

**THE REPUBLIC OF TAJIKISTAN**

**FINAL**

## **Non-technical Summary**

### **Dushanbe to Uzbek Border Road Improvement Project: *M41 Road from Avicenna Monument to West Gate***

**Financed by the European Bank for Reconstruction and Development  
Project ID 42232-TAJ**

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**For**  
**Ministry of Transport, the Republic of Tajikistan**

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**European Bank**  
for Reconstruction and Development





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### Abbreviations

|       |                                                     |
|-------|-----------------------------------------------------|
| CAREC | Central Asian Regional Economic Cooperation         |
| CCTV  | Close Circuit Television                            |
| EBRD  | European Bank for Reconstruction and Development    |
| EMP   | Environmental Management Plan                       |
| ESAP  | Environmental and Social Action Plan                |
| ESIA  | Environmental and Social Impact Assessment          |
| MoT   | Ministry of Transport of the Republic of Tajikistan |
| PIU   | Project Implementation Unit                         |
| RT    | Republic of Tajikistan                              |



## **1. INTRODUCTION**

The Government of Tajikistan is implementing the Dushanbe to Uzbek Border Road Improvement Project from Avicenna Monument to West Gate. The Project includes activities to improve the road traffic conditions in the Dushanbe City area by the reconstruction of the 4.9 km long road in north-western part of the City. In relation to this, the Non-Technical Summary (NTS) has been prepared and updated that describes the Project and summaries the results of various technical, economic, environmental and social studies carried out for preparation of the Project. The accompanying completed documentation required by EBRD's Performance Requirements include the updated Environmental and Social Impact Assessment (ESIA) Report, Environmental and Social Action Plan (ESAP), Stakeholder Engagement Plan (SEP), and Livelihood Restoration Framework (LRF). These documents have been prepared and updated in December 2014 to establish efficient and safe transport network in the country, and examine environmental and social safeguards towards project sustainability.

The Transport Ministry of Tajikistan Government has requested the European Bank for Reconstruction and Development (EBRD) to assist in the preparation and financing of the project within their investment program. In order to finance this Project, the EBRD seeks to ensure, through its environmental and social appraisal and monitoring processes, that the Project:

- ❖ Is socially and environmentally sustainable,
- ❖ Respects the rights of affected workers and communities if any, and
- ❖ Is designed and operated in compliance with applicable regulatory requirements and good international practice.

The Bank has adopted a comprehensive set of specific Performance Requirements ("PRs") that the project is expected to meet, covering key areas of environmental and social impacts and issues. These PRs are part of the EBRD's Environmental and Social Policy (2008) whose purpose is to promote environmentally sound and sustainable development.

Further, the purpose of this Non-Technical Summary (NTS) of the Dushanbe to Uzbek Border Road Improvement Project is to provide details of the Project to a wider group of interested parties that has been consulted to date. The Project is considered by most stakeholders consulted to date to be relatively reasonable in terms of scope especially in light of the overall positive effects that accompanies it and the general absence of negative environmental effects. The Tajikistan Department of Environmental Protection is the competent authority for application of the Environmental and Social Protection Act, has confirmed that the Project can proceed without further permitting under the Act.

Likewise, the NTS Report provides a summary of:

- Status of the existing road corridor from Avicenna Monument to West gate, Design of which are in progress;
- Procedures implemented to ensure protection of the environment, health and safety, compliance with the legislation and permits;
- Public consultation and disclosure done to ensure that people are informed about the Project and know what will be done to protect environmental and social values. People are not affected by this project.



The NTS also addresses:

- Competent organizations in Tajikistan are the MoT and City Authority– to inform them about the steps taken for implementation of overall Life of this Road Reconstruction Project;
- EBRD – to provide information on project financing for public disclosure.

ALFA 04 initiated formal processes in 2012 and afterwards SAI Consulting Engineers Pvt Ltd further recalled engagement and dialogue with local people and business communities in November 2014. Feedback from these sources has been included in much of the decision making associated with the reconstruction of this road project from Avicenna Monument to West Gate.

## **2. BACKGROUND**

The road corridor is about 4.9 km long existing section is a part of the CAREC III Transport Corridor Improvement Project from Dushanbe to the Uzbekistan Border with a total length of 61.5 km. Rehabilitation of this corridor belongs among objectives of short term action plan of the Republic of Tajikistan for years 2011-2015, as defined by Transport Sector Master Plan (2011). The country partnership strategy for 2010-2014 with ADB aims to develop transport infrastructure, build human capacity, and achieve good governance. Tajikistan has also developed a national transport sector master plan with Asian Development Bank (ADB) assistance. The plan is supportive of CAREC's Transport and Trade Facilitation Strategy (2008-2018) and Tajikistan's national development program. ADB will provide financial and technical assistance to support its implementation<sup>1</sup>.

The Project will support regional trade and economic development by reducing travel time and operating costs for international freight and passenger movements on Tajikistan's key export route. The road is an international road of strategic importance and is part of two international corridors, European corridor 60 and Asian Highway 65. It is the missing link in the rehabilitation of the Tajik section of the CAREC Corridor III.

Another main purpose of the proposed reconstruction is to reduce congestions at peak hours at Sino and Gafurov roundabouts with consequent increases in levels of vehicle emissions and traffic safety risks. The traffic flow is likely to grow very fast. Current Average Annual Daily Traffic in the section Avicenna Monument - 82<sup>nd</sup> Roundabout is 39,353 vehicles per day and it is predicted to raise by the year 2035 to 72,512 vehicles per day. Similarly, a random survey on Traffic Count was conducted on 25-26 November 2014; the result shows that between 08:30 and 16:00h, the movement of different types of vehicles constitutes 8,516<sup>2</sup>. The reason for comparative low volumes of vehicle movement is probably due to rainy days associated with winter adverse weather.

However, the increasing deterioration of the current road pavement due to this traffic intensity is also likely to cause an increase in road noise. The Project outputs comprise road widening, minor realignment and improvements to pavements and drainage structures for the entire road, establish 2 intersections, etc.

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<sup>1</sup> ADB, *Developing Tajikistan's Transport Sector, Transport Sector Master Plan, Tajikistan 2011*

<sup>2</sup> *Survey on Traffic Count, SAI Consulting Engineers Pvt Ltd, 25-26 November, 2014*



As declared earlier, the Project will be financed through the loan of the European Bank for Reconstruction and Development (EBRD). According to the EBRD's 2008 Environmental and Social Policy, the Project has been categorised as "A".

The technical basis for ESIA formed the Preliminary Design for the improvement of the section of the E-41 road within Dushanbe city from the Avicenna Monument to the West Gate. The Preliminary Design was developed by the Slovak designing company Alfa 04 on June 2012. The improvement works consist of:

- (i) Rehabilitation of the existing concrete carriageways on the main road and the parallel service roads by an appropriate cost effective technique. Sections where the main carriageway contains three lanes (in each direction) are to be widened to four lanes (in each direction) by adjusting verge and median widths to maintain the same overall road reserve width;
- (ii) Capacity upgrading works at the Avicenna Monument roundabout (km 0) and the 82<sup>nd</sup> circle roundabout (km 1.2). These works shall include provision of pedestrian crossing facilities to improve road safety conditions.

The overall length of the proposed section of the M41 highway is 4.959 98 km. The local administration proposed 6 pedestrian crossings instead of 4. The Road Design is still in refinement process under the supervision of SAI Consulting Engineers Pvt Ltd as Project Design, Construction Supervision and Management Consultant engaged by MoT in June 2014.

### **3. PROJECT DESCRIPTION**

The designed road lies between the Avicenna Monument and the West Gate, within the city limits (Ismail Somoni Avenue and Nasratullo Makhsum Avenue). Figure-2.1 shows the Project Location in the north-western part of Dushanbe City.

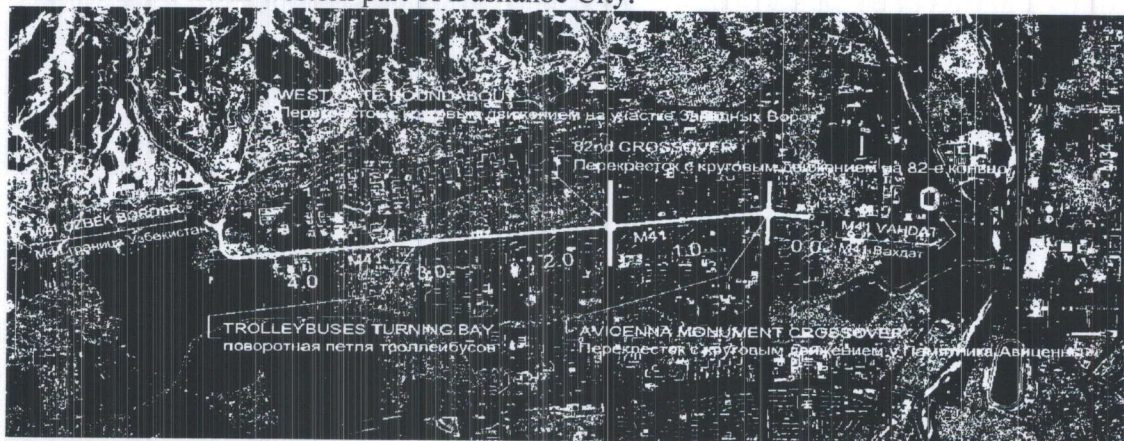


Figure-2.1: Location of the Project

#### **3.1 Current Situation**

The M41 highway is one of the most important urban roads of the capital city Dushanbe. In the city it represents the expressway thoroughfare running from the east to the west up to the Uzbek border. In the present configuration the M41 road is a dual carriageway 6-lane (2x3 lanes) urban



road (highway). The traffic lanes are physically separated by means of central reserve (median) with vegetal landscaping, with raised kerbs. Parallel to the main route, along the inter-junction links, runs the service (collector) road, which serves for the trolleybus traffic, for servicing the area and for parking of vehicles. It should be noted that unrestrained parking of vehicles and minibuses takes place even on the main route. At and after junction the service road route always connects to the main route by means of subsidiary (turning and merging) lanes.

The street area, except the main street and the service road, is filled with footways which are situated in follow up to adjacent buildings. The main route, service roads and footways are separated from each other by means of separating strips (separators), planted with abundant vegetation. At the same time the area of lateral separators is used for surface longitudinal drainage of paved areas (carriageways and footways).

The pavement consists of concrete panels. Most panels appear to be stable, but they have a variety of defects which contribute to a poor ride quality. Inspection has shown failure of the joints, transverse and longitudinal cracking, peeled and irregular surface overlays and areas of broken panels where these have been disturbed for the repair or installation of services. The kerbing, road side features and drainage are damaged and reflect a lack of maintenance.

### 3.2 Project Alternatives

At the first stage of the whole project, the Options Assessment Report has been prepared. In order to make the mutual comparison and in order to select the preferred option the Options Assessment Report included the elaboration of overall options assessment. There were 24 options of the design of the M41 highway in combination with the proposed types of grade-separated junctions (crossovers) assessed in total. Besides the estimation of construction costs a set of indicators was defined for the assessment objectification, which should, at cross-confrontation, give overall, more objective picture on advantageousness of certain option of the planned investment.

The basic division of variants is determined according to the M41 highway cross-sectional parameters (profile), namely into:

- red variant
- blue variant
- green variant

According to the chosen indicators and the adopted assessment method the option that has been assessed at the most beneficial variant for further design preparation was the "**Blue variant, three grade-line levels at both junctions**" with staged sequence of construction works. The technical solution would have to be adjusted so that it would be possible to complete this third level in the future.

### 3.3 Main Technical Characteristics of the Designed Route

The M41 highway is designed in 4-lane cross-sectional profile in each traffic direction. In km 0.100 – 4.450 with the median strip, in km 4.450 up to the roundabout at the West Gate without median strip. The highway route runs through the urban area of Dushanbe at the level of the



existing built-up area, only within the areas of roundabouts at the Avicenna Monument and the 82<sup>nd</sup> residential area it will be situated on grade-separated structures - flyovers.

### **3.4 Realignments of Main Intersecting Roads**

- Realignment of the Sino Avenue

At present this avenue is situated at the level of the existing built-up area, when it intersects the M41 highway at the roundabout at the Avicenna Monument. Within the scope of this project this avenue is proposed to be realigned to the intent that from the vertical alignment point of view its route would be situated below the existing ground level, passing through an open underpass. This will provide for collision-free intersecting with the M41 highway, as well as the possibility of collision-free location of new roundabout at the existing ground level.

The realignment of the Sino Avenue is designed to be implemented as 4-lane (2x2 lanes) dual carriageway road divided in two directions.

- Realignment of the Gafurov Avenue

At present this avenue is situated at the level of the existing built-up area, when it intersects the M41 highway at the 82<sup>nd</sup> roundabout. In fact the existing roundabout splits this route into two avenues: in the southern part it is the Gafurov Avenue, in the northern part the Karamov Avenue. Within the scope of this project these avenues are proposed to be realigned (as a single route) to the intent that from the vertical alignment point of view the road route would be situated below the existing ground level, passing through an open underpass. This will provide for collision-free intersecting with the M41 highway, as well as the possibility of collision-free location of new roundabout at the existing ground level.

The realignment of the Gafurov Avenue is designed to be implemented as 4-lane (2x2 lanes) dual carriageway road divided in two directions.

### **3.5 Junctions**

- Roundabout at the Avicenna Monument (OK1)

At present there is a large signal-controlled roundabout situated at this place, which, due to its capacity, no longer meets the current traffic demand. In addition to public passenger and freight traffic it is used also by the urban mass transport – the trolleybuses and minibuses. The current capacity problems of at-grade roundabout, in which the interconnection of all traffic directions of the M41 highway and the Sino Avenue is taking place, will be resolved by the construction of a grade-separated junction (interchange) at three grade-line levels. There is a four lane road – the Sino Avenue – situated at the three-level junction at the Avicenna Monument in the underpass, protected by revetment walls. There is a three-lane ring-road (roundabout - OK1) situated at the ground level, which is routed over the underpass on two single-span overpasses. The third level represents the M41 highway situated on seven-span flyover.

The crossing of all traffic directions will be resolved by connecting the parallel local roads to roundabout and by providing bypasses on roundabout perimeter.

The new design of junction (underpass of the Sino Avenue) will require the demolition of the whole area at the Avicenna Monument. It is assumed that, the structures adjacent to the monument will be removed and the monument itself will be relocated to other locality defined by the City Authority.

- 82<sup>nd</sup> roundabout (OK2)



At present there is a large non-signal-controlled roundabout situated at this place, with large inner radius  $R=50$  m. In spite of generous junction parameters and number of traffic lanes in it, at present it no longer meets, due to its capacity, the traffic demand. In addition to public passenger and freight traffic it is used also by the urban mass transport – the trolleybuses and microbuses. The current capacity problems of at-grade roundabout, in which the interconnection of all traffic directions of the M41 highway and the Gafurov (Karamov) Avenue is taking place, will be resolved by the construction of a grade-separated junction (interchange) at three grade-line levels. There is a four lane road – the Gafurov Avenue – situated at the three-level junction at the first level in underpass, protected by revetment walls. There is a three-lane ring-road (roundabout – OK2) situated at the ground level, which is routed over the underpass on two single-span overpasses. The third level represents the M41 highway situated on seven-span flyover. The crossing of all traffic directions will be resolved by connecting the parallel local roads to roundabout and by providing bypasses on roundabout perimeter.

### **3.6 Parallel Local Roads**

- Local Roads along the M41 Highway

At present nearly the whole section of the M41 highway from the roundabout at the Avicenna Monument up to km 4.4 is flanked with local collector streets, which, along the links between junctions, disconnect and then again connect to the main route. The local roads serve for lines and stops of trolleybus traffic, for serving the transportation needs of the area and parking of vehicles. The width of these roads between kerbs is about 7.5 m.

The Draft Preliminary Design reckons with maintaining the original function of parallel local roads. They will be situated along the whole section of the M41 highway from km 0.100 to km 4.400 along its both sides. Along the whole length of local roads the trolleybus line will be situated on this road structure.

The local roads will be connected to roundabout at the Avicenna Monument and the 82<sup>nd</sup> roundabout, by means of which they will provide for the interconnection of particular traffic directions. Along the links between junctions they will be interconnected with the M41 highway. The way of routing the traffic within the area of these two, as well as within the area of the remaining junctions, is obvious from the Site plan (part Drawings).

- Local Roads along the Sino and Gafurov Avenues

Similarly as along the M41 highway, there are two-lane local roads proposed to be situated on both sides also along the realignment of these two avenues. Their function will be the same: serving the transportation needs of the area, urban mass transport, eventually parking of vehicles. Within the area of junctions the local roads will be connected to the roundabout ring road, by means of which they will provide for the interconnection of particular traffic directions. The connections of local roads with the main route (the Sino and Gafurov Avenues) will be proposed to be provided at the beginning and the end of the main road realignment.

### **3.7 Trolleybus Line**

At present there is a trolleybus line situated along the M41 highway. This line alternately uses the roadways of local roads and the M41 highway. It ends approximately in km 3.100, where the trolleybuses turning bay is located. The new draft Preliminary Design assumes the extension of trolleybus line up to the roundabout at the West Gate, where the turning of trolleybuses is being considered at present till the final resolution of trolleybus transport concept and other transport



correlations. The trolleybus line will be situated along the whole length on roadways of the parallel (with the M41 highway) local roads, from km 4.400 on the outermost traffic lane of the M41 highway.

### **3.8 Pavement Reconstruction**

The options of reconstruction of the existing pavement of the M41 highway and parallel local roads have been assessed within the scope of the Options Assessment Report. From the options assessed the variant that has been found to be the most was the variant with removal of concrete slabs and with the construction of flexible (or semi-rigid) pavement. This type of structure can be applied to the reconstruction of the existing (old) pavement and at the same time to be applied also on parts of pavement where a completely new pavement will be constructed.

### **3.9 Drainage**

The present mode of pavement drainage is based on crosswise drainage of rainwater from the pavement surface into open longitudinal gutters. These are situated beyond the edge of the M41 highway and the local roads pavement. Gutters are interconnected under the pavement and covered with concrete slabs. The rainwater is collected in gutters flanking the intersecting roads (streets and avenues Sino, Mayakovski, Gafurov, Gissar and other transversal routes) and then along them brought in gutters and discharged into the Gissar channel. The same road drainage system is proposed also in the preliminary design, with a view to the fact that the gutters and their transversal interconnections observe the roads new routes and widths.

A specific case is the drainage of underpasses on realignments of Sino and Gafurov avenues. Concrete slotted drainage gutters are proposed to be provided along kerbs at these places. By means of these gutters the water is brought to the lowermost place of underpasses and from there it will be discharged by means of pumping station into the adjacent surface channel.

### **3.10 Utilities and Services**

The construction will affect the following types of overhead and underground utilities and services:

- CCTV Camera points
- water-main pipelines
- sewage disposal systems
- very high voltage lines
- heavy current lines
- telecommunication lines
- medium-pressure and high-pressure gas line pipes
- warm-water pipelines

In addition to the above specified lines there will be new road lighting constructed along the planned roads and a radical reconstruction will be performed on the trolleybus overhead contact line, the line of which will be extended up to the roundabout at the West Gate.

### **3.11 Demolitions**



As discussed, the routes of the proposed road corridor run through densely developed urban area of Dushanbe. In spite of that the construction is designed so that the requirements on related demolitions of existing structures are minimized. The demolition of structures will be executed only in the following cases:

- The Avicenna Monument and adjacent structures in its area. It was not possible to avoid this demolition because of the selected junction variant, in case of which there is the underpass of the Sino Avenue running through the monument area. It is assumed that the Avicenna Monument will be relocated to other suitable locality determined by the City Authority.
- Small structures in km 3.300 of the M41 highway. It concerns the small premises of private shops, which obstruct the construction of footways on the left side of the M41 highway
- The West Gate. In spite of an effort to save this unique monument situated at the approach to Dushanbe City, it was not possible to save it from the demolition because it is a major obstacle to resolution of the situation in traffic flows within the project area.

### **3.12 Felling of trees, landscaping**

At present the existing roads, above all the M41 highway itself, the parallel local roads, the Sino Avenue, the Gafurov Avenue, are flanked by extensive development. It concerns mainly the fully grown trees of local species, of which a substantial part will have to be removed due to the construction of planned roads. There will be 3,000 pieces of trees removed in total within the whole construction area.

After completion of roads and junctions the inter-junction areas and median strips will be created. After the terrain levelling these areas will be graded by top-soiling and grassed and in suitable localities the landscaping will be finished by planting of shrubs.

## **4. PROJECT RATIONAL**

The current situation in Dushanbe City is very unfavorable for traffic flows operating in East-West direction. The existing road leads directly into the urban area as well as to Uzbekistan through West Gate, where is the full mix of various traffic flows: local, origin-destination point of the city and through traffic to Uzbekistan. The standard of the existing road contributes to higher traffic congestion and to deterioration of life quality of nearby shops and residents. In addition, the level of road safety through the City is not adequate due to the fact that all traffic flows through the urban area.

The Project benefits include:

- ❖ Decreased traffic congestion;
- ❖ Reduced travel time for road users,
- ❖ Reduced vehicle operation costs for road users,
- ❖ Improved road safety conditions;
- ❖ Improved interconnection between eastern and western parts of the city;
- ❖ Reduced fuel consumption of road vehicles;

## **5. INTERNATIONAL REGULATORY FRAMEWORK, STANDARDS AND GUIDELINES**



## **5.1 EBRD's Environmental and Social Policy 2008**

The Environmental and Social Policy is a key EBRD document, which details the commitments of the Bank's Funding Agreement "to promote in the full range of its activities, environmentally sound and sustainable development."

## **5.2 IFC's General EHS Guidelines**

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice. The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs.

The above Guidelines have been followed to avoid adverse environmental and social impacts to ensure sustainability of this project

## **6. BASELINE CONDITION**

The site lies on the right-bank terrace of the Dushanbinka River. The terrain elevations are varying in the range of 830 - 850 m. The geological conditions are stable, without occurrence of geodynamic phenomenon (landslide, erosion). The area is located within a seismically active zone and this have to be taken into account during the design process for bridges. The road does not cross any surface water body. The groundwater table occurs in the depth of 20 metres. Along the Ismail Somoni Avenue and Nasratullo Makhsum Avenue, rows of trees have been planted. Most are between 20 and 30 years in age approximately. Around 90% are ornamental species, primarily Poplar (Genus populus) species. The fauna is typical for urban areas. No protected species or significant wildlife habitats occur in the affected area.

The site represents the urban part of the city of Dushanbe. The first section of the route from the roundabout at the Avicenna monument up to the trolleybuses turning bay is heavily populated. The build-up area mostly consists of three-floored residential buildings with ground floor used for mixed retail and commercial uses. At the right side of the road in the section between 82<sup>nd</sup> roundabout and trolleybuses turning bay there is a residential area built-up with family houses. Similar character has the left side of the road in the section from trolleybuses turning bay to the end of the route, with the newly built houses in the surrounding of new US Embassy. Some places of higher importance were identified in the vicinity of the route, such as schools, hospital and embassies. At the beginning of the route the Avicenna monument is situated near the roundabout. There are no other places of historical and cultural importance on the rest of the route.

The M41 road area, which is the subject of this project, represents the urban part of the capital city of Dushanbe. That means it is not an exclusive transport corridor, but a part of the city, which renders to its inhabitants, in addition to transportation function, also a number of other services (shops, services, institutions offering jobs, hospital). At the same time it is a residential district, in consequence of which this main road becomes the part of the living-space of city residents. The residents perceive (or they should perceive) the road's existence and serviceability as the service provided by the city to its residents. They require of this service certain qualitative level, but yet the minimization of its negative effects on citizen's life. This road can be negatively perceived in connection with its barrier effect in the area, with the obstacles imposed



on citizens (pedestrians) at overcoming it. The objective of the Preliminary design is to mitigate these adverse effects.

The first section of the route from the roundabout at the Avicenna monument up to the trolleybuses turning bay is heavily populated. The build-up area mostly consists of three-floored residential buildings with ground floor used for mixed retail and commercial uses.

At the right side of the road in the section between 82<sup>nd</sup> roundabout and trolleybuses turning bay there is a residential area built-up with family houses. Similar character has the left side of the road in the section from trolleybuses turning bay to the end of the route, with the newly built houses in the surrounding of new US Embassy.

The direct impact area can be defined as 150-200m either side of the proposed M41 alignment. In terms of construction of the proposed road the following facilities of higher importance are located within this area (see Figure-5.1):

1. Secondary school No. 25 directly adjacent to the roundabout at the Avicenna monument (40m right)
2. Electricity administration directly adjacent to the roundabout at the Avicenna monument (70m right)
3. Russian Embassy (km 0.6, 120m left)
4. Maternity Hospital (km 2.3, 50m left)
5. US Embassy (km 4.1, 110m left)
6. Newly built school No. 87 (km 4.6, 60m right).

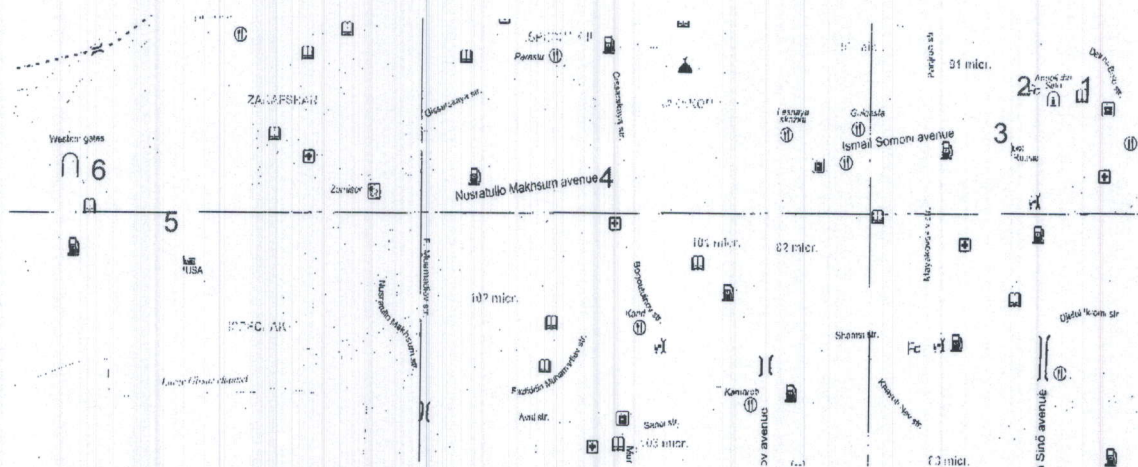


Figure-6.1 Location of Important Buildings in the Vicinity of the Road

## 7. PROJECT IMPACTS AND PROPOSED MITIGATION MEASURES

The Project will be implemented in accordance with Tajikistan and EBRD environmental requirements. A summary of the potentially significant adverse environmental and social impacts is given below together with details of mitigation measures that will be applied.

The ESIA report details out the impacts at various stages of development, the linkages across activities with respect to impacts and the classification; Further, evaluation of impacts across the affecting environmental and social components have also been considered. The report also



provides for the various mitigation options incorporated in the project design to minimize the impact and also the options which will be dealt with during the construction and operation period.

In association with the ESIA Report, the following companion documents also being updated in accordance with EBRD's Social and Environmental Policy 2008. These reports are as follows:

- Environmental and Social Action Plan (ESAP),
- Stakeholder Engagement Plan (SEP),
- Non-Technical Summary (NTS),
- Livelihood Restoration Framework (LRF).

The road rehabilitation will result in significant benefits to the local communities as well as national infrastructure, improving vehicle movement on the M41 road considered as one of the most important routes in the transport network. In summary, road improvement will also result in significant reduction in noise and air pollution bringing benefits to those living in the vicinity of the road.

### **7.1 Impacts on Air Quality**

The process, which could result in adverse environmental impacts by affecting the air quality during the **construction** phase, is the operation of construction machinery and vehicles. The majority of air pollution is expected from the earthmoving machinery and vehicles transporting materials, equipment and construction personnel. However, emissions from diesel engines will be kept to a minimum by ensuring regular maintenance and shutting them down when not in use. Dust will also be released into the atmosphere from milling, excavation and earthmoving operations which include the excavation works and backfilling. The adverse impacts on air quality emerging from dust emissions are considered temporary, only occurring during the reconstruction phase. The areas expected to be affected will be within hundred meters of the working corridor. However, if fully implemented, the proposed mitigation measures will minimize those impacts. Such measures include the use of dust suppression techniques (e.g. the application of water etc.), and prohibiting particular operations in high wind periods. The concentration of atmospheric pollution produced during the construction period is not expected to exceed the regulatory permissible ground-level concentrations.

In the **operation** phase of the Project, the adverse impacts on air quality due to emission of exhaust gasses created by traffic are expected to occur. The traffic air pollution modelling will be carried out at four locations along the designed road (at Avicenna Monument site, 82 Roundabout, at Zarnisar Bus station and West gate-will follow the same Baseline Survey Stations of November 2014). However, the air pollution is expected to diminish over the time because of the use of newer vehicles with lower emissions of exhaust gases. The new, modern road will ensure the optimal traffic flow preventing higher pollutant emissions occurring in case of traffic congestion.

### **7.2 Noise Emission Impacts**

Road traffic represents a source of noise with variable intensity and frequency. Noise levels and dispersion of sound waves from the emission source towards the mission point depend on various parameters such as: traffic composition and density/volume, longitudinal road profile,



flatness, roughness and wetness of the road, vehicle speed, type of tires, as well as effects between the road and the receiver (barriers, vegetation, etc.).

During the **construction** of roads, there will be emissions of noise caused by the heavy equipment/machinery. Maximum permitted levels of noise that occur during the works on the construction site will be determined using EBRD Guidelines and other international guidelines for noise management. In conclusion, the road reconstruction would potentially generate high levels of noise and ground borne vibration, which could significantly impact sensitive receptors located in the vicinity of the alignment. However, the impacts will be temporary and short-term. The proposed mitigation measures such as limiting the construction activities to normal daylight working hours, location of noise generating equipment away from residential areas, etc. are considered adequate to minimize their effects.

In the **operation** phase of the Project, there will be residual noise impacts created by road traffic. In order to determine potential impacts of noise, noise modelling will be carried out. The model will be used for determination of noise levels for this Project road, and adopt mitigation measure accordingly.

### **7.3 Vibration Impacts**

Vibrations originating from traffic are a common source of environmental pollution, especially for people living in the vicinity of this reconstruction corridor. Vibration interferences represent one of the subjects of residents' complaints addressed to local authorities. Vibrations caused by traffic may occur in two forms: (i) air vibrations and (ii) soil vibrations. In general, those forms of vibrations are associated with the traffic of heavy vehicles. Vibrations can be felt in buildings that are located within a few meters from the project road or when heavy vehicles pass over bumps in the road. Bearing in mind the distance of the alignment to the residential areas, the population in the vicinity of this road should not experience substantial impacts caused by high level vibrations during reconstruction of the Project road.

### **7.4 Impacts on Soil Quality**

The use and storage of the heavy machinery and equipment have the potential to contaminate soils at the construction sites. A number of measures have been proposed, which will avoid such impacts. These include strict fuelling and spill control procedures, regular maintenance of all heavy equipment and the designation of controlled storage areas for the machinery.

In the operation phase of the Project, it is necessary to monitor soil quality. In case of pollutant levels are above limiting values, the mitigation measures (mainly related to the rehabilitation of the contaminated land: soil enrichment by carbonates-liming ( $\text{CaCO}_3$  and  $\text{CaCO}_3 \times \text{MgCO}_3$ ) and planting of crops, which can accumulate large quantities of soil toxics) need to be carried out.

### **7.5 Impacts on Surface and Underground Waters**

The Project will not significantly deplete surface water supplies or significantly disturb their recharge. Possible adverse impacts of this type can be caused by the construction works that include deep excavations (during construction of underpasses). However, careful analysis of the site is required before the excavation begins wherever ground water is known or suspected to be a problem. Waste and hazardous materials need to be stored away from water bodies and



handled in accordance with the Waste Management Plan. Strict fuelling and spill control procedures will be adopted.

As regards the operation phase of the Project, there is a potential for impact on surface and underground waters. A closed and continuous drainage system, which will be constructed and tested before putting the Project into operation, is the basic measure to protect underground and surface waters. Sizing of drainage, especially the devices for purification and separation of sludge and grease from the water, must be sufficient to receive more precipitation than the annual average, as the drainage plan has already foreseen. The road edges, as well as the green belt must be secured and they must have slope protection so that all waters from the road are collected in the drainage system without entering the ground. At the drainage system construction, it is important to secure and check sealing elements in order to avoid penetration of collected water into the ground.

During the operation phase, a regular and complete maintenance of the drainage system and all outlets must be provided. Special attention should be paid to the filters that have to be regularly emptied of sludge and oily mass solidified or taken away by specialized and authorized companies in charge of hazardous waste.

#### **7.6 Impacts on Biological and Ecological Resources**

There are no registered protected flora and/or fauna in the vicinity of the planned road. The survey confirmed the absence of protected species along the road corridor and its impact area.

#### **7.7 Impacts on Landscape and Visual Sensitivity**

The alignment of the road is situated within the urban area of Dushanbe City and the elements of the road are within existing roads. Therefore, the Project will not cause negative changes in the physical structure and visual perception of the landscape.

#### **7.8 Land Acquisition and Resettlement Impacts**

The Project foresees no land acquisition and resettlement of households and businesses along the project RoW and its hinterland

#### **7.9 Impacts on Cultural and Historical Heritage**

There are no registered cultural and historical heritage sites along the alignment of the Project, so no impact of this type is expected.

#### **7.10 Impacts on Community Health and Safety**

No particular impacts on the health of the local population are envisaged as a result of the Project. The main impacts on population in the vicinity of the construction site are higher levels of noise and dust emissions, accident risks for pedestrians and vehicles due to higher frequency of traffic in Project area and increase in vehicle speed, and the potential of hazard risks within



the construction area. Mitigation measures have been proposed to avoid such impacts and include marking and fencing construction sites. Implementation of Traffic Management Plan, Air Emissions Management Plan, Noise Management Plan, Spill Response Plan and Safety Awareness Program will be under the responsibility of the Construction Supervision Consultant and Inspection of the MoT.

In addition, SOS<sup>3</sup> telephone numbers will be established during construction works for calls to urgent assistance units.

### **7.11 Impact on Living Conditions**

During the construction phase of the Project, likely impacts affecting the living conditions include construction works nuisances, nuisances due to increase in number of vehicle users during road operation, supply inconveniences, as well as visual and landscape impacts in terms of fragmentation and accessibility caused by road reconstruction.

Prevention of the deterioration of living conditions will be ensured by the implementation of management plans as follows: Air Emissions Management Plan, Noise Management Plan, Waste Management Plan, Traffic Management Plan, and Site Organization Plan. Additional information on expected power/water cuts and any inconveniences will be publicly disclosed in advance by the Tajikistan Government through local public information means.

### **7.12 Job Creation**

Construction activities are expected to generate jobs for both skilled and unskilled labor in the local firms and communities. The Project is expected to generate direct employment opportunities to laborers hired for a period of 1-2 years.

### **7.13 Connectivity and Developed Road Infrastructure**

A developed road infrastructure implies the improved use of roads in Dushanbe District area. People of Tajikistan and Uzbekistan and CAREC member countries will be directly benefitted from improved connectivity and increased level of traffic safety. In the long term, the Project will indirectly provide a regional economic stimulus, as well as enhance the quality of life of the community in general (better access to key facilities: health care, education, employment etc.).

Improved traffic connections and capacity delivered by the road are predicted to provide great benefits to vehicle travelers and users of public transportation means.

The industrial sector will benefit from the improved connections with the international road network, and the cost savings and reliability associated with a decrease in traffic congestion.

However, in relation to this project an Environmental and Social Management Plan (ESMP) has been developed and needs to be implemented during the construction phase of the project. Contractors will be obliged to prepare their own site specific environmental and social management plan for implementation during construction; containing the detailed information on meeting the requirements detailed in ESIA and EMP documents.

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<sup>3</sup> *International SOS is the world's leading medical and travel security Services Company. SOS Company help organizations protect their people across the globe. Their teams work night and day from more than 700 locations in 76 countries.*



## **8. ENVIRONMENTAL, SOCIAL MANAGEMENT AND MONITORING**

The overall finding of the ESIA is that the Project will not cause significant environmental and social problems and that potential adverse impacts are manageable through the implementation of the ESMP. Monitoring activities will focus on compliance monitoring during the construction phase. Monitoring during the operation phase that yields information of value the environmental management of the project road and for the road sector in general consists of regular consultations with roadside residents to obtain community feedback, and record keeping of traffic and traffic related accidents that occur on the project road and traffic counts.

## **9. PUBLIC INFORMATION AND ENGAGEMENT PROCESS**

A stakeholder consultation and engagement process has been conducted also within the framework of the Project development, based on the requirements of the EBRD. Alfa 04, the designer of the proposed M41 road launched preliminary consultations with the project's high-level stakeholders in October 2012. These preliminary consultations included meetings with the Mayor of the City of Dushanbe, Ministry of Transport of the Republic of Tajikistan and its Implementation unit, Chief architect of Dushanbe, and representatives of the EBRD.

During October - December 2011, in the course of Preliminary design development consultations on ongoing base have taken place particularly with representatives of MoT Project Implementation Unit (PIU) and Main Department of Architecture and Urban Planning in Dushanbe. In cooperation Alfa 04 with local design company Avtostrada meetings were arranged with various local authorities.

Afterwards in November 2014, similar focused group discussions and public consultation was conducted by SAI Consulting Engineers Pvt Ltd covering key project site residents and business group. The project is supported by the people, also suggested for mitigation measures of impacts of air quality, noise and other temporary adverse impacts caused by construction work.

## **10. CONCLUSIONS**

The EBRD loan proceeds would rehabilitate the road pavements along the existing alignment and upgrade the intersections, including the construction of a grade-separated junction at two existing roundabouts. The project will increase capacity on the section, and therefore relieve congestion within the city. The project will be implemented by the Ministry of Transport and Communications.

The project will involve: widening of the road, from three lanes to four; construction of a flyover and underpass; removal of the existing concrete pavement and then construction of a new asphalt road. The potential environmental and social impacts associated with these works include: construction impacts such as health and safety concerns, noise (particularly at night during construction) and dust; loss of trees; potential visual and cultural heritage impacts as the Avicenna flyover is likely to affect the view of the Avicenna monument from the south; and road



safety risks due to temporary traffic disruptions. Neither physical nor economic displacements are anticipated as the works are planned within the existing road corridor. As a result, it was confirmed that a Resettlement Action Plan will not be required for the Project.

However, this Non-Technical Summary (NTS) of the Dushanbe to Uzbek Border Road Improvement Project is to provide details of the Project to a wider group of interested parties that has been consulted to date. The Project is considered by most stakeholders consulted to date to be relatively reasonable in terms of scope especially in light of the overall positive effects that accompanies it and the general absence of negative environmental effects. The Tajikistan Department of Environmental Protection is the competent authority for application of the Environmental and Social Protection Act, has confirmed that the Project can proceed without further permitting under the Act.



