Environmental Management Plan

Tbilisi-Rustavi Road –Section 2 Due-Diligence Report Implementation

Introduction

Tbilisi-Rustavi Road modernization project (Section 2) has been implemented under Sustainable Urban Transport Investment Program (SUTIP) Tranche 3. The second section was divided into three phases. The first phase works are completed. Due to the problems caused by the local population, the Government of Georgia decided to omit the second and part of the third phases from the project, which resulted in several problems related to already started works, and reinstatement of some places. Particularly, two issues have been identified by ADB and MDF:

- Stock pile stored on site, and
- Works related to the foundation of the retaining wall, built in the riverbed.

After multiple consultations held between MDF and ADB, an agreement was reached, that MDF would take measures to address these issues. In accordance with this agreement, MDF plans to announce construction bidding in the third quarter of 2021, with approximate value of 1,200,000 GEL for:

- Arranging-levelling of stock pile stored on site, grassing and fencing for safety reasons;
- Works related to the foundation of the retaining wall, built in the riverbed.

The objective of preparation of the Environmental Management Plan (EMP) is to address less significant environmental impacts and all general construction related impacts of the proposed project implementation. The EMP will be provided as part of the guidelines for best operating practices to be followed by the contractors for sustainable management of all environmental issues. This EMP will be annexed in the general conditions of all contracts carried out under the project.

Background

Modernization of Tbilisi-Rustavi Section of “Tbilisi-Red Bridge” road was one of the most important projects, planned for improving the road infrastructure in Georgia. The project was implemented under Sustainable Urban Transport Investment Program (SUTIP) Tranche 3.

The impact of the Investment Program, was to improve urban environment, local economy, and living conditions within urban areas. It aimed to expand economic growth, create job opportunities, and improve environmental sustainability. The expected outcome was to improve the efficiency, reliability, and affordability of urban transport services in relevant cities of Georgia.

Tbilisi-Rustavi Road serves the population of Tbilisi, Rustavi and of Kvemo Kartli region. It serves as well the movement and conveyance of people and goods in the direction of Azerbaijan. Prior to modernization, about 17 000 vehicles were moving on this section of the road, exceeding its design load twice. The technical parameters of existing road could not meet the safety requirements. Frequent road accidents resulted in great number of injured people. Discomfort was caused also due to traffic jams of permanent character.

The Government of Georgia decided to implement Tbilisi-Rustavi Modernization Project with consideration of all the mentioned above.

The project implementation was financed by Asian Development Bank (ADB) and Government of Georgia. The project Implementing Agency (IA) was the Municipal Development Fund of Georgia (MDF). The Tbilisi-Rustavi Urban Road Link Project was designed to upgrade the existing 17.4 km long road between Tbilisi and Rustavi into a dual carriageway, two lanes per direction.

Considering the complexity of the project site, the project route was divided into three sections, out of which the first and third sections were constructed at the first stage.

<table>
<tr><td>Project Name</td><td>2655-GEO:Sustainable Urban Transport Investment Program MODERNIZATION OF TBILISI-RUSTAVI SECTION OF THE TBILISI-RED BRIDGE(AZERBAIJAN BORDER) ROAD</td></tr>
<tr><td>Employer</td><td>Municipal Development Fund of Georgia</td></tr>
<tr><td>Donor</td><td>Asian Development Bank</td></tr>
<tr><td>Implementation Period</td><td>January 23th, 2012 ~ December 31th, 2020 Total</td></tr>
<tr><td>Contract Amount of the Consultant Company</td><td>USD 8,437,990.87</td></tr>
<tr><td>Project Cost:</td><td>Construction Cost for Section 1 &3: 95,123,869.50GEL
Construction Cost for Section 2: 88,899,114.00GEL</td></tr>
<tr><td>Scope of Work</td><td><u>PROJECT SUMMARY</u>
<table>
<tr><th>Section</th><th>Location</th><th>Works Scope</th><th>Design Speed</th><th>Width</th><th>Pavement Type</th></tr>
<tr><td>Total</td><td>Tbilisi ~ Rustavi</td><td>Total Length = 30.17km[1]*</td><td>40~120 km/hr</td><td>4~6 lanes</td><td>-</td></tr>
<tr><td>1</td><td>Tbilisi ~ Ponichala</td><td>1. Main Road (L=4.0km)
2. Ramp Road (L=1.74km, 2 lanes)</td><td>40~120 km/hr</td><td>34.5m (6 lanes)</td><td>Asphalt Concrete Pavement</td></tr>
<tr><td>2</td><td>Ponichala</td><td>1. Main Road[2] (L=3,6km)
2. Ramp Road (L=1.03km, 1 lanes)</td><td>40~120 km/hr</td><td>28.5~ 34.5m (4~6 lanes)</td><td>Asphalt Concrete Pavement</td></tr>
<tr><td>3</td><td>Ponichala ~ Rustavi</td><td>1. Main Road (L=6.6km)
2. Ramp Road (L=8.0km, 2 lanes)
3. Secondary Road</td><td>40~120 km/hr</td><td>28.5m (4 lanes)</td><td>Concrete Pavement</td></tr>
</table></td></tr>
</table>

[1] According to the original design the total length before omission was 33,37km.

[2] According to the original design the length of the II section before omission was 6,8km.

		(L=4.3km)			

○ Major Facilities

- Bridge (Prestress Reinforce Concrete Bridge)

No.	Location	Length (m)	Width (m)	Remarks
1	Pk. 21+80.0	2@33=66	15.84	Section 1
2	Pk. 35+00.0	33	33.64	Section 1
3	Pk. 36+16.5	33	33.64	Section 1
4	Pk. 74+96.0	33	29.74	Section 2[3]
5	Pk. 98+24.0	33	28.04	Section 2
6	Pk.125+48.5	33	33.64	Section 3
7	Pk. 128+10.0	33	33.64	Section 3
8	Pk. 167+50.0	4@33=132	19.84	Section 3

- Foot Bridge (Prestress Reinforce Concrete Bridge)

No.	Location	Length (m)	Width (m)	Remarks
1	Pk. 58+00.0	2@19=38	3.3	Section 2[4]
2	Pk. 61+20.0	2@19=38	3.3	Section 2
3	Pk. 69+00.0	2@19=38	3.3	Section 2[5]
4	Pk. 84+40.0	2@27=54	3.3	Section 2
5	Pk. 88+20.0	2@27=54	3.3	Section 2
6	Pk. 94+40.0	2@27=54	3.3	Section 2
7	Pk.114+53.5	2@27=54	3.3	Section 3
8	Pk. 139+38.8	2@27=54	3.3	Section 3
9	Pk. 161+10.0	2@27=54	3.3	Section 3

- Interchange

No.	Location	Type of Interchange	Remarks
1	Pk. 21+80.0	Directional Interchange	Section 1
2	Pk. 47+00.0	Diamond	Section 2[6]
3	Pk. 99+00.0	Diamond	Section 2
4	Pk.128+10.0	Diamond	Section 3

[3] Was designed but not constructed

[4] Was designed but not constructed

[5] Was designed but not constructed

[6] Was designed but not constructed

5	Pk. 145+58.5	Trumpet	Section 3
6	Pk. 167+50.0	Trumpet	Section 3

- Tunnel

No.	Location	Length (m)	Width (m)	Remarks
1	Pk. 45+80.0	420	27.4	Section 2
2	Pk.49+75.0	10	35.1	Section 2

The Second Section covers the congested area of Phonichala Settlement at the length of 6,8 km. On this particular section the new road of urban type was planned to be constructed at about 2,0 km length along Mtkvari River. The cross section of the road consists of 4 lanes, per 3,75 m width each. The roadbed is of asphalt-concrete material, structures: traffic centers, two underpasses, four vehicle bridges and four pedestrian bridges. At the design stage, several options for layouts of the road were developed and reviewed. Finally, the option chosen deemed as the most feasible from technical, economical and resettlement standpoints, which bypassed the most congested area of Phonichala settlement as much as possible and envisaged construction of the new road of urban type across the right bank of Mtkvari River.

During the project preparation, substantial design improvements were undertaken to reduce the likely impact of the road section on affected households and businesses.

The second section of the road was divided into three construction phases (Figure1):

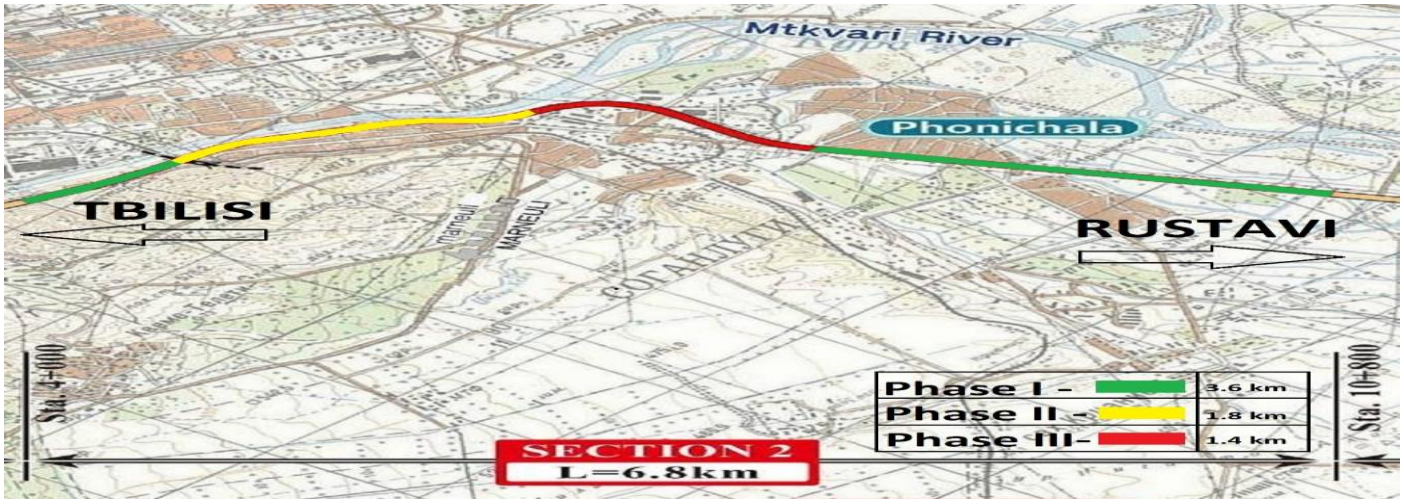
- the first phase 4+00 km – 5+100 km; 8+600 km - 10+800 km.
- The second phase: 5+100km-6+900km, and
- The third phase 6+900km - 8+600 km.

As of to date the main construction works at 3.6 km (out of 6.8 km) of the new road have been finalized with the financial support from ADB. Construction works for the remaining 3,2 km section of the road are not being carried out, notwithstanding the large-scale consultations held by MDF with the local population, aimed at addressing number of issues associated with the project.

Additional arrangements for the road impact decrease and number of mitigation measures for the local communities were scheduled. Since taking of above referenced mitigation measures and proceeding with construction works was objected by local residents, as per the Decree #494 dated March 15th 2019 of the Government of Georgia, Ministry of Finance of Georgia was assigned to address to ADB to remove the 2nd and 3rd phases from Tbilisi-Rustavi Urban Link (2nd Section) Project.

Government of Georgia issued the decree #1044 dated 10 May 2019 on omission of phases II and III. MDF processed a variation order to the contractor to omit remaining works under phases II and III from the civil works contract. Relevant amendment was signed thus contract amount was decreased from 118,9 million GEL to 88,9 million GEL.

Figure 1



After omission of the phases II and III, the completed section of Tbilisi-Rustavi road (phase I) was connected to the 3 km section of the existing road, being in Phonichala Settlement. Connection of the new road has been executed on two sections: road junction: km 4+780 at separating section from Marneuli road– on Tbilisi side (Figure 2), and on the road km 8+100, being at Phonichala Settlement – on Rustavi side (Figure 3). The movement is open and at this point the project goal has been achieved.

Figure 2

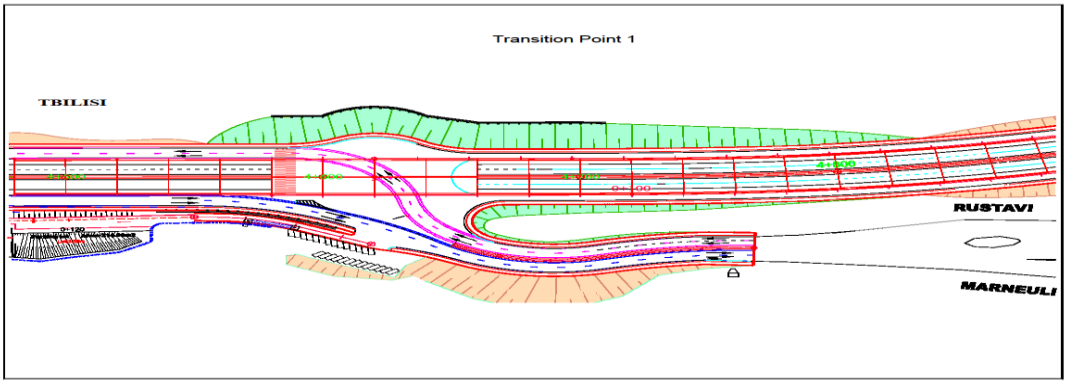
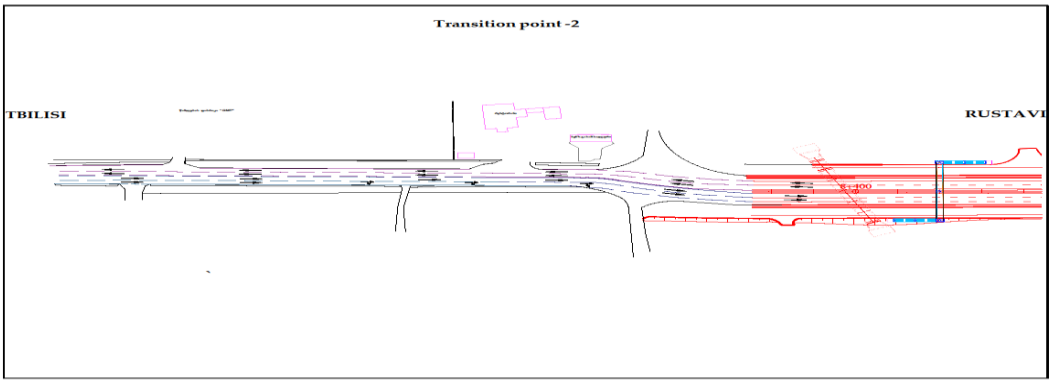


Figure 3



Following the decision on completion of phase I and omission of phase II and phase III, MDF and ADB agreed that a number of remaining issues including the works related to some of already started works, waste disposal and reinstatement of some places should be carried out. In May 2019 a Due Diligence Report was prepared to carry out the remaining works and address open issues. Due Diligence includes three main issues:

- Leveling of stockpile next to building 28A;
- Reinstatement of Mtkvari riverbed;
- Works related to the foundation of the retaining wall, built in the riverbed.

A. Leveling of stockpile next to building 28A

The temporary spoil material storage facility at PK 6+900-7+140 (Photo 1) should be made safe, landscaped, covered with borrow material and reseeded.

Project land could be used for the purpose of further storage of materials (in this case, the stored ground is called inert/excess construction material and not construction waste).

Photo 1

B. Reinstatement of Mtkvari riverbed

A river ecology and impact assessment study was completed at the design stage to investigate the ecological sensitivity of the river to the Project, assess the magnitude of impacts, and propose likely mitigation measures. The report concluded that impacts from the Project on the Mtkvari river ecosystem will be insignificant. In order to mitigate the minor residual impact on the natural habitat, habitat restoration should be undertaken along the river banks. After construction has started close monitoring was required to ensure that mitigation as outlined in the EMP and the river ecology report is implemented.

According to the Hydrologic Analysis of the Mtkvari river**,** carried out during design stage, it was concluded, that even in the event of constructing 1700m long retaining wall, the river bed and its natural flows would not be affected by constructed part of the retaining wall, which is only 60m long. Such part of the structure is not impeding the flow since it is located at the shore of the river.

In addition to the existing Hydrologic Analysis of the river, hydrological expert hired by Supervision Company Dohwa, carried out relevant audit additionally in order to ensure that such partially constructed retaining wall does not affect the river Mtkvari's natural flow at the construction area as well as further down to Rustavi direction.

According to the expert, the construction works carried out in the area of the Mtkvari river did not affect river's sustainable riverbed width which is 80m. Respectively, sustainable width of the riverbed and the processes of its bedding, the migration routes of the fish, and the places of their immersion are not disturbed. In addition, since the Project does not consider any active intervention into the river, the riverbed morphology at the lower section (Rustavi direction) of River Mtkvari is preserved and unaffected (Please see Attachment 1 for Hydrologist's conclusion). The cofferdam has naturally been eroded away by spring peak flows and the flow within the river has been restored during the last two years.

C. Foundation of the retaining wall, built in the riverbed

Foundation for three sections of retaining wall (20m/section) have already been constructed including rebar arrangement at KM 5+800-KM6+600 in 2019 when the water level was low. However, the main body of retaining wall was not concreted, as the works have been halted and further omitted by the Government of Georgia. As a result, long section of reinforcement bars are now protruding from the river (Photo 2).

Photo 2

Since it is concluded, that river's natural flow is not affected due to partial construction of retaining wall foundations it is recommended to make such construction safe.

The list of mitigation measures prepared for Tbilisi-Rustavi Road –Section 2 Due Diligence Report Implementation Project is given below:

1. Waste Management
2. Fuels and Hazardous Goods Management
3. Water Resource Management
4. Air Quality Management (Hydrology)
5. Noise and Vibration Management
6. Road Transport and Road Traffic Management

7. Biodiversity (River Ecology and Riparian Habitats)
8. Construction Camp Management
9. Reinstatement of stockpile area
10. Occupational Health and Safety
11. Community Health and Safety
12. Access

1) Waste Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures /Management	Implementation	Monitoring
General Waste	Soil and water pollution from the improper management of wastes and excess materials from the construction sites.	The Contractor shall • Organize disposal of all wastes generated during construction in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact • Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach • Ensure proper storage, maximum reuse and recycling of waste and timely removal of unusable waste to agreed location according to national waste management regulations. • Segregate and reuse or recycle all the wastes, wherever practical. • Prohibit burning of solid waste • Collect and transport nonhazardous wastes to all the approved disposal sites. The sites for waste disposal shall be agreed with the authorities. A specialized company will be contracted to ensure collection of domestic and general waste from camps and temporary storage areas and transportation to the landfills. • Vehicles transporting solid waste shall be covered with tarps or nets to prevent spilling waste along the route • Ensure all government legislation regarding waste is being followed. • Provide regular training of staff in waste management issues. • Provide garbage bins and facilities within the project site for temporary storage of domestic solid waste and construction waste. • Waste storage containers will be covered, tip-proof, weatherproof and scavenger proof.	CC	MDF
Hazardous Waste	Health hazards and environmental impacts due to improper waste	The Contractor shall • (Construct concrete or other impermeable flooring to prevent seepage in case of spills	CC	MDF

	management practices	• Ensure all government legislation regarding waste is being followed including providing a waste inventory to and a Waste Management Plan to governmental bodies. • Prohibit use of damaged containers. Check integrity of containers – regularly. • Mark containers adequately specifying the waste types. • Provide secondary containment for hazardous waste liquids. • Hire state authorized contractor for hazardous waste removal and keep agreements with hazardous waste management company's active. • Keep a record of waste on-site and waste removed.		

2) Fuels and Hazardous Goods Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures /Management	Implementation	Monitoring
Fuels and hazardous goods	Materials used in construction have a potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers.	The Contractor shall • Store dangerous goods in bunded areas on a top of a sealed plastic sheet minimum 100 m away from watercourses. • All refueling operations on the working sites will use absorbent pads and/or straw to minimize spills, which will be put in place prior to the commencement of refueling operations. • Ground water and surface water pollution risk will be reduced or eliminated in case of immediate removal of polluted ground. • Soiled ground and absorbents will be removed, stored and treated as hazardous waste. • In case of significant spill authorized and responsible person will be informed, works will be stopped till the elimination of pollution risk • Refueling will always be carried out with the correct equipment (i.e. nozzles of the appropriate size), and only by suitably trained and experienced Refueling Operators. • Provide protective clothing, safety boots, helmets. Masks, gloves, goggles, to the construction personnel, appropriate to materials in use.	CC	MDF

3) Water Resource Management (Hydrology)

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures /Management	Implementation	Monitoring
Hazardous Material and Water	Water pollution from the storage, handling and disposal of hazardous materials and general construction waste, and accidental spillage	The Contractor shall • Follow the management guidelines proposed in ECPs 1 and 2 • Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, storm water systems or underground water tables.	CC	MDF
Discharge from construction sites	During construction both surface and groundwater quality may be deteriorated due to sewerages from construction sites and work camps.	The Contractor shall • Install temporary sediment basins, where appropriate, to capture sediment laden run-off from site • Stockpile materials away from drainage lines • Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport to a approved waste disposal site or recycling depot • Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site. • Ensure that tyres of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done in every exit of each construction vehicle to ensure	CC	MDF
General construction impacts in the river		• Should any temporary fuel tank be available, it must be located within at least 100m from the riverbed. • The tank must be placed in covered areas with berms or dikes installed to intercept spills, if any. Any spill should be immediately localized and cleaned up with absorbent materials. • Onsite repairs/maintenance and fueling activities should be limited. Priority should be given to offsite commercial facilities. • Store all materials above flood level. • Avoid fueling/maintenance of machinery and vehicles on the bare ground. Only contained areas can be used. Locate the maintenance/fueling sites (if planned to have on the site away from watercourses and wetland areas. Distance of not less than 100m must be preserved.	CC	MDF

		• Park construction machinery/vehicles and storage areas not less than 50m from the riverbed.		
Waste Water Discharge		• Discharge of any untreated water into the surface water body is strictly prohibited. • Treated water discharge must comply with the water quality standards outlined in Section 3.6.2 **Error! Reference source not found.**, including IFC standards for effluent discharge, as well as national standards. • Portable toilets shall be provided at all work sites.	CC	MDF
Stockpiles and Runoff		• In order to be safe, materials and waste must be stockpiled in accordance with Georgian legislation and ADB Safeguards Policy requirements so as to avoid erosion and washing off into the river. • Drainage trenches must be established to divert surface runoff from the site. • Ensure availability of spill cleanup materials (e.g., absorbent pads, etc.) in the areas where accidental spills may occur.	CC	MDF
Waste Management and Training		• Contract authorized company for hazardous waste disposal. • Train construction personnel in soil and water protection measures, handling of fuels, spill control and response procedures and requirements.	CC	MDF

4) Air Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures /Management	Implementation	Monitoring
Construction vehicular traffic	Air quality can be adversely affected by vehicle exhaust emissions and combustion of fuels.	The Contractor should • Operate the vehicles in a fuel efficient manner • Cover haul vehicles carrying dusty materials (cement) moving outside the construction site • Impose speed limits on all vehicle movement at the worksite to reduce dust emissions • Control the movement of construction traffic • Service all vehicles regularly to minimize emissions • Ensure proper state of maintenance of buildings, machinery and vehicles to minimize exhaust emissions • Smoke emitting vehicles and equipment shall not be allowed and shall be repaired or removed from the project.	CC	MDF

Construction Machinery	Air quality can be adversely affected by vehicle exhaust emissions and combustion of fuels.	The Contractor shall • Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection, aggregate handling, cement dumping, circulation of trucks and machinery inside the installations • Use construction equipment and vehicles that meet national emission standards. • Wherever possible, use electrically-powered equipment rather than gas or diesel-powered equipment. • Implement a regular vehicle maintenance and repair program.	CC	MDF
Construction activities	Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard.	The Contractor shall • Water the material stockpiles, access roads on an as required basis to minimize the potential for environmental nuisance due to dust. • Restore disturbed areas as soon as practicable by vegetation/grass-turfing • Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations	CC	MDF

5) Noise and Vibration Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures /Management	Implementation	Monitoring
Construction vehicular traffic	Noise quality will be deteriorated due to vehicular traffic	The Contractor shall • Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures • Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc. • Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site. • All vehicular movements to and from the site to only occur during the scheduled normal working hours, unless approval has been granted by MDF.	CC	MDF
Construction machinery	Noise and vibration may have an impact on people and property	The contractor shall • Appropriately site all noise generating activities to avoid noise pollution to local residents	CC	MDF

		• Construction activities will be strictly prohibited between 10 PM and 7 AM in the residential areas. • Give notice as early as possible to sensitive receptors for periods of noisier works such as excavation. Describe the activities and how long they are expected to take. Keep affected neighbours informed of progress. • Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures. Equipment suppliers and contractors shall present proof of maintenance register of their equipment. • Maintenance tools, machines and equipment to ensure that they are in good conditions. When some wrong is found, they must be fixed immediately in order to reduce noise from the equipment. • Where possible, no truck associated with the work should be left standing with its engine operating in a street adjacent to a residential area. • Provision of noise protection kits such as ear plug, earmuff, for workers who are working in the area with noise level is higher than 85 dB(A).		
Construction activity	Noise and vibration may have an impact on people, property. Hazardous driving conditions where construction interferes with preexisting roads.	The Contractor shall • Plan activities on site and deliveries to and from site to minimize impact • Monitor and analyze noise and vibration results and adjust construction practices as required • As works will be largely conducted outside daylight hours. Ensure access and egress is done in a way to avoid noise to local residents. • Monitor noise and vibration during significant vibration-producing construction activities as determined by MDF. • Claims for damage caused by vibration shall be handled through the Project Grievance Redress Mechanism (GRM),	CC	MDF

6) Road Transport and Road Traffic Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures /Management	Implementation	Monitoring
Construction vehicular traffic	Increased traffic use of road by construction vehicles will affect the	The Contractor shall • Ensure uninterrupted traffic movement during construction.	CC	MDF

	movement of normal road traffics and the safety of the road-users.	• Provide signs at strategic locations of the roads complying with the schedules of signs contained in the Georgian Traffic Regulations • Install and maintain a display board at each important road intersection on the roads to be used during delivery of oversized loads.		
	Accidents and spillage of fuels and chemicals	Contractor Shall • Operate road traffics/transport vehicles, if possible, to nonpeak periods to minimize traffic disruptions. • Design and implement safety measures to contain damages from accidental spills. • Designate special routes for hazardous materials transport (if necessary.	CC	MDF

7) Biodiversity (River Ecology and Riparian Habitats)

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures /Management	Implementation	Monitoring
River Ecology	Impacts on river ecology and natural habitat; Increased pollution of the river bed; Degradation of the river and accidental spills; Flood risk;	• Contractor to follow River ecology and impact assessment study completed at the design stage to investigate the ecological sensitivity of the river to the Project, assess the magnitude of impacts, and propose likely mitigation measures. • In order to mitigate the minor residual impact on the natural habitat, habitat restoration should be undertaken along the river banks. • Disposal of any construction or construction related waste in the river bed should not be allowed. • Laydown areas should be set away from the banks of the river to ensure that further degradation of the river does not occur and accidental spills will not end up in the river. The site picked should also have minimal flood risk so should be well above the maximum flow level for the river. • Fuel, oil and chemicals supplied in drums will be stored in an impermeable lined and bunded designated storage area and / or in the metal drip trays capable of holding 110% of the volume stored. • Refuelling should take place at least 50m from the river and vehicles should be regularly checked for leaks before entering the river.	CC	MDF

8) Construction Camp Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures /Management	Implementation	Monitoring
Siting and Location of construction camp (if applicable)	Construction Camps are the important locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities	The Contractor shall • Prior to commencement of works, identify the location of the camp and undertake environmental and social screening of the site to ensure that no significant environmental or social issues will arise as a result of the use of the site. • No construction camp will be located within 500m of a residential area and at least 50 m from any surface water course.	CC	MDF
Construction Camp Facilities	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	Contractor shall provide the following facilities in the campsites • Safe and reliable water supply. • Hygienic sanitary facilities and sewerage system. • Treatment facilities for sewerage of toilet and domestic wastes • Rain-water run-off arising on the site will be collected, removed from the site via a suitable and properly designed temporary drainage system and disposed of at a location and in a manner that will cause neither pollution nor nuisance. The drainage system will be fitted with oil and grease interceptors. • There will be no direct discharge of sanitary or wash water to surface water. • Provide a wash pit or a wheel washing and/or vehicle cleaning facility at the exits from the sites. • Ensure that all vehicles are properly cleaned (bodies and tires are free of sand and mud) prior to leaving the site areas. • Provide necessary cleaning facilities on site and ensure that no water or debris from such cleaning operations is deposited off-site. • Undertake regular monitoring of the construction camps to ensure compliance with the SEMP and the Construction Camp Site Plan. • Ensure that potable water for construction camps and workers meets the necessary water quality standards of the GoG. If groundwater is to be used it will be tested weekly to ensure that the water quality meets the GoG drinking water standards. • Maintain and cleanup campsites and respect the rights of local landowners. If located outside the ROW, written agreements with local landowners for temporary use of the property will be required	CC	MDF

		and sites must be restored to a level acceptable to the owner within a predetermined time period.		
Disposal of waste	Management of wastes is crucial to minimize impacts on the environment.	The Contractor shall • Ensure proper collection and disposal of solid wastes within the construction camps. • All solid waste will be collected and removed from the work camps and disposed in approved disposal sites.	CC	MDF
Health and Hygiene	Health issues from workers could spread disease to the local community or place a burden on local health care system	The Contractor shall • Provide adequate health care facilities within construction sites. • Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse.	CC	MDF
Safety	In adequate safety facilities to the construction camps may create security problems and fire hazards	The Contractor shall • Provide appropriate type of firefighting equipment suitable for the construction camps • Display emergency contact numbers clearly and prominently at strategic places in camps	CC	MDF

9) Reinstatement of stockpile area

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures /Management	Implementation	Monitoring
Stock pile levelling	Making the site safe is crucial by fencing and preventing the site from dust by seeding the surface of the area.	• In order to make the site safe, access must be restricted, • Landscaping activities must be carried out which includes covering the area with borrow material (10cm thick) and reseeded using hydro seeding technology as necessary to prevent dust. • The flattened surface of stockpile should be covered with fertilized soil and the grass will be spread using water-seeding technology. • The grass shall be seeded over the area covering about 28,000 square meters in order dusting of vicinity site to be minimized • Use of additional land adjacent to existing project land should be explored to reduce the overall height of the stockpile. • Hazardous sections (from an H&S perspective) should be fenced with wire mesh to prevent falling hazard.	CC	MDF

10) Occupational Health and Safety

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures /Management	Implementation	Monitoring
Best Practices	Construction works may pose health and safety risks to the surrounding communities, construction workers and site visitors leading to severe injuries and deaths.	The Contractor shall • Provide the workers with a safe and healthy work environment. • Contractor to prepare Health and Safety Plan (HSP) and Emergency Response Plan (ERP) according to ADB requirements for implementing anti-COVID-19 measures. • Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. • Maintain the PPE properly • Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job. • All workmen will be required to attend a safety induction course before they are allowed access to the work site. • Life vests will be provided for all staff working around, or above river. • Appoint an environment, health and safety manager to look after the health and safety of the workers. • All workers will have contracts describing their job description and conditions of work, and will have the contents explained to them.	CC	MDF
Accidents	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	Contractor to provide • Appropriately equipped first-aid stations and health care facilities should be easily accessible throughout the place of work and at the Construction Camp. • Regularly inspect, test and maintain all safety equipment (including firefighting equipment), scaffolds, guardrails, working platforms, hoists, ladders and other means of access, lifting, lighting, signing and guarding equipment. • Mark the areas where risk of injuries from falling objects exist with rope or flagging to minimize risks and injuries. • First aid kits (compliant with OSHA standard 1910.266 App. A) will be provided at all work sites. • Keep a log of both training records and safety incidents including near misses.	Implementation	Monitoring

		• Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice.		
Water and sanitation facilities at the construction sites	Lack of Water sanitation facilities at construction sites cause inconvenience to the construction workers and affect their personal hygiene.	The contractor should provide • Portable toilets at the construction sites and drinking water facilities. These portable toilets should be cleaned once a day and all the sewerage should be pumped from the collection tank once a day and should be brought to the common septic tank for further treatment.	Implementation	Monitoring

11) Community Health and Safety

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures /Management**	Implementation	Monitoring
Consultations	Current works may cause discomfort for the society living or using nearby area.	• Consultations will be undertaken with neighboring land users and road users including their agreements for the use of these areas, roads. • The Project will review measures to mitigate community health and safety impacts regularly and will consult with local communities every six months, informing them on the status of implementation and results, and discussing any changes needed to the Pollution Prevention Plan or the Community Health and Safety Plan in advance of proposed changes.	CC	MDF
Traffic Accidents	Traffic management plan and safe transportation	• Temporary traffic control measures will be employed at road crossings and junctions (flagmen, temporary traffic lights) where a safety risk assessment has identified traffic control measures will reduce the risk of traffic accidents. • Temporary traffic control (e.g. flagmen) and signs will be provided where necessary to improve safety and provide directions. • Vehicles delivering fuel or hazardous liquids will carry appropriate spill kits to allow an initial response to any spill to be deployed.	CC	MDF
Involvement of Society	Complaints box	• Implement the Grievance Procedure to provide opportunity for local residents to raise concerns.	CC	MDF

12) Access

Project Activity/ Impact Source	**Environmental Impacts**	**Mitigation Measures /Management**	Implementation	Monitoring
Road Condition	All access roads, used during implementation of the Project should be reinstated to preconstruction condition, or better.	• A road condition survey of all roads will be conducted prior to construction in order to gauge any damage to the road as a result of the intensive heavy traffic during the construction phase. Before completion of the Project repeat the survey to determine which, if any roads need to be repaired by the Contractor.	CC	MDF
General access	Providing Information prior to performing above explained activities to the interested parties	• Provide information to the public about the scope and schedule of construction activities and expected disruptions and access restrictions at least 24 hours before the disruptions. • Allow for adequate traffic flow around construction areas via diversions or temporary access roads. • Provide adequate traffic signs, appropriate lighting, well-designed traffic safety signs, barriers and flag persons for traffic control.		