

GEORGIA  
ROADS DEPARTMENT OF THE MINISTRY OF  
REGIONAL DEVELOPMENT AND INFRASTRUCTURE



SECOND SECONDARY AND LOCAL ROADS PROJECT  
(SLRP II)

## DESIGN DOCUMENTATION

REHABILITATION OF THE SECONDARY ROAD

Agara - Kornisi - Tskinvali

km 1 - km 4; km 9 - km 16

VOLUME V.

ENVIRONMENTAL MANAGEMENT PLAN

CONTRACT #: SLRP/II/CS/QCBS-04



**KOCKS**  
ENGINEERS

TBILISI 2014

## **Design composition**

**Volume I - Explanatory note, Tables of volumes of works**

**Volume II - Drawings**

**Volume II- I – Drawings. Cross Sections**

**Volume III - Confidential cost estimates**

**Volume IV - Economic analysis**

**Volume V - Environmental Management Plan**



## Environmental Management Plan

for  
rehabilitation of secondary road

Agara-Kornisi-Tskhinvali  
km 1 – km 4 and km 9 – km 16

**Tbilisi, Georgia**  
**2014**

## PART 1: GENERAL PROJECT AND SITE INFORMATION

INSTITUTIONAL & ADMINISTRATIVE	
Country	Georgia
Project title	Rehabilitation of secondary road Agara-Kornisi-Tskhinvali km 1 – km 4 and km 9 – km 16
Scope of project and activity	<p>Actual condition of asphalt concrete road pavement is unsatisfactory at present. The edges are broken, there are longitudinal and transverse cracks, frequent potholes, cross fall is disturbed.</p> <p>Project road crosses the river Ptsa with a reinforced concrete bridge. The bridge is in an unsatisfactory condition. Rehabilitation of the bridge is not envisaged in the design under the agreement with the Roads Department of Georgia.</p> <p>Existing culverts of various cross-sections are mainly used for irrigation. They mainly do not ensure proper water discharge and shall be replaced.</p> <p>Length of the road section is 3.931 km.</p> <p>Section km 5 – km 8 of Agara-Kornisi-Tskhinvali road has been recently rehabilitated.</p> <p>Project section km 9 – km 16 starts at the exit of the village Abisi which represents the end of the rehabilitated section and corresponds to PK 0+00. The road passes the villages Tseronisi, Avlevi, Knolevi and ends at PK76+78 at the Police Post at the end of the village Knolevi (village Knolevi is bordering conflict zone).</p> <p>Length of the road section is 7.678 km.</p> <p>Asphalt concrete pavement is actually missing on the mentioned section (rare fragments exist). Surface water flows on the carriageway on many sections, ditches are mainly silted, water discharge from the road is not ensured, shoulders are washed off</p> <p>Reinforced concrete bridge over the river Prone requires repairing. Existing culverts of various cross-sections are mainly damaged and require replacing and some repairing.</p> <p>Junctions and yard entrances shall be repaired, road signs shall be installed.</p> <p>Total length of both sections is 11.609 km.</p> <p>Based on the study and analysis of the actual conditions of road and in accordance with the requirements of the Terms of Reference the following design parameters are adopted:</p> <ul style="list-style-type: none"> <li>● Width of road bed - 8.0 - 10.0 m</li> <li>● Width of carriageway - 6.0 – 7.0 m</li> <li>● Width of traffic lane - 3.0 m</li> <li>● Width of paved shoulders - 0.5 m</li> <li>● Width of shoulder - 1.0 - 1.5 m</li> <li>● Crossfall - 2.0 %</li> <li>● Minimal radius of horizontal curve - 30 m</li> </ul>

	<ul style="list-style-type: none"> <li>Maximum longitudinal gradient - 8 %</li> </ul>			
Institutional arrangements (Name and contacts)	WB (Project Team Leader) Joseph Melitauri	Project Management Giorgi Tsereteli RDMRDI	Local Counterpart and/or Recipient Agara and Znauri Municipality	
Implementation arrangements (Name and contacts)	Safeguard Supervision WB Darejan Kapanadze	Local Counterpart Supervision Technical Supervisor (not selected yet)	Local Inspectorate Supervision -	Contractor (not selected yet)
<b>SITE DESCRIPTION</b>				
Name of site	Rehabilitation of secondary road Agara-Kornisi-Tskhinvali km 1 – km 4 and km 9 – km 16. The project road is located in Shida Kartli region and crosses the territory of Agara and Znauri district.			
Describe site location	Project road links Agara and Znauri regions and adjacent villages to Tbili–Senaki–Leselidze highway and by means of this road to various regions and cities of Georgia.	Attachment 1: Site Map [x]Y [ ] N to be attached once the works contractor is selected and mobilized to the construction site)		
Who owns the land?	Agara and Znauri Municipality			
Description of geographic, physical, biological, geological, hydrographic and socio-economic context	<p><u>Location</u> - Agara-Kornisi-Tskhinvali road starts at km 110 of Tbilisi–Senaki–Leselidze highway (km 109+700) in Daba Agara.</p> <p>Section km 1 - km 4 of the road starts at the junction with the highway from PK 0+00 and ends at the newly rehabilitated section at PK 39+31. The road crosses the village Kvenatkoca from PK 0+00 to PK 14+40 and agricultural plots of lands up to PK 39+31.</p> <p><u>Air</u> - Air quality in the project area is good due to low traffic levels and the absence of industrial facilities.</p> <p><u>Water and Soil</u> - No pollution is reported.</p> <p><u>Flora</u> - The construction activities will be carried out in the existing alignment and without alteration of the existing elements (straights, curves, widths etc.). Vegetation would only be affected in the sections where side drains are to be rehabilitated or reconstructed. Vegetation is sparse along the road with rare occurrence of bushes and small trees that are not part of riparian forests. No protected species have been observed in the vicinity of the road.</p> <p><u>Fauna</u> – Impacts upon fauna will remain unchanged during construction since works will be confined to the existing road. There are several rivers that are crossed by the road. Works in these sections will be restricted to rehabilitation of bridge abutments, requiring the removal of garbage or other impediments to water flows; resulting in a positive impact on existing fauna.</p> <p><u>Noise</u> - The current noise level is low due to low traffic levels and a lack of industrial facilities. The project will have modest impact on the village population, as construction works will constraint movement only of those people who reside immediately along the road and this impact will be limited to the rehabilitation phase.</p>			
Locations and distance for material sourcing, especially aggregates, water, stones?	(To be decided by Contractor and entered hereby thereafter)			

<b>LEGISLATION</b>	
<p>Identify national &amp; local legislation &amp; permits that apply to project activity</p>	<p>The project triggers World Bank OP/BP 4.01 - Environmental Assessment and, according to its principles, has been classified as environmental Category B. The present EMP has been prepared to meet requirements of OP/BP 4.01.</p> <p>Georgian legislation does not require any type of environmental review, approval, or permitting for the project. Though according to the national regulatory system,</p> <ul style="list-style-type: none"> <li>(i) works contractor must be licensed,</li> <li>(ii) construction materials must be obtained from licensed providers,</li> <li>(iii) if contractor wishes to open quarries or extract material from river bed (rather than purchasing these materials from other providers), then the contractor must obtain licenses for extraction,</li> <li>(iv) if contractor wishes to operate own asphalt or concrete plant (rather than purchasing these materials from other providers), then the contractor must obtain an environmental permit with an established ceiling of pollutant concentrations in emissions.</li> <li>(v) disposal of the construction waste into a landfill or permanent placement of access inert material generated in the course of earth works in a selected location must be approved by local (municipal) governing bodies in written.</li> </ul> <p>Copies of extraction licenses (if applicable), permits for operating asphalt/concrete plants (if applicable), and waste disposal permits will be attached to this EMP once the contractor is selected and mobilized to the work site.</p>
<b>PUBLIC CONSULTATION</b>	
<p>Identify when / where the public consultation process took place</p>	<p>Environmental Management Framework for the Secondary and Local Roads Project II was disclosed through the RDMRDI web page and a stakeholder consultation meeting was held on 03/02/2012. The present site-specific EMP will be disclosed through the same media and also delivered in hard copies to the municipality of Agara and Znauri . Consultation meeting with local communities will be held and the minutes of this meeting will be attached to this EMP.</p>
<b>INSTITUTIONAL CAPACITY BUILDING</b>	
<p>Will there be any capacity building?</p>	<p><input checked="" type="checkbox"/> N or <input type="checkbox"/> Y</p>

## PART 2: SAFEGUARDS SCREENING AND TRIGGERS

ENVIRONMENTAL /SOCIAL SCREENING FOR SAFEGUARDS TRIGGERS			
	Activity/Issue	Status	Triggered Actions
Will the site activity include/involve any of the following??	A. Roads rehabilitation	<input checked="" type="checkbox"/> Yes [ ] No	If “Yes”, see Section <b>A</b> below
	B. New construction of small traffic infrastructure	[ ] Yes <input checked="" type="checkbox"/> No	If “Yes”, see Section <b>A</b> below
	C. Impacts on surface drainage system	<input checked="" type="checkbox"/> Yes [ ] No	If “Yes”, see Section <b>B</b> below
	D. Historic building(s) and districts	[ ] Yes <input checked="" type="checkbox"/> No	If “Yes”, see Section <b>C</b> below
	E. Acquisition of land <sup>1</sup>	[ ] Yes <input checked="" type="checkbox"/> No	If “Yes”, see Section <b>D</b> below
	F. Hazardous or toxic materials <sup>2</sup>	[ ] Yes <input checked="" type="checkbox"/> No	If “Yes”, see Section <b>E</b> below
	G. Impacts on forests and/or protected areas	[ ] Yes <input checked="" type="checkbox"/> No	If “Yes”, see Section <b>F</b> below
	H. Risk of unexploded ordinance (UXO)	[ ] Yes <input checked="" type="checkbox"/> No	If “Yes”, see Section <b>G</b> below
	I. Traffic and Pedestrian Safety	<input checked="" type="checkbox"/> Yes [ ] No	If “Yes”, see Section <b>H</b> below

### **PART 3: MITIGATION MEASURES**

<b>ACTIVITY</b>	<b>PARAMETER</b>	<b>MITIGATION MEASURES CHECKLIST</b>
<b>0. General Conditions</b>	Notification and Worker Safety	(a) The local construction and environment inspectorates and communities have been notified of upcoming activities (b) The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works) (c) All legally required permits have been acquired for construction and/or rehabilitation (d) The Contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. (e) Workers' PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) (f) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
<b>A. General Rehabilitation and /or Construction Activities</b>	Air Quality	(a) During excavation works dust control measures shall be employed, e.g. by spraying and moistening the ground (b) Demolition debris, excavated soil and aggregates shall be kept in controlled area and sprayed with water mist to reduce debris dust (c) During pneumatic drilling or breaking of pavement and foundations dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site (d) The surrounding environment (sidewalks, roads) shall be kept free of soil and debris to minimize dust (e) There will be no open burning of construction / waste material at the site (f) All machinery will be well maintained and serviced and there will be no excessive idling of construction vehicles at sites
	Noise	(a) Construction noise will be limited to restricted times agreed to in the permit (b) During operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed as far away from residential areas as possible
	Water Quality	(a) The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in canalization and nearby streams and rivers
	Waste management	(a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from excavation, demolition and construction activities. (b) Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. (c) Construction waste will be collected and disposed properly into formally agreed upon locations. (d) Whenever feasible Contractor will reuse and recycle appropriate and viable materials (except when containing asbestos)
<b>B. Impacts on surface drainage system</b>	Water Quality	(a) There will be no unregulated extraction of groundwater, nor uncontrolled discharge of process waters, cement slurries, or any other contaminated waters into the ground or adjacent streams or rivers. (b) There will be proper storm water drainage systems installed and care taken not to silt, pollute, block or otherwise negatively impact natural streams, rivers, ponds and lakes by construction activities. (c) There will be procedures for prevention of and response to accidental spills of fuels, lubricants and other toxic or noxious substances. (d) Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies.



ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
C. Historic building(s)	Cultural Heritage	(a) If construction works take place close to a designated historic structure, or are located in a designated historic district, notification shall be made and approvals/permits be obtained from local authorities and all construction activities planned and carried out in line with local and national legislation. (b) It shall be ensured that provisions are put in place so that artifacts or other possible “chance finds” encountered in excavation or construction are noted and registered, responsible officials contacted, and works activities delayed or modified to account for such finds.
D. Acquisition of land	Land Acquisition Plan/Framework	(c) If expropriation of land was not expected but is required, or if loss of access to income of legal or illegal users of land was not expected but may occur, that the Bank’s Task Team Leader shall be immediately consulted. (d) The approved Land Acquisition Plan/Framework (if required by the project) will be implemented
E. Toxic materials	Asbestos management	(a) If asbestos is located on the project site, it shall be marked clearly as hazardous material (b) When possible the asbestos will be appropriately contained and sealed to minimize exposure (c) The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust (d) Asbestos will be handled and disposed by skilled & experienced professionals (e) If asbestos material is stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. Security measures will be taken against unauthorized removal from the site. (f) The removed asbestos will not be reused
	Toxic / hazardous waste management	(a) Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information (b) The containers of hazardous substances shall be placed in an leak-proof container to prevent spillage (c) The wastes shall be transported by specially licensed carriers and disposed in a licensed facility. (d) Paints with toxic ingredients or solvents or lead-based paints will not be used
F. Affected forests, wetlands and/or protected areas	Ecosystem protection	(a) All recognized natural habitats, wetlands and protected areas in the immediate vicinity of the activity will not be damaged or exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities. (b) A survey and an inventory shall be made of large trees in the vicinity of the construction activity, large trees shall be marked and cordoned off with fencing, their root system protected, and any damage to the trees avoided (c) Adjacent wetlands and streams shall be protected from construction site run-off with appropriate erosion and sediment control feature to include by not limited to hay bales and silt fences (d) There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.
G. Risk of unexploded ordinance (UXO)	Hazard to human health and safety	(a) Before start of any excavation works the Contractor will verify that the construction area has been checked and cleared regarding UXO by the appropriate authorities
H Traffic and pedestrian safety	Direct or indirect hazards to public traffic and pedestrians by construction activities	(b) In compliance with national regulations the Contractor will insure that the construction site is properly secured and construction related traffic regulated. This includes but is not limited to <ul style="list-style-type: none"> <li>▪ Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards</li> <li>▪ Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes.</li> <li>▪ Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement</li> <li>▪ If required, active traffic management by trained and visible staff at the site for safe passage for the public</li> <li>▪ Ensuring safe and continuous access to all adjacent office facilities, shops and residences during construction</li> </ul>

## PART 4: MONITORING PLAN

### Construction Phase

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
Supply of construction materials	Purchase of the construction materials from licensed providers	Offices and warehouses of material suppliers, and borrowing sites	Checking documents;  Inspection of material quality	In the process of signing the agreements for material provision	Ensure technical quality of construction;  Protect human health and environment	Roads Department (RD)
Transportation of construction materials and waste  Movement of construction equipment	Technical condition of construction vehicles and machinery;  Adequacy of the loading trucks for transported types of cargo, and canopy coverage of cargo transported in open trucks;  Movement of construction vehicles and machinery along pre-defined routes.	Routes for transportation of construction materials and construction wastes	Inspection of roads adjacent to the construction site and included in the agreed-upon routes of transportation	Unannounced checks during the working hours	Avoid air and road pollution with dust and solid matter;  Reduce traffic disruption	RD;  Traffic Police
Operation of Construction machinery on site	Proper technical condition of construction machinery: <ul style="list-style-type: none"> <li>• no excessive exhaust,</li> <li>• no fuel leakage,</li> <li>• respect of working hours</li> </ul>	Construction site	Inspection	Within and off working hours	Reduce air and soil pollution caused by equipment operation;  Reduce noise and dust nuisance to local population	RD

<p>Servicing of construction machinery</p>	<p>Washing vehicles and machinery off-site of in the location sufficiently distant from water bodies;</p> <p>Servicing vehicles and machinery with oils and lubricants off-site or in an especially arranged location on-site;</p> <p>technical adequacy of the servicing location:</p> <ul style="list-style-type: none"> <li>• solid, insulating floor or adsorbent layer (sand, gravel, membrane),</li> <li>• containment barriers allowing enough space for holding fuel over the maximum amount expected on the location at a time,</li> <li>• emergency fire-fighting kit,</li> <li>• sedimentation pool at car wash area.</li> </ul>	<p>Construction site and construction base (if applicable)</p>	<p>Inspection</p>	<p>Entire period of machinery operation</p>	<p>Avoid land and water pollution with oil products due to servicing of vehicles and machinery;</p> <p>Be ready for fire emergency action to promptly localize fire source and minimize material damage</p>	<p>RD</p>
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<p>Extraction of inert material</p>	<p>Purchase of inert material from the existing providers if possible;</p> <p>Obtaining license for extraction of material by the Contractor and strict adherence to the terms of such license;</p> <p>Terrace processing of the borrow pits, backfilling of excess material, and harmonization with landscape;</p> <p>River bed gravel extraction away from water flow, arrangement of gravel barriers for isolating extraction area from water flow, prevention of water flow entry by vehicles and machinery;</p> <p>Demarcation of borrow areas with warning signs</p>	<p>Borrow areas</p>	<p>Checking documents</p> <p>Inspection of activities</p>	<p>The period of material extraction</p>	<p>Reduce slope erosion and damage to the ecosystem and landscape;</p> <p>Reduce river bank erosion, water pollution with suspended particles, and impact on the aquatic life;</p> <p>Protection of animals and people from accidents</p>	<p>RD</p> <p>Agency of Natural Resources</p>
<p>Generation of construction waste</p>	<p>Temporary storage of inert and hazardous wastes separately at the designated locations;</p> <p>Timely disposal of waste to the formally designated landfills;</p> <p>Hand-over of hazardous wastes to licensed deactivating and processing companies.</p>	<p>Construction site and base (if applicable);</p> <p>Locations designated for waste disposal</p>	<p>Checking documents;</p> <p>Visual observation</p>	<p>Entire period of construction</p>	<p>Avoid pollution of the environment</p>	<p>RD;</p> <p>Local Municipality</p>

Accumulation of household waste	Provision of waste containers on-site;  Agreement with local municipality for regular out-transporting of waste	Construction site and base (if applicable)	Visual inspection	Entire period of construction	Avoid pollution of soil and water with household waste	RD;  Local Municipality
Generation of liquid waste	Arrangement and operation of toilets compliant with sanitary norms on-site;  Arrangement of drainage system for storm water collection and periodic cleaning of the system from silt;  Arrangement of sedimentation pool for waste water collection on-site	Construction site and base (if applicable)	Visual inspection	Entire period of construction  Increased frequency of inspection in periods of high precipitation	Avoid flooding of construction site and base;  Reduce pollution of surface and ground water	RD
Operation of asphalt-concrete plant	Obtaining permit for impacting environment by Contractor and strict adherence to its terms;  Placement of plant in the location permissive for minimal disturbance of local population;  Arranging sedimentation pool for capturing of liquid discharges from plant	Construction site and base (if applicable)	Checking documents  Inspection	Before establishment of plant and during entire period of its operation	Reduce inconvenience for local population due to plant operation;  Reduce air and surface water pollution from emissions and discharges from plant	RD;  Environment Protection Agency
Safety of labor	- provision of Special Clothes and protective means for the contractors - Consistency with the rules of exploitation of the construction equipment and usage of private safety means	Construction site	Inspection of the activities	the whole construction period	reduce the probability of accidents	RD

## Operation Phase

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
Cleaning road surface and shoulders from waste	Trash deposited from moving vehicles timely collected and removed;  Bodies of animals overrun by vehicles timely collected and removed	Carriageway and shoulders of the road section	Inspection	Quarterly	Prevent road littering;  Road safety	Local municipality
Keeping road drainage system operational	Periodic cleaning of drainageditches from silt and trash	Drainage system long the road section	Inspection	Quarterly	Maintaining drainage system capacity for preventing road flooding and water damage	Local municipality
Confinement of accidental spills and clean-up	Timely confinement, deactivation, and removal of liquid or powder spills of cargo in case of road accidents	On the road and its immediate surroundings	Inspection	Upon occurrence of accidents, as required	Prevent pollution of soil and water	Traffic Police;  Local municipality
Disposal of waste from regular road maintenance works	Collection and timely disposal of waste from maintenance works to the designated landfill	On the road and its immediate surroundings	Inspection	Towards completion of scheduled maintenance works	Prevent environment pollution	Local municipality

Attachemnt 1: Project Location Map

