



Roads Department of Georgia

Preparation of Feasibility Study on the Environmental Improvement Activities, Draft,
Tender documentation and Environmental Management Plan for Natakhtari-Ruisi
section of the International Tbilisi-Senaki-Leselidze E-60 Highway

Environmental Improvement Activities on Natakhtari- Ruisi section of East-West Highway

Volume 4

Environmental Management Plan

Executors:



Sakgametsniereba Ltd

General Director

**Project Leader
Tamaz Shilakadze**



Gamma Consulting Ltd

Director

Vakhtang Gvakharia

Tbilisi 2015 May

PART A: GENERAL PROJECT AND SITE INFORMATION

Institutional & Administrative				
Country	Georgia			
Name of the project	Fourth East-West Highway Improvement Project			
Name of the sub-project	Preparation of Feasibility Study, Design, Bidding Documents and Environmental Management Plan for environmental improvement measures on Natakhtari-Ruisi section of the East-West Highway			
Description of the planned activities	<p>The sub-project aims at improvement of the status of natural environment within the Natakhtari-Ruisi section of the East-West Highway (EWH). The section under consideration is located between km27 and km95 of the EWH. It comprises: Natakhtari-Agaiani (km27-km43); Agaiani-Igoeti (km43-km55); Igoeti-Seveneti (km55-km80) and Seveneti-Ruisi (km80-km95) sections. The following activities are planned:</p> <ul style="list-style-type: none"> • Removal of soil dumped in the EWH corridor and filling up the median strip in 9 sections identified along the highway; • Removal of construction waste and waste material from 11 sections, including the waste generated during dismantlement of two old bust stops, and disposal to officially indicated area. Transportation distance from the site to disposal area ranges between 3km and 16km; • Arrangement of drainage holes in 12 sections of the median strip of the highway; • Slope stabilisation – including technical re-cultivation of 2 sections, introduction of topsoil and planting. Fencing of plantation area with barbed wire to avoid deliberate/non-deliberate damage of the saplings; • Grading of the area – in 2 locations adjacent to the highway; • Rehabilitation of irrigation canal - construction of a new pipeline (plastic d=300mm pipe) between the storm culvert and arable land of vil. Gamdlistskaro. 			
Institutional arrangements (Name and contacts)	WB (Project Team Leader) Mustapha Benmaamar	Project Management Irakli Khergiani RDMRDI	Local Counterpart and/or Recipient Mtskheta-Mtianeti (Mtskheta municipality) and Shida Kartli (Kaspi, Gori, Kareli municipalities) regions	
Implementation arrangements (Name and contacts)	Safeguard Supervision WB Darejan Kapanadze	Local Counterpart Supervision Technical Supervisor (not selected yet)	Local Inspectorate Supervision - (not selected yet)	Contractor (not selected yet)
Description of the project object:				
The institution whose property is to be rehabilitated	The state (Roads Department under the Ministry of Regional Development and Infrastructure of Georgia) and private property (see Annex 2)			
The address of the facility and the location of the object whose property is to be rehabilitated	Mtskheta-Mtianeti (Mtskheta municipality) and Shida Kartli (Kaspi, Gori, Kareli municipalities) regions			
Who is the owner? Who benefits from the land (formal / informal)?	The state (Roads Department, under the Ministry of Regional Development and Infrastructure of Georgia, and other Governmental Institutions)			
Description of physical and natural environment within the project area	The main characteristics of the project area are hot summers and relatively cold winters, and significantly less precipitation than in western Georgia. Average air temperature in the area of interest is at around 23 °C in July and August, when daytime temperatures often reach 33-35 °C, but fall below 20 °C at night. In winter the average air temperature is around 1-2 °C between December and February, and regularly falls below -10 °C throughout this period. Annual precipitation - around 500 mm. Spring and autumn are the wettest periods, and that winter is generally drier. Snowfall is moderate in most winters and the average snow cover on the plain is between 34 to 52 days. Wind speeds are generally quite low, averaging between 1.0 and 1.6 m/s in most months, and winds blow mainly from the north-east or south-west. Air quality in the area of interest is assumed to be generally good, given its rural character. The E-60 is assumed to be			

	<p>the main source of air pollution, no worth to mention sources of industrial pollution are available. As was the case for air pollution, the EWH is also likely to be the main source of noise in the project area.</p> <p>The main water bodies closest to the project area are Mtkvari, Ksani, Liakhvi, Mejuda, Lekhura.</p> <p>The section under consideration is located in Kartli Artesian Basin of porous, fissured and fissured-karst water, which underlies most of the Gori Plain.</p> <p>The study area is mainly flat. Seismic activity is 8-9 Richter scale. Flooding is the major hazard - as the rivers are at risk of overspill during the spring and autumn high flow periods.</p> <p>Long ago, most of the natural vegetation was removed from the area when the land was first converted to agricultural use. Vegetation is presented by cultivated crops and secondary re-growth in fields that have been left fallow. The only type of vegetation that is important is the riparian forest found in small fragments alongside the Mtkvari, Liakhvi rivers. The removal of natural vegetation has also affected the fauna. According to available data, 45 species of the Georgian Red List are either known or likely to occur in the region. However, this does not apply to the study area which is significantly altered.</p> <p>There are no historic/cultural heritage monuments within the project 'impact' zone.</p>
What is the location and distance of the nearest licensed source of material (including water, stone, etc.)?	<p>The Contractor may either use inert material (gravel) from licenced provider; use material from own quarry, if available; or, obtain the license for extraction from the Ministry of Environment and Natural Resources Protection of Georgia.</p> <p>With consideration of the scope of works and the volume of required material, it is less likely, that Contract decides to obtain a licence exclusively for this project. All the more, there is a range of sand-gravel licenced deposit within the Ksani, Liakhvi and Mtkvari riverine areas. Distance – from 2 to around 9km.</p>
Legislation	
National and local laws and permits, related to the project activities	<p>The Law of Georgia "On Protection of Atmospheric Air" – Project implementation will be related to propagation exhaust emissions, dust and noise in the ambient air. Accordingly, ambient air pollution protection measures considered by the law should be implemented during the project rehabilitation process;</p> <p>Waste Management Code. Removal of surplus soil and its beneficial reuse is planned; inert waste located in the roadside area will be removed. These activities comply with objectives set under the code, including protection of environment through prevention and reduction of negative impact of generated waste and development of effective mechanisms for waste management.</p> <p>There is a risk of damage/deterioration of the quality (pollution) of soil during the equipment / vehicles movement and earth works. Therefore, provisions of the Law "On Soil Protection" such as those related to protection of soil from erosion, protection of soil from pollution with hazardous and inert waste and littering, should be considered.</p> <p>The site for removal of waste and waste materials (suggested are Kaspi landfill which is in 6 to 16km from the work area, or Gori landfill – in 9 km to 18km distance from the site) must be officially agreed with the Solid Waste Management Company LLC.</p>
Public consultation	
When and where will be public consultations held?	Environmental Management Plan will be available to local residents before starting of works.
Annexes	
<p>Annex 1: Map with indication of location of the project area</p> <p>Annex 2: Land ownership information</p> <p>Annex 3: The public consultation recording (should be provided)</p> <p>Annex 4: Agreements regarding the disposal of waste (should be provided)</p> <p>Annex 5: Other (as applicable)</p>	

PART B: SAFEGUARDS INFORMATION

ENVIRONMENTAL /SOCIAL SCREENING				
Will the site activity include/involve any of the following?	Activity/Issue	Status		Triggered Actions
	a. Building rehabilitation	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Section A below
	b. New construction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	See Section A below
	c. Individual wastewater treatment system	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	See Section B below
	d. Historic building(s) and districts	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	See Section C below
	e. Acquisition of land ¹	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	See Section D below
	f. Hazardous or toxic materials ²	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	See Section E below
	g. Impacts on forests and/or protected areas	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	See Section F below
	h. Handling / management of medical waste	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	See Section G below
	i. Traffic and Pedestrian Safety	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Section H below

¹ Land acquisitions includes displacement of people, change of livelihood encroachment on private property this is to land that is purchased/transferred and affects people who are living and/or squatters and/or operate a business (kiosks) on land that is being acquired.

² Toxic / hazardous material includes but is not limited to asbestos, toxic paints, noxious solvents, removal of lead paint, etc.

PART C: MITIGATION PLAN

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
0. General Conditions	Notification and Worker Safety	<ul style="list-style-type: none"> (a) The local construction and environment inspectorates and communities are notified of upcoming activities through appropriate notification in the media and/or at publicly accessible sites (including the site of the works); (b) All legally required permits have been acquired for construction and/or rehabilitation; (c) 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; (d) Workers' PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots); (e) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
A. General Rehabilitation and /or Construction Activities	Air Quality	<ul style="list-style-type: none"> (a) Demolition debris shall be kept in controlled area and sprayed with water mist to reduce debris dust; (b) During pneumatic drilling/wall destruction dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site; (c) The surrounding environment (sidewalks, roads) shall be kept free of debris to minimize dust; (d) There will be no open burning of construction/ waste material at the site; (e) There will be no excessive idling of construction vehicles at sites; (f) Loading/unloading height will be minimum; (g) Truck loads should be confined and protected with scattering around.
	Noise	<ul style="list-style-type: none"> (a) Construction noise will be limited to daytime hours; (b) During operations the engine covers of any powered mechanical equipment shall be closed, and equipment placed as far away from residential areas as possible; (c) The machinery should move only along the preliminarily agreed route; (d) The maximum allowed speed should be restricted; (e) Proper technical control and maintenance practices of the machinery should be applied; (f) Proper mufflers will be used on machinery. Idling shall be prohibited.
	Water Quality	<ul style="list-style-type: none"> (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 nearby streams and rivers (where appropriate); (b) Contractor will plan all excavations, topsoil and subsoil storage so as to reduce to a minimum any runoff; (c) Proper technical maintenance of vehicles will be required to ensure that there is no leakage of fuel and lubricating materials. All machinery will be maintained and operated such that all leaks and spills of materials will be minimised. Daily plant checks (Vehicle Maintenance Procedure) will be undertaken to ensure no leaks or other problems are apparent; (d) Use of commercial car maintenance facilities will be encouraged. In case vehicle maintenance, cleaning, degreasing etc. onsite is required, this will be undertaken in designated areas, of hard-standing. The maintenance site must not be located in less than 50m of any watercourse; (e) Spill containment materials (sorbents, sand, sawing, chips etc.) should be available on the site.
	Waste management	<ul style="list-style-type: none"> (a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and other project activities; (b) Waste will be disposed to an agreed upon municipal landfill; (c) 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; (d) The records of waste disposal will be maintained as proof for proper management as designed.

	Material supply	<ul style="list-style-type: none"> (a) Use existing quarries/borrow pits that have appropriate official approval/valid operating license; (b) Obtain licenses for any new quarries and/or borrowing areas if their operation is required; (c) Reinstate used sections of quarries and/or borrowing areas as extraction proceeds on or properly close quarries if extraction completed and license expired; (d) Haul materials in off peak traffic hours; (e) Place speed regulating, diverting, and warning signs for traffic as appropriate.
H. Traffic and Pedestrian Safety	Direct or indirect hazards to public traffic and pedestrians by construction activities	<ul style="list-style-type: none"> (a) In compliance with national regulations the contractor will ensure 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"> ▪ Signposting, warning signs, barriers and traffic diversions - site will be clearly visible and the public warned of all potential hazards; ▪ Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where/if construction traffic interferes; ▪ Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement; ▪ Active traffic management by trained and visible staff at the site.

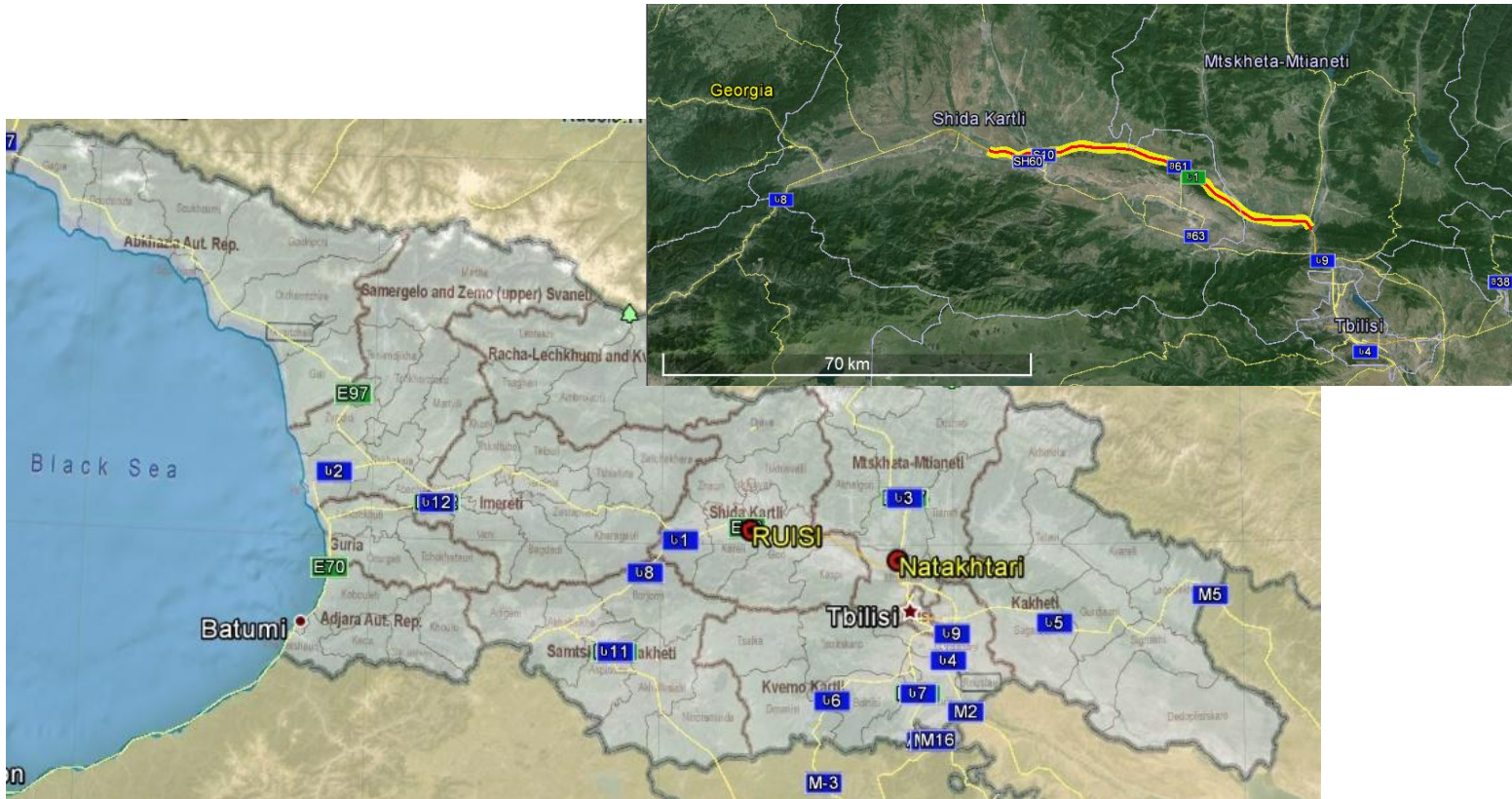
PART D: ENVIRONMENTAL MONITORING PLAN

Activity	What (parameters should be monitored?)	Where (is there any parameter subjected to monitoring?)	How (should the parameter be monitored?)	When (Have you determined the frequency and / or continuity?)	Why (is the parameter monitored?)	Who (is responsible for monitoring?)
Earthworks, removal and spreading of soil, grading of the slopes and disturbed areas	<ul style="list-style-type: none"> No excessive dust at work site; Construction machinery and vehicles kept in standard technical condition; No idling of engines; Work sites demarcated and boundaries respected by contractor; Observance of working hours (set by works manager) during operation near the residential area; Use of erosion control measures while working on the slopes or near water bodies. 	Worksites	Inspection	<p>Always, during removal , and spreading the soil;</p> <p>Unannounced inspections during work hours</p>	<ul style="list-style-type: none"> To prevent air pollution; To reduce noise related nuisance; To preserve soil quality – avoidance of pollution with spilled products; To reduce soil compaction outside the boundaries of the work area; To avoid sliding of soil and/or impact on water quality; To preserve vegetation. 	RD, works supervisor
Loading and unloading of soli, material and/or waste	<ul style="list-style-type: none"> Unloading height; No excessive dust at work site; Technical condition of vehicles; No idling of engines; Keeping to the boundaries of the worksite while soil removal; Observance of working hours (set by works manager) during operation near the residential area. 	Loading and disposal/unloading sites	Inspection	Whenever loading/unloading is in process	<ul style="list-style-type: none"> To prevent air pollution; To reduce noise related nuisance; To preserve soil quality – avoidance of pollution with spilled products; To reduce soil compaction outside the boundaries of the work area; To preserve vegetation. 	RD, works supervisor
Demolition works	<ul style="list-style-type: none"> No excessive dust at work site; Temporary storage of waste in allocated areas, keeping the boundaries of 	Demolition site	Visual inspection, control	In the course of demolition works	<ul style="list-style-type: none"> To prevent air pollution; To reduce noise related nuisance; To preserve soil quality – avoidance of pollution with spilled products; 	RD, works supervisor

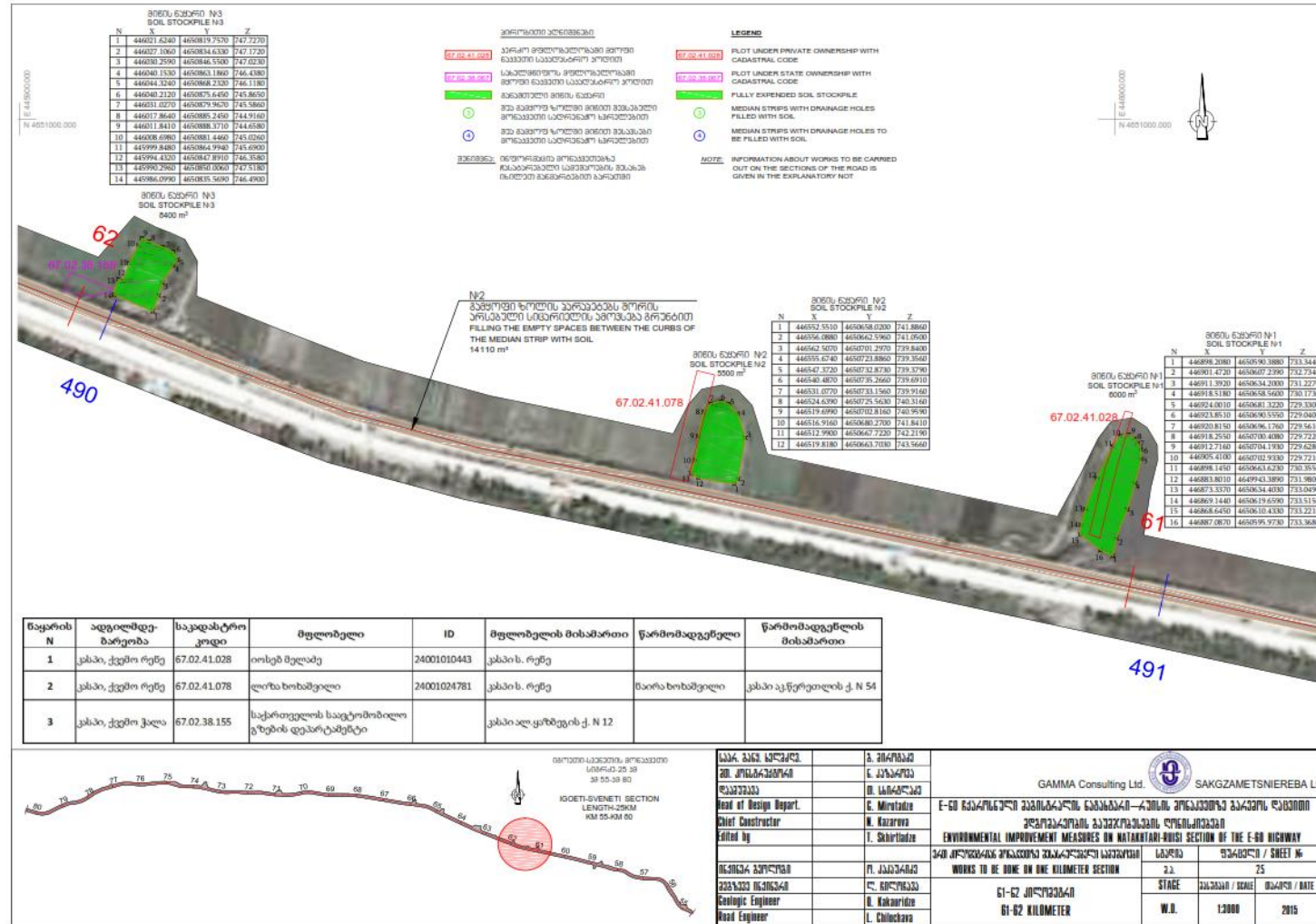
	<p>these sites, timely removal of waste;</p> <ul style="list-style-type: none"> • Construction vehicles and machinery maintained in standard technical condition; • No idling of engines; • Observance of operation hours set by works manager; • Work sites demarcated and boundaries respected by contractor. 				<ul style="list-style-type: none"> • To preserve vegetation; • To reduce soil compaction outside the boundaries of the work area; • To avoid pollution of environment with waste. 	
Biological recultivation – tree planting	<ul style="list-style-type: none"> • Planting of pre-agreed species only; • Adherence to the established methodology of planting. 	Roadside slopes subject to biological recultivation	Visual inspection	In the course of biological recultivation works	<ul style="list-style-type: none"> • To prevent damage of saplings. 	RD, works supervisor
Sourcing/supply with construction materials -during arrangement of drainage of the median strip and irrigation canal	<ul style="list-style-type: none"> • Purchase of construction materials from the officially registered suppliers <u>or</u> obtaining extraction license and strict compliance with the license conditions. 	In the supplier's office or warehouse	Verification of documents or Inspection of works	During conclusion of the supply contracts	<ul style="list-style-type: none"> • To limit erosion of slopes and degradation of ecosystems and landscapes; • To limiting erosion of river banks, water pollution with suspended particles and disruption of aquatic life (in case material sourcing works are in any contact with water body). 	RD, works supervisor
Transportation of soil, materials and waste; Movement of construction machinery and vehicles	<ul style="list-style-type: none"> • No excessive dust at work site; • Construction vehicles and machinery kept in standard technical condition; • Speed limits observed; • Confinement and protection of truck loads with taurpalin; • Respect of the working hours (set by works manager) and routes of transportation; • Adhering to the general traffic safety rules. 	Along the transport route	Inspection	Unannounced inspections during work hours	<ul style="list-style-type: none"> • To limit emissions and dust generation; • To reduce the risk of material/waste scattering around; • To limit nuisance to local communities from noise and vibration; • To minimize traffic disruption; • To ensure accident/injury free traffic. 	RD, works supervisor

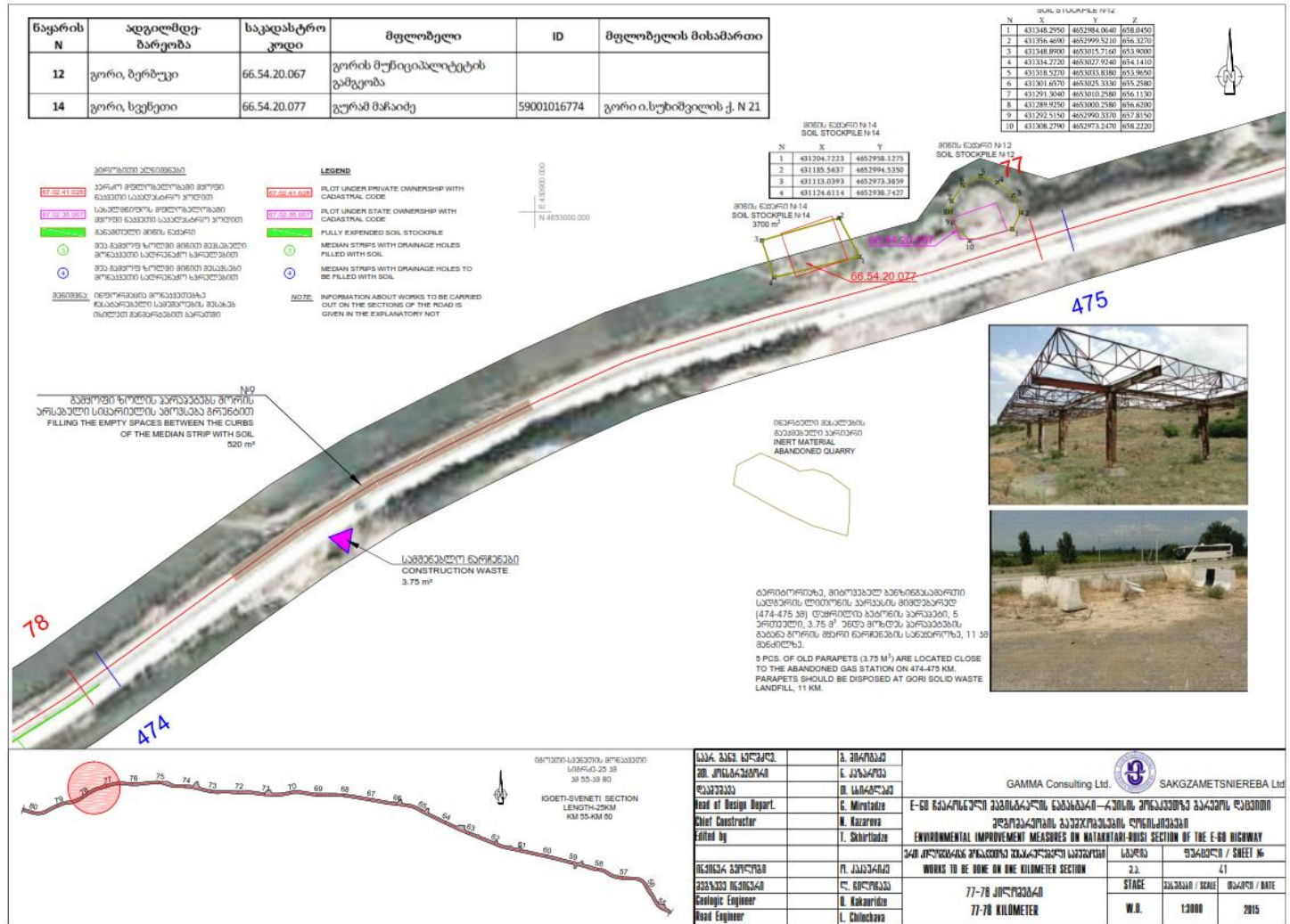
Generation of construction and other waste	<ul style="list-style-type: none"> • Temporary storage of waste in especially allocated areas; • Timely disposal of waste to the formally designated locations. 	Construction site; Waste disposal site	Inspection	Periodically during construction and upon complaints	To prevent pollution of the construction site and nearby area with solid waste	RD, works supervisor
Traffic disruption and limitation of access	<ul style="list-style-type: none"> • Installation of traffic limitation/diversion signage; • Storage of construction materials and temporary placement of construction waste in a way preventing congestion of access roads 	At and around the construction site	Inspection	In the course of construction works	<ul style="list-style-type: none"> • To prevent traffic accidents; • To limit nuisance to local residents, commuters 	RD, works supervisor
Workers' health and safety	<ul style="list-style-type: none"> • Provision of uniforms and safety gear to workers; • Keeping to the general occupational safety requirements relevant to the type of activity; • Informing of workers and personnel on the personal safety rules and instructions for operating machinery/equipment, and strict compliance with these rules/instructions 	Construction site	Inspection	Unannounced inspections in the course of work	<ul style="list-style-type: none"> • To limit occurrence of on-the-job accidents and emergencies 	RD, works supervisor
Operation Phase						
Maintaining status of planted vegetation	Status of plants	Re-cultivated slopes	Visual observation	Seasonal	<ul style="list-style-type: none"> • To ensure health of plantations; • To ensure aesthetic view of the area. 	Contractor hired by RD
Maintaining the irrigation canal	Maintenance of technical condition of the canal	Along the irrigation canal	Visual observation	After adverse weather events	<ul style="list-style-type: none"> • To ensure good operation of the canal. 	Local administration

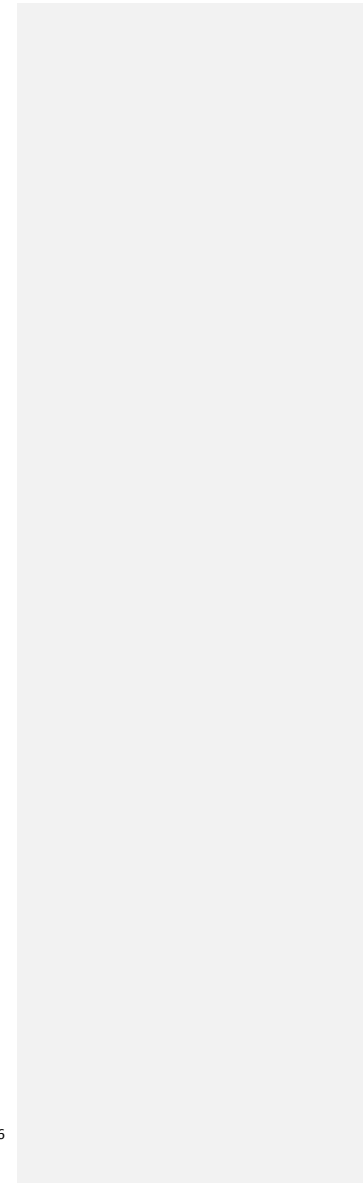
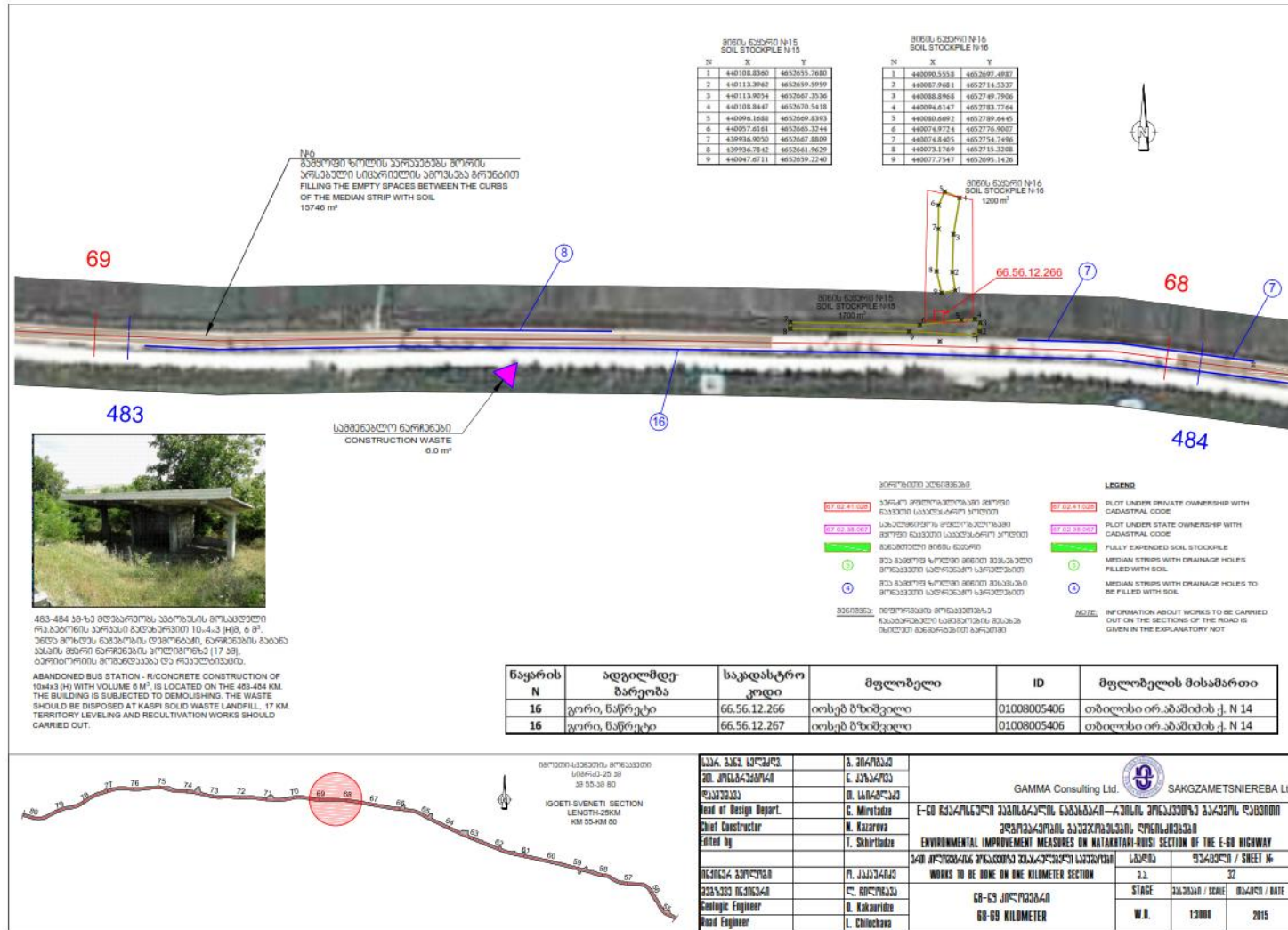
ANNEXES
ANNEX 1. LOCATION OF THE PROJECT AREA



Annex 2. Land ownership information







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