Environmental Monitoring Report

#1 Semestral Report June 2013

GEO: Sustainable Urban Transport Investment Program – Tranche 1

Prepared by the Municipal Development Fund of Georgia for the Government of Georgia and the Asian Development Bank.

Biannual Environmental Monitoring Report

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GEORGIA: GEORGIAN SUSTAINABLE URBAN TRANSPORT INVESTMENT PROGRAM, Tranche 1

(Financed by the Asian Development Bank)

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ABBREVIATIONS

ADB	Asian Development Bank		
EA	Executing Agency		
EARF	Environmental Assessment and Review Framework		
EIA	Environmental Impact Assessment		
EIP	Environmental Impact Permit		
EMP	Environmental Management Plan		
GoG	Government of Georgia		
SUTIP	Georgian Sustainable Urban Transport Investment Program		
IA	Implementing Agency		
IEE	Initial Environmental Examination		
MDF	Municipal Development Fund		
MFF	Multi-tranche Financing Facility		
MoEPNR	Ministry of Environmental Protection and natural resources		
MoRDI	Ministry of Regional Development & Infrastructure		

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I. INTRODUCTION

Upgrading and improvement of local transport and transport-related infrastructure plays a significant role in the development of Georgia infrastructure. To this effect a number of important activities have been implemented and financed from the budget of Georgia and from other sources. Development of transport and related infrastructure plays an important role in improvement of Georgia's urban infrastructure. Recently several significant programs, financed through state budget, loans and grants, have been implemented with this regard. Notwithstanding the efforts undertaken so far several problems need to be solved regarding development of transport infrastructure.

Sustainable Urban Transport Investment program tranche 1 include several projects in the different municipalities of Georgia. Program aims efficient, reliable and affordable urban infrastructure development and service improvement. In effect, urban transport service will be improved, and the level of different types of public and social services will be increased.

Sustainable Urban Transport Investment Program tranche 1 includes:

Consultation services and construction activities for the following projects:

- Rehabilitation of Zugdidi-Jvari-Mestia-Lasdili motor road;
- Anaklia coastal improvement Phase 1;
- Tbilisi Metro extension.

And, Consultation services for the following projects:

- Anaklia coastal improvement Phase 2;
- Rustavi-Tbilisi urban link for section I and III;
- Rustavi-Tbilisi urban link for section II;

The environment classification for tranche is Environmental Category B, as all subprojects under SUTIP 1 were classified as category B which will not have significant irreversible or permanent negative environmental impacts during or after construction and requires preparation of Initial Environmental Examination (IEE).

The environmental categorization of subprojects were conducted using ADB's Safeguard Policy Statement (2009), the required environmental assessment was conducted and the IEEs including environmental management plans (EMP) which are the integrated part of IEEs have been prepared accordance with environmental assessment and review framework (16.04.2010) approved for SUTIP 1:

Rehabilitation of Zugdidi-Jvari-Mestia-Lasdili motor road.

Rehabilitation of Zugdidi-Jvari-Mestia-Lasdili motor road was initiated by the Department of Motor Roads of Georgia. The road is of national significance and connects upper Svaneti region with Tbilisi-Senaki-Leselidze main motor road. The road needed significant rehabilitation in order to restore its operational capacity and insurance of traffic safety. Certain sections and infrastructure facilities of the road needed significant reconstruction.

The secondary road Zugdidi-Jvari-Mestia-Lasdili links the villages located in Zeda Svaneti region, Daba Mestia and Mestia with the region Zugdidi as well as with the trunk road Tbilisi-Senaki-Leselidze, which is the main road in the region. It should be noted that the present

project aims to significantly contribute to the socio-economic development of Zeda Svaneti region and facilitate development of tourism infrastructure.

Presented project is one of various projects backed by international donor organizations to be implemented by the Municipal Development fund (MDF).

The Municipal Development Fund of Georgia (MDF) is a legal entity under Public Law. Its objectives are to facilitate institutional and financial capacity building of the local municipalities, invest in the development of local infrastructure and services and improve economic and social services to the local communities.

The presented investment project has been implemented under SUTIP tranche 1 and envisaged reconstruction/rehabilitation of the following four sections of Zugdidi-Jvari-Mestia-Lasdili motorway:

- 1) Section 1 motorway section from km 74 to 80;
- 2) Section 2 demolition of the existing balcony (260 m long) at km 89 and construction of a new tunnel instead;
- 3) Section 3 from km 91 to 203 of the motorway;
- 4) Section 4 from km 121 to km 125 of the motorway.

Anaklia Coastal Improvement Phase 1

This project is to review of design which is for Anaklia shore line rehabilitation and further protection of the beaches against erosion by means of submerged hydrotechnical coast protecting structures. The prepared design documentation aims at Anaklia shoreline rehabilitation, restoration of the full profile of beaches to the possible limits (which is necessary for wave breaking and suppression of its power and assigns to the beach a function of bank protecting structure), by selection of the most optimum types and design of hydro-technical coast protecting structures, to take into account the requests of Georgian and ADB environmental legislation.

For the end of June 2013 Consultation services have been implemented by EPCM contractor, bidding documentation was prepared, the tender was held and construction contractor was chosen under Anaklia coastal improvement Project Phase 1. The project is not ongoing yet.

Tbilisi Metro Extension

The project can be divided into two main assignments:

- The 2,6 km long Metro extension from Delisi Station to University Station
- Creation of University Station and a 301 m long tunnel section for cross over and parking tracks.

Tbilisi Metro extension Activities under Tbilisi Metro extension subproject included selection of EPCM contractor which has prepared IEE report of subproject. The project is on preparatory stage and is not ongoing yet.

Due to only Rehabilitation of Zugdidi-Jvari-Mestia-Lasdili motor road has been implemented under SUTIP 1, the paragraphs below include information about the activities conducted under the presented project.

A. Construction activities during project implementation

As it was mentioned above Zugdidi-Jvari-Mestia-Lasdili motorway reconstruction/rehabilitation project included four subprojects. The works were substantial completed and handed over on 27.10.2011 for Lot 1 and 4 and on 12.12.2012 for Lot 2 and 3. The defects liability period was 365 days.

At the end of the defects liability period of Lot 3 and 4, surface distresses on the concrete pavement were observed. In order to investigate the distress and to allow a rectification of defects outside the winter period, the defects liability period was extended until June 1, 2013 for Lot 3 and 4 to complete remedial of defects.

During the defects liability period the services includes:

- Periodic inspection to reveal defects prior to the expiry of the contractor's defects liability period
- Supervision services on part time basis during Defects Liability period.
- Carry out final inspection of works together with representatives of the Employer and the Contractor

Subproject 1 - contract # P42414-ICB-1.01-L1: Rehabilitation of section km 74 – km 80 of the Secondary Road Zugdidi-Jvari-Mestia-Lasdili

The rehabilitated section is located in Mestia, mainly on uninhabited area. The project section starts at PK 73+200 of Zugdidi-Jvari-Mestia- Lasdili road corresponding the PK 0+00. The end section is PK 80+200 corresponding with project PK 70+00.

The works covered preparatory works: repair and cleaning of culverts, construction of new culverts, repair of road pavements and bridge PK 68+00, repair and construction of retaining walls.

Subproject 2 - P42414-ICB-1.01-L2: Reconstruction of section km 89 (Tunnel and Gallery) of the Secondary Road Zugdidi-Jvari-Mestia-Lasdili

This section of a road was characterized with intensive rock falls (on the total length of balcony) and snow avalanches.

Reconstruction of this section included the construction of tunnel and gallery against snow slide with length 84 m.

For the transportation safety tunnel on this section of the road has been considered. The length of the project tunnel was 260 m.

Blasting works generally were done by specialized authorities and team.

Subproject 3 - P42414-ICB-1.01-L3: Reconstruction of section km 91- km 103 of the Secondary Road Zugdidi-Jvari-Mestia-Lasdili

Design considered restoration of the road bed on separate sections of the rehabilitated road with construction of retaining walls by gabion boxes. Repair of the existing retaining walls had done as well. Walls repair included rising in height, filling with stones and construction of reinforced concrete casing.

In total design considered:

- Gabion lower retaining walls –589/2738 linear m/m³;
- Gabion upper retaining walls-62/275 linear m/m³;
- Gravity gabion walls 101/1702.5 linear m/m³;
- Repair of the existing concrete retaining walls- 32/1005 u/linear m;

The following works were performed immediately upon the completion of preparatory works: repair and cleaning of culverts, construction of new culverts, repair of bridges, repair and construction of gabion retaining walls.

Blasting of 63905 m3 rocky soil (31a, 31g, 28b) was required on the road Zugdidi-Jvari-Mestia-Lasdili km 91-km 103.

Subproject 4 - P42414-ICB-1.01-L4: Reconstruction of section km 121-km 125 of the Secondary Road Zugdidi-Jvari-Mestia-Lasdili

The rehabilitated section km 121-km 125 (section I) with the length of 5.14 km of the road is located in Mestia, mainly on uninhabited area. Along the project section the village Becho is located, at 23 km the road junction is located directing the way to the villages Magarduli, Lezgara, Tskhumari and etc.

Construction of new road pavement instead of heavily damaged asphalt-concrete pavement was stipulated under the present project

9 reinforced concrete pipe culvert and one box-culver 1.0x1.0 s from 16 had been repaired.

7 new box-culverts of 1x1.5 m had been constructed under the present design.

At 121 km of the rehabilitation road PK 203+40 crosses the river Dolra Bridge. Design considered bridge repair, in proper: total removal of bridge deck and construction of new one, replacement of steel railings, sidewalk blocks, movement joints and pavement.

Repair of 17 existing down retaining walls had been done under the project. The total length of walls is 659 L.m.

Blasting of 19770 m³ rocky soil was required on the road Zugdidi-Jvari-Mestia-Lasdili km 121-km 125.

Remedial Works and Rectification of Defects.

At the time of substantial completion of works for each lot, a detailed list of remedial and outstanding minor works was established and included in the handover documents.

The progress of completion of remedial and outstanding works has been monitored during periodic site visits during the defects liability period of the works.

Lot 1, Road Section from Km 74+000 to Km 80+000

On Lot 1 works were executed by construction company "SANI" LTD. The works were completed on 17.10.2011 and the road section was handed over on 27.10.2011.

No outstanding works and defects were noticed at handover. Therefore no remedial works were carried out during defects liability period.

No defects were observed during the defects liability period. The final inspection of the works was carried out with representatives of the employer, contractor and supervisor. No defects were revealed and the certificate on expiry of defects liability period was issued on 25 October 2012.

Lot 2, Road and Tunnel Section at Km 89

The works on the road and tunnel at km 89, on Lot 2, were executed by "ZIMO" LTD. The works were completed and handed over on 12.11.2011.

No outstanding works and defects were noticed at handover. Therefore no remedial works were carried out during defects liability period.

During the defects liability period no defects were observed. The final inspection of the works was carried out with representatives of the employer, contractor and supervisor. No defects were revealed and the certificate on the expiry of defects liability period was issued on 7 February 2013.

Lot 3, Road Section from Km 91+000 to Km 103+000

The works on the road section from km 91 to km 103, on Lot 3, were executed by JSC "ARQOPLISI'. The works were completed and handed over on 12.11.2011.

Due to rock fall side ditches and culverts were filled and collected water caused damages on road pavement and culvert headwall.

Following defects were noticed:

- Km 95 Pavement has been settled (average 3-6 cm) at about 25 m²;
- KM 98 Gabion retaining wall partially deformed, the right lane of cementconcrete carriageway was depressed (5 cm) on 20m length;
- Km 98 Head wall of box culvert was constructed on existing old wall and moved out of angle, resulting in a gap between wall and culvert section;
- Km 100 The right lane of cement-concrete carriageway has been settled (5 cm) on 40m length, shoulder is slightly depressed also;
- Km 100 The right lane of concrete carriageway has been settled (10 cm) on 30m length, shoulder is slightly depressed also;
- Km 102/103 The right lane of cement-concrete carriageway has been settled (10 cm) on about 110m length, the second lane is cracked, and shoulder is depressed also.

Side ditches and culverts have been cleaned from rock fall debris.

Settled sections of the concrete pavement have been removed and a new concrete pavement has been constructed. Where shoulder or side ditches shows erosion damages, there have been reinstated.

The deformed parts of the gabion walls at km 98 have been replaced and the headwall of the culvert has been made good. The culvert was cleaned from debris and a new reinforced concrete headwall constructed.

During the defects liability period distresses of the concrete pavement surface were observed. Scaling/mortar flaking appeared over large areas. In order to investigate the surface distress and allow a rectification of defects outside the winter period, the defects liability period was extended until June 1, 2013 from the original defects liability period ending 12.11.2012.

Scaling or mortar flaking is the general loss of surface mortar and was exposed to large areas. The distress was investigated and it found out that scaling/mortar flaking does not expose the coarse aggregate and appears as a very shallow loss of mortar in the surface. This is purely aesthetic in nature and is not a progressive distress that continuous to greater depths in the concrete. The original mortar flaking disappears as the pavement ages and traffic abrades the surface. Therefore no remedial action were necessary and, in consent with the employer, no remedial work were carried out.

Final inspections with representatives of the employer and contractor were carried at the end of the extended defects liability period and so far no further defects were observed. However, the end of defects liability certificate has not been signed yet and is under revision of the responsible departments.

Lot 4, Road Section from Km 121+000 to Km 125+000

On Lot 4, works were executed by the Joint Venture (JV) of construction companies ENGURI 2006 and JSC "ARQEOPOLIS". The works were completed on 17.10.2011 and the road section was handed over on 27.10.2011.

Following defects were noticed and remedial measures were carried out:

- Installation of crash barrier (several locations);
- Filling of shoulders at depressed shoulders(several locations);
- Reinstate damaged carriageway sections (several locations).

The outstanding works have been completed and defects on the carriageway were rectified during the defects liability period.

As for Lot 3, also in Lot 4 was scaling/mortar flaking of the concrete pavement surface observed during the defects liability period. Therefore In order to investigate the surface distress and allow a rectification of defects outside the winter period, the defects liability period was extended until June 1, 2013.

The distress was investigated and it found out that scaling/mortar flaking does not expose the coarse aggregate and appears as a very shallow loss of mortar in the surface. This is purely aesthetic in nature and is not a progressive distress that continuous to greater depths in the concrete. The original mortar flaking disappears as the pavement ages and traffic abrades the surface. Therefore no remedial action were necessary and, in consent with the employer, no remedial work were carried out.

Final inspections with representatives of the employer and contractor were carried at the end of the defects liability period and the certificate on the expiry of defects liability period was issued on 31 May 2013.

All environmental procedures were provided in compliance with Environmental and Social Requirements of the ADB and Georgian environmental legislation. The environmental categorization of project was conducted using ADB's Safeguard Policy and Environmental Guidelines. The project was classified as category B, the required Environmental Impact Assessment was conducted, and the Initial Environmental Examination (IEE) including EMP was prepared. According to the Law on Environmental Impact Permits (EIP) the project didn't

require Environmental Impact Assessment, preparation of EIA report and obtaining of environmental impact permit.

The Project's Environmental Impact Monitoring and Mitigation was carried out in accordance with the Environmental Management Plans prepared by the MDF/Consultant for current project. The construction activities affecting the environment were as follows:

- 1. Contractor's mobilization and site installation;
- 2. Excavation works;
- 3. Removal of old asphalt pavement and soil;
- 4. transportation of construction materials;
- 5. Arrangement of new drainage system, shoulders and asphalt-concrete pavements;
- 6. Surface water drainage during rains;
- 7. transportation and location of construction waste;
- 8. Fuel and oil lubricant spillages.

The following items were monitored during the implementation of the project:

- 1. Air Quality;
- 2. Noise;
- 3. Flora and Fauna;
- 4. Water Quality ;
- 5. Waste management;
- 6. Loss of top soil;
- 7. Fueling of machinery;
- 8. Health and safety issues;
- 9. Providing of living conditions for workers;
- 10. Transportation safety;
- 11. Consultations with communities.

The only parameters monitored during the construction period were dust control to keep air quality at acceptable level and noise. Dust control issue was working positively to avoid complains from local residents.

The subproject sites were located on Government owned land. There are no protected areas around the subproject site. There were no land acquisition and resettlement issues involved. Trees, vegetation (mostly shrubs and grasses), and animals in the subproject sites were those commonly found in project areas.

The geological structure of the area was stable and no potential land subsidence had been occurred.

The MDF staff, particularly environmental specialists, has been involved in the monitoring of implementation of the environmental mitigation measures specified in the EMPs. The environmental specialists were carrying out environmental monitoring in accordance with the plans and schedules outlined in the EMPs and the schedule for conducting of monitoring approved by MDF management.

B. Environmental Management Team

An environmental protection analysis and resettlement division existing under MDF consists of Mr. Alexandre Dumbadze, Head of the division as Manager and Ms. Nino Patarashvili, Mr. David Baindurashvili, Mr. Nikoloz Soselia and Ms. Ekaterine Mumladze as Environment and Resettlement Specialists of division. The responsible person on supervision of EMPs implementation from MDF under reconstruction/rehabilitation project of Zugdidi-Jvari-Mestia-Lasdili motorway SUTIP tranche 1 was Mr. Nikoloz Soselia - specialist of environmental protection analysis and resettlement division.

During project implementation MDF environmental specialist has been involved in the monitoring of implementation of the environmental mitigation measures specified in the EMP. The environmental monitoring was carried out in accordance with the plans and schedules outlined in the EMP and the schedule for conducting of monitoring approved by MDF management.

The supervisory company - Joint Venture of Kocks Consult GmbH (Germany), DMEC Seoul (Korea) and Design & Consulting Company "BT" (Georgia) hired by MDF in August of 2011 was responsible to supervise the progress of construction activities during project implementation and defects liability period. In accordance with the contract, the company was also responsible on environmental monitoring of the sub-project.

Project Organization

Contract #	Employer	Contractor
Contract-1 (P42414-ICB-1.01-L1)	MDF	Ltd Zimo
Contract -2 (P42414-ICB-1.01-L2)	MDF	LTD Sani
Contract -2 (P42414-ICB-1.01-L3)	MDF	JSC Arkeopolisi
Contract -2 (P42414-ICB-1.01-L4)	MDF	JV Enguri 2006 LTD and Arkeopolisi JSC

Project organization for the awarded contracts listed above is given in the table below.

II. ENVIRONMENTAL MONITORING

The MDF staff has been conducting periodic unannounced visits to the project site in order to check the current situation on-site and consultations with local communities during project implementation. No environmental monitoring of construction activities were carried out by MDF environmental team during defects liability period.

The supervisory company was carried out monitoring of civil works and environmental issues as well. In accordance with "Defects Liability Report and Final Completion" submitted by supervisory company no environmental non-compliances have been observed during defects liability period.

During the defects liability period no environmental issues or complaints were received from the local residents.

Within the defects liability period the contractors monitored and addressed the issue of air quality, industrial and construction waste disposal, noise, industrial and Health and safety issues safety during fueling of machinery

Air Quality

Construction materials were provided to the site when required. Speedy completion of work and proper site clearance after completion were ensured. Wheels and undercarriage of haul trucks were washed prior to leaving construction site.

Dust was controlled through watering the roads where driving can easily generate dust. Excavated mounds of soil were damped down by water spray. Tarpaulins were used to cover loose materials that are transported to and from the site by track.

Dust generation was controlled while unloading the loose material at the site by sprinkling water inside barricaded area.

Regular and clean maintenance of the temporary labor camps was ensured.

Noise

The Contractor had employed practical means to minimize noise resulting from construction work. The plan of transportation routes were agreed with Municipality and Police.

Drivers were informed to limit speed 20-25 KMPH to avoid use of horn in populated areas. Local population was informed about project works. No nighttime activities took place.

Flora and Fauna

During construction works wasn't observed serious negative impacts on flora and fauna.

Water Quality

During construction works wasn't observed the cases of sub-soil and surface water pollution.

Loss of Top Soil

No topsoil was identified and subsequently stripped at the construction site within the reporting period.

Fueling of Machinery

Fueling of machinery was provided through mobile and fuelling vehicles.

Health and Safety Issues

Personnel were provided by health and personal safety equipment.

Providing of living conditions for workers.

Necessary living conditions for workers were provided by the Contractor in living and on-site camps: Proper waste management, pollution prevention from storages; proper organization of fueling.

Transportation Safety

During civil works construction sites were equipped with transportation and safety traffic signs.

Consultations with Communities

No consultations with local communities were conducted during defects liability period.

III. ENVIRONMENTAL MANAGEMENT

A. Site Inspections

The site visits was held periodically during the defects liability period of the works by the Joint Venture of Kocks Consult GmbH (Germany), DMEC Seoul (Korea) and Design & Consulting Company "BT" (Georgia).

An environmental post-construction audit will be conducted by MDF staff or will be outsourced. Final audit report will be submitted to ADB no later than 30 September, 2013. The environmental post-construction audit will be conducted in accordance of ADB requirements.

B. Reporting

The report "Defects Liability Report and Final Completion" was submitted by supervisory company. No environmental non-compliances have been observed during defects liability period.

C. Corrective Action Plans

There was no need for corrective action during defects liability period.

D. Consultation and Complaints

No consultations with local communities were conducted. No complaints were received during the defects liability period.

No	Issue	Location	Recommended Measures	Implementation/ Compliances	Comments
IV.	Construction		·	• •	
1.	Erosion from road cuts and fills and sedimentation of natural drainage ways.	Construction site	Installation of long-term drainage systems and anti-erosion structures.	Mitigation measures have been daily implemented.	Satisfactory
	Nature of impact: long-term. Change of relief, drainage patterns, land clearance, may cause gradual but stabile intensification of erosion	RoW	 reinstatement of relief, soil and vegetation cover Installation of long-term drainage system and permanent monitoring. Installation of sedimentation basins, seeding or planting of erodible surfaces as soon as possible Increase the number of drain outlets. Place drain outlets so as to avoid cascade effect. Line receiving surface with stones, concrete. Long-term monitoring and maintenance 		
2.	Erosion stimulated from fresh road cuts and fills and temporary sedimentation of natural drainage ways. Nature of impact: immediate ; Fresh road cuts may immediately trigger intensive erosion during construction and drastic increase of sedimentation	Construction site RoW	 Mitigation strategy: prevention through implementing temporary anti-erosion measures – temporary drainage, biomatting or geo-textile cover, berms etc. Limitation of earth moving to dry periods. Protection of most susceptible soil surfaces with mulch. Protection of drainage channels with berms, straw or fabric barriers. Installation of sedimentation basins 	N/E	Satisfactory
3.	Erosion of lands below the road bed receiving concentrated outflow from covered or open drains	Construction site	 Increase the number of drain outlets. Place drain outlets to avoid cascade effect. Line receiving surface with stones, concrete. 	If needed, mitigation measures have been implemented during construction works.	Satisfactory
4.	Topsoil losses due to improper storage and handling	Construction site	 Topsoil Protection The topsoil will not be handled by Contractor when the following conditions are observed: The topsoil is frozen; The site is experiencing persistent rainfall; 	Due to the location where construction works were being undertaken no topsoil stripping and storage was required.	Satisfactory

No	Issue	Location	Recommended Measures	Implementation/ Compliances	Comments
			 The topsoil is saturated; or Handling will damage the structure of the topsoil. Keep topsoil storage standards 		
5.	Increased suspended sediment in streams affected by erosion at construction sites and fresh road cuts, fills and waste dumps. Declined water quality and increased sedimentation Character of impact : immediate; Fresh road cuts may immediately trigger intensive erosion during construction and drastic increase of sedimentation	Construction site	 Mitigation strategy: prevention through implementing temporary anti-erosion measures – temporary drainage, temporary sediment catchments etc. Protect susceptible surfaces with fabric, Establishment of retention ponds to reduce sediment loads before water enters streams 	If needed, recommended mitigation measures have been implemented during construction works.	Satisfactory
6.	Soil and water contamination during construction by oil, grease, fuel and paint	Construction site	 Collect and recycle lubricants. Store the lubricants and fuel residue in special room. Use impermeable tray for placing lubricant containers. Avoid accidental spills through good practice. Avoid refueling near watercourses; Ensure proper maintenance of equipment and fueling of the vehicles and machinery. Check vehicles (leaking of fuel etc.) Organize and cover material storage areas; Isolate concrete, earthwork and other works from water courses by using sealed formwork; Isolate wash down areas of cement and gravel trucks and other equipment from water courses by selecting areas for washing that are not free draining directly or indirectly into water courses; 	Recommended mitigation measures have been implemented during construction works	Satisfactory

	Issue	Location	Recommended Measures	Implementation/	Comments
No				Compliances	
7.	Poor sanitation and solid waste disposal	Construction	Provide adequately located and maintained waste	Mitigation measures have	Satisfactory
	in construction camp and work sites	site	disposal facilities (containers).	been daily implemented. The	
	(sewerage, sanitation, waste			waste disposal facilities were	
	management)		Contract municipal waste operators for disposing	adequately provided at	
			the household waste, garbage and small amounts	construction camps and work	
			of nonhazardous construction waste etc.	sites.	

No	Issue	Location	Recommended Measures	Implementation/ Compliances	Comments
8.	Construction wastes. Disposal of excess soil and rock. Certain part of the cut material (soil and rocks) should be disposed of Demolition of old pavement	Construction site Asphalt and rocks demolition area; Landfill	Assess and, if required, develop a spoil and rock disposal plan Provide for disposal facilities agreed with Regional Services of MoE Transport any further material to the nearest spoil disposal sites agreed with the regional services of MoE and/or municipal services. The main purpose is not to damage valuable landscapes or soil deposits and other ecological sensitivities. For the rock disposal licensed landfill can be used. All waste from the construction site will be disposed of in accordance with the local environmental regulations and on the sites approved by the environmental authority. The demolished asphalt and rocks should be reused.	As far as licensed landfill doesn't exist in the region, waste was disposed on the basis of verbal agreement with Municipality. None of contractors presented written consent of the Municipality.	Satisfactory
9.	Noise pollution from vehicle operation during construction in the populated areas traversed by the highway, Local noise.	Construction site	Install and maintain mufflers on equipment. Routine maintenance shall be done to a high standard to ensure that vehicles are safe and that emissions and noise are minimized. All the plants used on site will be regularly maintained so as to be in good working order at all times to minimize noise. Prohibit night works near the settlements	Transportation routes were planned in consultation with Municipality and Police. No parking is allowed on the roads, to avoid disturbing traffic movement. Information on works was provided to local residents prior to start of works. No nighttime transportation and construction activities were carried out.	Satisfactory

Na	Issue	Location	Recommended Measures	Implementation/	Comments
<u>No</u> 10.	Air pollution from vehicle operations during construction in the populated areas traversed by the highway, Local dust	Construction site Access roads	 Require adherence to engine maintenance schedules and standards (or use alternative fuels) to reduce air pollution. Periodically water down or lightly oil temporary roads. Enhance public transportation and traffic management capability. Cover trucks carrying cement and/or gravel; Wet or cover trucks carrying stone/ sand/ gravel; Haul materials in off peak traffic hours. 	CompliancesTarpaulins were used to coverloose material that wastransported to and from thesite by trucks.Dust generation wascontrolled while unloading theloose material at the site bysprinkling water.The dust was controlledthrough watering down theroads in the populated areawhere driving can easilygenerate dust. Access to sitewas restricted.	Satisfactory
11.	Infrastructure. The main infrastructure elements that could be affected are the power transmission lines, water supply systems and irrigation pipes and channels.	Construction site	Protection of infrastructure. Replace the affected infrastructure elements Permanent monitoring during construction. Full reinstatement in case of damage	No damages of main infrastructure elements have been observed during civil works.	Satisfactory

No	Issue	Location	Recommended Measures	Implementation/ Compliances	Comments
12.	 Construction Camp Site The potential impacts related to the construction and operation of the camp can be summarized as follows: Clearance of vegetation cover during camp construction Potential damage of topsoil Contamination related to fuel storage and fuelling operations Sewerage related contamination Waste management 	Construction site	 Proper waste management. Pollution prevention strategies: proper organization of fueling, waste management; Proper storage of topsoil 	Contractor provided workers with required accommodation. No new camps / accommodation were built to avoid impact on environment.	Satisfactory
13.	Creation of temporary breeding habitats for mosquito vectors of disease e.g. sunny, stagnant pools of water. Creation of stagnant water bodies in borrows pits, quarries, etc. suited to mosquito breeding and other disease vectors.	Construction site	Remove all created pools till spring-time. Reinstate relief and landscape.	There was no need for removal of pools. The relief and landscape was restored before completion of construction works.	Satisfactory
14.	Health hazards by noise, air emissions and dust raised and blown by vehicles during construction activities.	Construction site; Access roads	Dust control by application of watering. Use as minimum as 2 browsers; Noise control, installation of mufflers on equipment, daytime works;	Mitigation measures have been daily implemented.	Satisfactory
15.	Impacts on archaeological sites and remnants	Construction site	Permanent monitoring during land clearance and excavation activities. Stoppage and suspension of construction activities in case of archaeological findings. Completion of required archaeological works before restarting construction activities.	During construction works no findings were discovered.	Satisfactory

No	Issue	Location	Recommended Measures	Implementation/ Compliances	Comments
			Conservation of remnants		
16.	biological recontamination during earthworks near pest-holes of soil infections (e.g. anthrax);	Construction site	Permanent monitoring during land clearance and excavation activities. Stoppage and suspension of construction activities in case of burial site findings. Notification to the local division of Veterinary Department. Veterinary clearance before start up.	No risks of biological recontamination were observed during earth works.	Satisfactory
17.	Hazardous driving conditions where construction interferes with pre-existing roads	Construction site	Include in the design for proper markings and safety signs on roads, including lights. Instruct the drivers.	The proper markings and safety signs were provided on the roads during construction works. The drivers have been instructed about transportation rules and speed limitation.	Satisfactory

Annex B: End of Defects Liability Certificates

Annex 4.8

ოქმი

დეფექტებზე პასუხისმგებლობის პერიოდის ვადის გასვლის თაობაზე

მესტია (ოქმის შედგენის ადგილი)

ჩვენ ქვემოთ ხელის მომწერმა პირებმა (მხარეები) შევაღგინეთ აღნი შნული ოქმი მასზედ, რომ კოტრაქტის № P42414-ICB-1.01-L,1 საფუძველზე შემსრულებელმა: შპს "სანი "-მ დაასრულა "ზიგდიდი-ჯვარი-მესტია-ლახდილის გზის 74-80, კმ მონაკვეთის რეაბილიტაციის სამუშაოები", რაზედაც 2011 წლის 27 ოქტომბერს გაფორმებული იქნა შესაბამისი მიღება-ჩაბარების აქტი.

შემსრულებელთან გაფორმებული ხელშეკრულებიდან გამომდინარე, მიღება-ჩაპარების აქტიდან გავიდა 365 დღე, რასთან დაკაეშირებითაც შემსრულებელს გაუვიდა დეფექტებზე პასუხისმგებლობის პერიოდი.

აღნიშნულ ობიექტზე ოქმის გაფორმების მომენტისათვის დეფექტები არ არის. ზემოაღნიშნულთან დაკავშირებით გაფორმდა წინამდებარე ოქმი. რომელიც წაეიკითხეთ, ჩაწერილია სწორდ, რასაც ეადასტურებთ ხელმოწერით:

მუნიციპალური განვითარების ფონდი

მონიტორინგის სამართველოს სპეციალისტი - დავით შაფრგე

2. მესტიის მუნიციპალიტეტის წარმონადგენელი

3. საზედამხედველო სამსახურის უფროსი ინჟინერი - სვიად ცირეკიძე ma

4. შემსრულებელი

შპს "სანი"-ს დირექტორი- სერგო გვარამია

საგზაო დეპარტამენტის წარმომადგენელი – კახა სხულუხია

Translation

Expiry period of the defects liability

Protocol

We, the undersigned parties below composed this protocol stating that based on the contract # P42414-ICB-1.01-L,1 Ltd "Sani" completed rehabilitation works on Zugdidi-Jvari-Mestia-Lasdili road section at Km 74-80 for that has been made handover act on 27.10.2011.

Based on the contract signed with the Contractor, from the date of signing handover act 365 days is over, according to which the contractor has expired defects liability period.

By the moment of signing of the current protocol there are no defects.

The protocol was composed according above mentioned, which was read, is recorded correctly, we confirm it with signatures.

Municipal Development Fund

Monitoring Division Specialist: David Sharangia

Mestia Municipality Representative: M. Nizharadze

Roads Rehabilitation and Modernization Supervision Direction: Zviad Tsirekidze

LTD "Sani" Director: Sergo Gvaramia

Road Department Representative: Kakha Skhulukhia

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მესტია (ოქმის შედგენის ადგილი)

07.02. 2013 Barno

<u>ჩვენ ქვემოთ ხელის მომწერმა პირებმა (მხარეები) შევადგინეთ აღნიშნული ოქმი</u> <u>მასზედ, რომ კოტრაქტის</u> № P42414-ICB-1.01-L 2 <u>საფუძველზე შემსრულებელმა</u> შპს "ზიმო"-მ დაასრულა ზუგდიდი-ჯვარი-მესტია-ლასდილის გზისა და გვირაბის რეაბილიტაციის სამუშაოები <u>89 კმ. "</u>რაზედაც 2011 <u>წლის 19 დეკემბერს გაფორმებული</u> იქნა შესაბამისი მიღება-ჩაბარების აქტი.

შემსრულებელთან გაფორმებული ხელშეკრულებიდან გამომდინარე, მიღებაჩაბარების აქტიღან გავიდა 365 დღე, რასთან დაკავშირებითაც შემსრულებელს შპს "ზიმო"-ს გაუვიდა დეფექტებზე პასუხისმგებლობის პერიოდი.

აღნიშნულ ობიექტზე ოქმის გაფორმების მომენტისათვის დეფექტები არ არის. ზემოაღნიშნულთან დაკავშირებით გაფორმდა წინამდებარე ოქმი, რომელიც წავიკითხეთ, ჩაწერილია სწორედ, რასაც ვადასტურებთ ხელმოწერით:

1. საგზაო დეპარტამენტის სახელით

კახაზერ სხულუხია

2. საავტომობილო გზების რეაბილიტაციისა

და მოდერნიზაციის ზედამხედველობის სახელით

კანდიდ მეტრეველი

3. შემსრულებელი- შპს "ზიმო"-ს სახელით

ზურაზ კიკნაძე

Expiry period of the defects liability

Annex B

Translation

Expiry period of the defects liability

Protocol

We, the undersigned parties below composed this protocol stating that based on the contract # P42414-ICB-1.01-L,2 Ltd "Zimo" completed rehabilitation works on Zugdidi-Jvari-Mestia-Lasdili road section and the tunnel at Km 89 for that has been made handover act on 19.12.2011.

Based on the contract signed with the Contractor, from the date of signing handover act 365 days is over, according to which the contractor has expired defects liability period.

By the moment of signing of the current protocol there are no defects.

The protocol was composed according above mentioned, which was read, is recorded correctly, we confirm it with signatures.

Road Department Representative: Kakha Skhulukhia

Roads Rehabilitation and Modernization Supervision Direction: Kandid Metreveli

Ltd "Zimo" Representative: Zurab Kiknadze

ოქმი

დეფექტებზე პასუხისმგებლობის პერიოდის ვადის გასვლის თაობაზე

31 მაისი 2013 წელი

ქ. მესტია

ჩვენ ქვემოთ ხელის მომწერმა პირებმა შევადგინეთ აღნიშნული ოქმი მასზედ, რომ კოტრაქტის №P42414-ICB-1.01-L,4 საფუძველზე შემსრულებელმა შპს "ნიუქონსთრაქშენ"-მა დაასრულა ზუგდიდი-ჯვარი-მესტია-ლასდილის საავტომობილო გზის 121-125 კმ მონაკვეთის რეაბილიტაციის სამუშაოები, რაზედაც 2012 წლის 27 ოქტომბერს გაფორმებული იქნა შესაბამისი მიღება-ჩაბარების აქტი.

შემსრულებელთან გაფორმებული ხელშეკრულებიდან გამომდინარე, მიღებაჩაბარების აქტიდან გავიდა საგარანტიო ვადა, რასთან დაკავშირებითაც გაუვიდა დეფექტებზე პასუხისმგებლობის პერიოდი.

აღნიშნულ ობიექტზე ოქმის გაფორმების მომენტისათვის დეფექტები არ არის. ზემოაღნიშნულთან დაკავშირებით გაფორმდა წინამდებარე ოქმი, რომელიც წავიკითხეთ, ჩაწერილია სწორად, რასაც ვადასტურებთ ხელმოწერით:

- 1. საქართველოს საგზაო დეპარტამენტის სახელით
- კახაზერ სხულუხია 2. მესტიის მუნიციპალიტეტის წარმილი გებელი მაიზერ ჯაფარიძე 3. საზედამხედველო სამსახურის უფლეჭი ბნჟინერი ზვიად ცირეკიძე 4. შპს "ნიუქონსთრაქშენი"-ს დირექტორი რეზო ჭკადუა

Translation

Expiry period of the defects liability

Protocol

We, the undersigned parties below composed this protocol stating that based on the contract # P42414-ICB-1.01-L,4 Ltd "New Construction" completed rehabilitation works on Zugdidi-Jvari-Mestia-Lasdili road section at Km 121-125 for that has been made handover act on 27.10.2012.

Based on the contract signed with the Contractor, from the date of signing handover act 365 days is over, according to which the contractor has expired defects liability period.

By the moment of signing of the current protocol there are no defects.

The protocol was composed according above mentioned, which was read, is recorded correctly, we confirm it with signatures.

Road Department Representative: Kakha Skhulukhia

Mestia Municipality Representative: Maizer Japaridze

Roads Rehabilitation and Modernization Supervision Direction: Zviad Tsirekidze

Ltd "New Construction" Director: Rezo Chkadua

Annex C: Handing-Over Documents

(Delivery Acceptance Act)

პროექტის დასახელება	ზუგდიდი - ჯვარი-მესტია-ლასდილის გზის 74-80, კმ რეაბილიტაცია.
პროექტის აღგილმღებარეობა	სამეგრელო-ზემოსვანეთის მხარე

ამ აქტს ხელი მოეწერა <u>27.10.2011</u> მასხედ, რომ კონტრაქტის № # P42414-ICB-1.01-L,1 მიხედვით (შემსრულებელმა) შპს "სანი-მ დაასრულა ზუგდიდი - ჯვარიმესტია-ლასდილის გზის 74-80, კმ მონაკვეთის რეაბილიტაციის სამუშაოები. **საქართველოს მუნიციპალური განვითარების ფონდი და საავტომობილო გზების ღეპარტამენტი** იბარებს დამთავრებულ სამუშაოებს და თვლის, რომ დასრულებული სამუშაოები პასუხობს ყველა სამშენებლო ნორმებს. ამასთანავე შემსრულებელს ეკისრება პასუხისმგებლობა, წინამდებარე აქტის გაფორმებიდან 365 დღის განმავლობაში უზრუნველყოს შესაბამისი ღეფექტების აღმოფხვრა, რის შემდეგაც გაფორმებული იქნეს შესაბამისი ოქმი დეფექტებზე პასუხისმგებლობის პერიოდის ვადის გასვლის თაობაზე.

შემსრულებელმა უნდა შეასრულოს შემდეგი რეკომენდაციები:

პროექტის საკონტრაქტო ღირებულებაა **3,867,184.56** (სამი მილიონ რვაასსამოცდაშვიდი ათას ასოთხმოცდაოთხი ლარი 56 თეთრი) ლარი

პროექტის საბოლოო ღირებულებაა **3,815,146.59** ((სამი მილიონ რვაასთხუთმეტი ათას ასორმოცდაექვსი ლარი 59 თეთრი) ლარი

	Annex 4.8
<u>გადასცა</u>	
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<u>მამუკა კაკალაშვილი</u> სახელი, ლ კეარი ხელმოწერა	
სახელი, და კვარი ხელმოწერ <u>ა</u>	
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მგფ-ს აღმასრულებელი დირექტორის პირველი მოადგილე:	
მგფ-ს აღმასრულებელი დირექტორის პირველი მოადგილე:	
მგფ-ს აღმასრულებელი დირექტორის პირველი მოადგილე: დავით სირამე სახელი დ კეარი ხელმოწერა	and the second s

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8957. 12.12.20116 Annex 4.8 ზუგდიდი - ჯვარი-მესტია-ლასდილის გზისა და გვირაბის რეაბილიტაცია 89 კმ. პროექტის დასახელება პროექტის ადგილმდებარეობა სამეგრელო-ზემოსვანეთის მხარე

ამ აქტს ხელი მოეწერა -- 19.12. 2016 -- მასზედ, რომ კონტრაქტის № # P42414მიხეღვით (შემსრულებელმა) შპს "ზიმო"-მ ღაასრულა ზუგდიდი -ICB-1.01-L,2 ჯვარი-მესტია-ლასდილის გზისა და გვირაბის რეაბილიტაციის სამუშაოები 89, კმ . საქართველოს მუნიციპალური განვითარების ფონდი და საავტომობილო გზების დეპარტამენტი იბარებს დამთავრებულ სამუშაოებს და თვლის, რომ დასრულებული სამუშაოები პასუხობს ყველა სამშენებლო ნორმებს. ამასთანავე შემსრულებელს ეკისრება პასუხისმგებლობა, წინამდებარე აქტის გაფორმებიდან 365 დღის განმავლობაში უზრუნველყოს შესაბამისი დეფექტების აღმოფხვრა, რის შემდეგაც გაფორმებული იქნეს შესაბამისი ოქმი დეფექტებზე პასუხისმგებლობის პერიოდის ვადის გასვლის თაობაზე. შემსრულებელმა უნდა შეასრულოს შემდეგი რეკომენდაციები: პროექტის საკონტრაქტო ღირებულებაა: 8,507,710.94 (რვა მილიონ ხუთასშვიდი ათას შვიდაასათი ლარი 94 თეთრი) ლარი პროექტის საბოლოო ღირებულებაა: 7,857,456.08 ლარი (შვიდი მილიონ რვაასორმოცდაჩვიდმეტი ათას ოთხასორმოცდათექვსმეტი ლარი 08 თეთრი) 2000030



პროექტის დასახელება	ზუგდიდი - ჯვარი-მესტია-ლასდილის გზის 91-103 კმ რეაზილიტაცია.
პროექტის ადგილმდებარეობა	სამეგრელო-ზემოსვანეთის მხარე

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ამ აქტს ხელი მოეწერა <u>49.12 2011</u> მასზედ, რომ კონტრაქტის № # P43171-ICB-1.01-L3 მიხედვით (შემსრულებელმა) ს.ს "არქეოპოლის"-მა დაასრულა ზუგდიდი - ჯვარი-მესტია-ლასდილის გზის 91-103, კმ მონაკვეთის რეაზილიტაციის სამუშაოები. **საქართველოს მუნიციპალური განვითარების ფონდი და საავტომობილო გზების დეპარტამენტი** იბარებს დამთავრებულ სამუშაოებს და თვლის, რომ დასრულებული სამუშაოები პასუხობს ყველა სამშენებლო ნორმებს. ამასთანავე შემსრულებელს ეკისრება პასუხისმგებლობა, წინამდებარე აქტის გაფორმებიდან 365 დღის განმავლობაში უზრუნველყოს შესაბამისი ღეფექტების აღმოფხვრა, რის შემდეგაც გაფორმებული იქნეს შესაბამისი ოქმი დეფექტებზე აასუხისმგებლობის პერიოდის ვადის გასვლის თაობაზე.

შემსრულებელმა უნდა შეასრულოს შემდეგი რეკომენდაციები:

პროექტის საკონტრაქტო ღირებულებაა: 14,102,936.42 (თოთხმეტი მილიონ ასორი ათას ცხრაასოცდათექვსმეტი ლარი 42 თეთრი) ლარი

პროექტის საბოლოო ღირებულებაა: 14,611,538.27 (თოთხმეტი მილიონ ექვსასთერთმეტი ათას ხუთასოცდათვრამეტი

ლარი 27 თეთრი) ლარი

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		121

პროექტის დასახელება	ზუგდიდი - ჯვარი-მესტია-ლასდილის გზის 121-125, კმ რეაბილიტაცია.
პროექტის ადგილმდებარეობა	სამეგრელო-ზემოსვანეთის მხარე

ამ აქტს ხელი მოეწერა 27.10.2011 წ. მასზედ, რომ კონტრაქტის № # P42414-ICB-1.01-L,4 მიხედვით (შემსრულებელმა) შპს "ენგური-2006"-მა დაასრულა ზუგდიდი ჯვარი-მესტია-ლასდილის გზის 121-125, კმ მონაკვეთის რეაზილიტაციის სამუშაოები. საქართველოს მუნიციპალური განვითარების ფონდი და საავტომობილო გზების დეპარტამენტი იბარებს დამთავრებულ სამუშაოებს და თვლის, რომ დასრულებული სამუშაოები პასუხობს ყველა სამშენებლო ნორმებს. ამასთანავე შემსრულებელს ეკისრება პასუხისმგებლობა, წინამდებარე აქტის გაფორმებიდან 365 დღის განმავლობაში უზრუნველყოს შესაბამისი ღეფექტების აღმოფხვრა, რის შემდეგაც გაფორმებული იქნეს შესაბამისი ოქმი დეფექტებზე პასუხისმგებლობის პერიიდის ვადის გასვლის თაობაზე.

შემსრულებელმა უნდა შეასრულოს შემდეგი რეკომენდაციები:

კონტრაქტორმა დამატებით უნდა მოახდინოს გვერდულების შევსება, მოაწესრიგოს პარაპეტები, აღადგინოს სავალი ნაწილის დაზიანებული მონაკვეთები, შესრულებაზე წარმოადგინოს საზედამხედველო სამსახურის მიერ დამოწმებული აქტი, რის შემდეგაც განხორციელდეს დაკავებული სარეზერვო თანხის პირველი 2,5%-ს გადახდა.

პროექტის საკონტრაქტო ღირებულებაა 5,403,360.71 (ხუთი მილიონ ოთხასსამი ათას სამასსამოცი ლარი 71 თეთრი) ლარი

პროექტის საბოლოო ღირებულებაა 5,631,102.44 ((ხუთი მილიონ ექვსასოცდათერთმეტი ათას ასორი ლარი 44 თეთრი) ლარი

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Annex D: Pictures



Photograph No. 3	Photograph No. 4
	<image/>
Replaced concrete pavement	Rectified culvert headwall at km 98

