administrative facilities alongside the routes of the Project components under rehabilitation. Another likely impact will be the increased risk for the security and health conditions of the children living and visiting kindergartens and schools in the Project's vicinity, increased risk for the children with asthma, pulmonary diseases and respiratory problems from the increased dust levels associated with the construction works, increased risk for the security and health status of the elderly people living in the Project's vicinity, increased risk for the security and health status of the people with disabilities living in the Project's vicinity.

These impacts will be local and short-term and will be mitigated by measures like instalment of safety overpasses, sectional rehabilitation of the sidewalks and information disclosure for the activities and their duration prior the start of the construction works, etc.

Mitigation measures are listed in Section 5.9.1 below.

5.1.2 Impacts associated with operation and maintenance

The operational phase of the Project will be associated with a number of long-term positive impacts like improved access to the residential buildings, business and administrative premises; improved healthy living conditions through renovation of the old water pipes; improved access to the children and parents to the educational facilities; improved healthy conditions for the children with asthma, pulmonary diseases and respiratory problems; improved access and possibility for movement of the elderly people; improved access and possibility for movement of the people with disabilities; improved aesthetical environment and more greenery.

Impacts associated with future maintenance activities will be similar to those during the construction phase of the Project, but they will be much shorter, less intense and occurring very rarely.

Mitigation measures are listed in Section 5.9.2 below.

5.1.3 Gender issues

Gender inequality is not considered to be an issue for the realization of the Project.

5.2 IMPACTS TO EXISTING INFRASTRUCTURE AND PUBLIC SERVICES

The Project implementation will result in improvement of the water supply and sewerage infrastructure and the associated services provided for the citizens. Some interruptions may occur during the construction phase, but they will be kept as short as technically possible.

5.3 LOCAL TRAFFIC AND ACCESS IMPACTS

Each investment design at technical design phase includes Plan for temporary traffic management and traffic safety during construction. These Plans are approved by the traffic police prior to their implementation. The Contractors are obliged to restore the traffic management after the completion of the construction works.

Pipeline connections are never placed in front of the entrances of buildings, offices, shops, etc. Therefore the replacement of house connections will not obstruct the access to the any of the above. If any of these house connections are relatively close to the entrances, temporary access means (like overpasses, bridges) will be used. Before the commencement of the construction works, the Contractor will make an overview of the potential problematic locations jointly with the representatives of the City, and will organise the construction activities in a way to avoid any difficulties of access.

5.4 LAND ACQUISITION AND RESETTLEMENT

All residents from the residential buildings, employees in the business facilities and in the administrative buildings along the streets, subject of rehabilitation, could be considered as directly impacted from the implementation of the Project. However, there is no identified need for temporary resettlement or economic displacement, as the rehabilitation activities (incl. sidewalks rehabilitation and renovation) will be executed by sections, with safety overpasses for each entrance and sectional renovation of the sidewalks in order to prevent any difficulties for accessing the buildings and facilities.

Therefore the Project will not cause economic displacement. No land acquisition or expropriation will be required either.

5.5 CONTRACTOR MANAGEMENT, INCLUDING THE SITING AND MANAGEMENT OF WORKER CAMPS

Contractors are selected in accordance with the National Public Procurement Act and the Internal rules for public procurement, developed by the City of Varna. The technical specifications for the Project components require the contractors to adhere to the applicable legislative requirements for provision of health and safety working conditions. The City selects Construction Supervisor for the execution of the construction works. One of the obligations of the Construction Supervisor is to control the adherence to the health and safety requirements. The City also appoints health and safety coordinator for the construction period within the framework of the contract for construction supervision.

There will be no worker camps required for this Project.

5.6 COMMUNITY IMPACTS

No community impacts are expected as a result of the Project. No Roma are known to utilise the land on which the Project will be implemented.

5.7 LABOUR ISSUES AND STANDARDS

The Project will not be associated with labour issues. The nature of the works does not require extensive labour force. The technical specifications for the Project components require the contractors to adhere to the applicable legislative requirements and standards including those covering labour.

5.8 PUBLIC ROAD SAFETY, INCLUDING HEALTH AND SAFETY MITIGATION IN THE DESIGN

Increased risk of traffic accidents may occur during the construction phase, caused by the change in the traffic organisation and hindered access. To reduce this risk, a Plan for temporary traffic management and safety during construction is developed and approved as part of each project component documentation. Appropriate traffic signs, road blocking devices and warning lights are provided. Before the commencement of the construction works, the residents are notified on the hindered access.

Increased risk of tripping, slipping and falling due to excavations and other obstacles associated with the construction works may occur as well. To reduce this risk the foreseen preventive measures include installation of temporary fences with height 2 m, posting of warning signs, installation of temporary overpasses or leaving of access routes.

The rehabilitated street surface will contribute to streamlining of the traffic during the operational phase of the Project.

5.9 SOCIAL MANAGEMENT PLANS, MITIGATION MEASURES AND COMPENSATORY MEASURES

No social management plans or compensatory measures would be required for the Project.

The following potential risk for community may rise in relation to the Project implementation:

- Traffic accidents – to address these, as part of each project component documentation is developed and approved a Plan for temporary traffic management and safety during construction. Appropriate traffic signs, road blocking devices and warning lights are provided. Before the commencement of the construction works, the residents are notified on the hindered access;
- Tripping, slipping and falling – preventive measures include installation of temporary fences with height 2 m, posting of warning signs, installation of temporary overpasses or leaving of access routes;
- Falling objects – the Contractors are required to ensure only qualified persons are involved in the loading, unloading and lifting processes, inspection of the associated equipment and use only of certified equipment;
- Electrocution – prevention measures include prevention of unauthorized access to the construction sites, excavation works are conducted manually in the likely locations of live cables in the presence of persons from the respective utility company;

- Fire - prevention measures include provision of firefighting equipment at the construction sites, development of fire response and emergency plan, conduction of fire drills;
- Noise - prevention measures include implementation of the requirements of Ordinance 4 of 27 December 2006 on reduction of the harmful noise via noise insulation of the building in the process of their design and norms for conduction of construction works with regards to noise emissions during construction.

All workers will be provided with adequate personal protective equipment as per the requirements of Ordinance 3 on the minimal requirements for health and safety of workers during use of personal protective equipment.

The temporary fence of the construction section will prevent the access of the citizens to the construction sites. Where the access of the citizens to their homes or other premises will be temporarily interrupted due to construction activities, safety overpasses will be installed to prevent the loss of access for the period of construction.

In order to address issues identified during this Environmental and Social Assessment, an Environmental and Social Action Plan (ESAP) was developed as a separate document. The ESAP is focused on those issues that are required to bring the operations into compliance with the EBRD's requirements, best practice and legal requirements.

5.9.1 Mitigation measures during construction

In order to avoid or minimize the potential negative impacts and issues during construction, Consultants propose the following additional mitigation measures to be implemented during the construction phase:

- Mitigation measures for the impacts from the construction activities on the population inhabiting the project area of influence, and for the employees and customers of the business and administrative facilities alongside the project components:
 - Early information disclosure prior to the start of the construction activities. The information should contain more details and clarification about the construction schedule, construction areas, responsible persons from the Municipality, Construction Contractor and Construction Supervisor (together with their contact details).
 - Instalment of safety overpasses to secure the access to residential buildings, business and administrative premises the construction;
 - Sectional rehabilitation of the sidewalks in order to prevent difficulties with the access during sidewalks rehabilitation
 - Providing strict independent monitoring during the construction and in case of need, prohibition of the access in the vicinity of construction sites for minors, elderly and/or disadvantaged individuals that may be put in risk during the construction works.
- Mitigation measures for the impacts from the construction activities associated with security and healthy conditions of the children living or visiting kindergartens and schools in the project area
 - Early information disclosure prior to the start of the construction activities to the director and employees in the educational facilities and to the parents. The information should contain more details and clarification about the construction schedule, construction areas, responsible persons from the Municipality,

- Construction Contractor and Construction supervisor (together with their contact details).
- Instalment of safety overpasses and sectional rehabilitation of the sidewalks
- Permanent monitoring from City's representatives of the overpassing points next to the educational facilities;
- Temporary interruption of construction works in case of need
- Mitigation measures for the impacts from the construction activities associated with children with asthma, pulmonary diseases and respiratory problems
 - Early information disclosure prior to the start of the construction activities to the director and employees in the educational facilities and to the parents. The information should contain more details and clarification about the construction schedule, construction areas, responsible persons from the Municipality, Construction Contractor and Construction supervisor (together with their contact details).
 - Ventilation of the school/kindergarten premises every day, early in the morning, prior the start of the construction works
 - Avoiding outdoor activities during construction works
 - Regular examination and permanent daily monitoring of the healthy status of the children with asthma, pulmonary diseases and respiratory problems from the medical representatives in the schools and kindergartens during the overall performance of the construction works
- Mitigation measures for the impacts from the construction activities associated with security and healthy conditions of the elderly people living in the project area
 - Early information disclosure prior to the start of the construction activities to the Clubs of the retired people. The information should contain more details and clarification about the construction schedule, construction areas, responsible persons from the Municipality, Construction Contractor and Construction supervisor (together with their contact details).
 - Instalment of safety overpasses and sectional rehabilitation of the sidewalks
 - Permanent monitoring from City's representatives of the overpassing points next to the Clubs of retired people
 - Temporary interruption of construction works in case of need
- Mitigation measures for the impacts from the construction activities associated with security and healthy conditions of the elderly people living in the project area
 - Early information disclosure prior to the start of the construction activities to the staff working in the centres for social assistance, rehabilitation and protection.. The information should contain more details and clarification about the construction schedule, construction areas, responsible persons from the Municipality, Construction Contractor and Construction supervisor (together with their contact details).
 - Appointment of a responsible person from the City that will maintain permanent contact with the Centres and will facilitate the disabled people in their movement, when necessary
 - Provision of team of social assistants from the City and all necessary equipment and facilities to facilitate the disabled people in their movement during the construction
 - Conducting regular medical examinations from the medical staff in the centres of the healthy status of the permanently accommodated people with disabilities
 - Temporary interruption of construction works in case of need

5.9.2 Mitigation measures during operation and maintenance

Measures to minimise adverse impacts during future maintenance/repair works are the same as those prescribed for the construction phase, except that maintenance/repair will be undertaken very rarely (only when needed).

5.10 CULTURAL HERITAGE, IMPACTS AND MANAGEMENT MEASURES

The Project components do not pass across any registered architectural and archaeological heritage sites and will not affect any known sites of cultural heritage. No impacts on cultural heritage are expected as a result of the Project.

6.0 Monitoring of Impacts

6.1 PROCESS FOR MONITORING THE IDENTIFIED IMPACTS

In addition to the mitigation measures, regular monitoring shall be undertaken during the construction phase, including:

- Visual monitoring during the construction phase to ensure that construction works are carried out within the designated RoW and do not affect any vegetation beyond these limits.
- Visual monitoring during the Project construction to ensure that environmental reinstatement is carried out according to the approved design.

Visual monitoring during the Project operation shall be carried out to ensure that biological remediation is successfully implemented and maintained. No other measures are required.

6.2 ON-GOING SOLICITATION OF FURTHER COMMENTS

The City has established a Project Implementation Unit that will take care of any on-going solicitation of further comments.

6.3 PROCESS FOR ADDRESSING ANY ISSUES ARISING

The City has adopted a Stakeholder Engagement Plan (SEP), prepared as a separate document in relation with this Project. The SEP describes the process (a Project-specific grievance mechanism) for addressing of any issues arising in relation with the Project.