



**Ministry of Regional Development and Infrastructure of Georgia.
Roads Department of Georgia.**

**DETAILED DESIGN FOR THE CONSTRUCTION OF
POTI-GRIGOLETI-KOBULETI BYPASS.
SECTION OF INTERNATIONAL E-70 SENAKI-POTI (DETOUR) - SARPI (BORDER
OF TURKISH REPUBLIC) ROAD**

LOT 1: GRIGOLETI-KOBULETI BYPASS ROAD

**ACTIVITY 2 (DETAILED DESIGN, LOT 1)
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT
(Executive summary)**

Project Code: 5100160001-1GE

Doc. Code	Carried Out by	Verified by	Date	Vers.
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1. INTRODUCTION

The Government of Georgia (GoG) is conducting a program to upgrade the major roads of the country, managed by the Roads Department (RD) of the Ministry of Regional Development and Infrastructure (MRDI). The program aims to improve transportation and transit of goods to surrounding countries, which is a significant and growing contributor to GDP. Transport of goods into and through Georgia has increased over the past 10-15 years as markets have expanded following the breakup of the Soviet Union, and Georgia is now a major transit country. Almost two-thirds of goods in Georgia are transported by road, and haulage by domestic and international truck companies is very evident on the country's highways. Many of the roads are however poorly equipped to cope with the volume of traffic and the proportion of heavy vehicles. This creates difficulties for haulage companies and their clients, truck drivers, Georgian motorists and local residents.

The main targets of the program for upgrading are major roads in Georgia such as E-60 and E-70. The World Bank, JICA and ADB have already providing series of loans to the Government of Georgia for construction/rehabilitation of the road infrastructure.

As a part of the program under the funding from European Investment Bank (EIB), construction of Grigoleti-Kobuleti bypass and Poti-Grigoleti sections of international Senaki Poti (detour) - Sarpi (border of Turkish Republic) road is planned.

Consortium represented by Getinsa-Payma-Eurostudios has been awarded a contract for the mentioned project. As defined under the Terms of Reference for this assignment, feasibility study of Poti-Grigoleti-Kobuleti bypass have been carried out. This stage was followed by development of detailed design, preparation of bidding document, elaboration of environmental protection and resettlement documents for Grigoleti-Kobuleti bypass. Design for the Poti – Grigoleti section is pending.

To deal with environmental and social (including resettlement) components of the assignment Georgian environmental consultancy company - Gamma Consulting Ltd has been hired by the Consortium.

Construction works will be implemented by construction company identified through tendering procedure.

2. NEED FOR ESIA- ENVIRONMENTAL SCREENING

The project belongs to the types of activities capable to have significant environmental and/or social impact and requires full-fledged environmental impact assessment according to the national and IFI environmental regulations (ref. Law of Georgia on Environmental Impact Permit; EU EIA Directive (DIRECTIVE 2011/92/EU as amended by Directive 2014/52/EU - Annex I); IFI

environmental and social safeguards for Category A projects, EIB statement of Environmental and Social principles and Standards; etc.).

3. OBJECTIVE OF ESIA

The purposes of the ESIA are to:

- examine the project's potential negative and positive environmental and social impacts and recommend any measures needed to prevent, minimise, mitigate, or compensate adverse impacts and to improve environmental and social performance;
- analyse project alternatives;
- provide technical information and recommendations for selection and designing of the best option out of several alternatives;
- ensure that affected communities are appropriately engaged on issues that could potentially affect them; and
- develop an Environmental Management Plan, which will include a mitigation programme, a monitoring plan and assessment of institutional capacity for its implementation.

In the course of assessment the issues related to labour, health and safety – need for compliance with labour standards, occupational and community health and safety, population movement (including involuntary resettlement issues, with particular focus on vulnerable groups) was paid attention to. The process was carried out with active involvement of the stakeholders.

4. PUBLIC PARTICIPATION

The Bank policies and the Georgian legislation require meaningful public participation and involvement of stakeholders in the process of ESIA and environmental management planning. These includes disclosure of the draft ESIA report to the public through the convenient media in a national language; organisation of public consultation meetings, invitation for written comments/questions on the draft ESIA and consideration of public feedback into the final ESIA report for re-disclosure.

At least two public consultation meetings for environmental Category A activities are required – on the Terms of Reference stage, to describe the scope of an environmental assessment, and one, on the later stage – when draft report is ready, to present the findings of the study.

RD carried out consultation meetings in Ureki and Ozurgeti on February 9, 2017 and September 29, 2017 were held. Two meetings in RD office with participation of EIB and RD representatives, design team and environmental and social specialists from Gamma Consulting were held on 30.01.2017 and 13.02.2017.

The draft ESIA report was posted on the web page of the MRDI. Hard copies of the document will be made available at the local self-government office as well as offices of RD, design team and environmental consultant.

5. LOCATION OF THE PROJECT

The project is located in the Black Sea coastal area, Samegrelo-Zemo Svaneti and Guria Regions of west Georgia and comprises the area from Grigoleti to the Kobuleti bypass. The design alignment starts from the area north to Supsa terminal, left bank of the Supsa river, and connects to the newly constructed Kobuleti bypass, south to the Black Sea Arena. Based on functional conditions and agreed with the Roads Department, the start point of the design alignment connects directly the new highway Samtredia-Grigoleti.

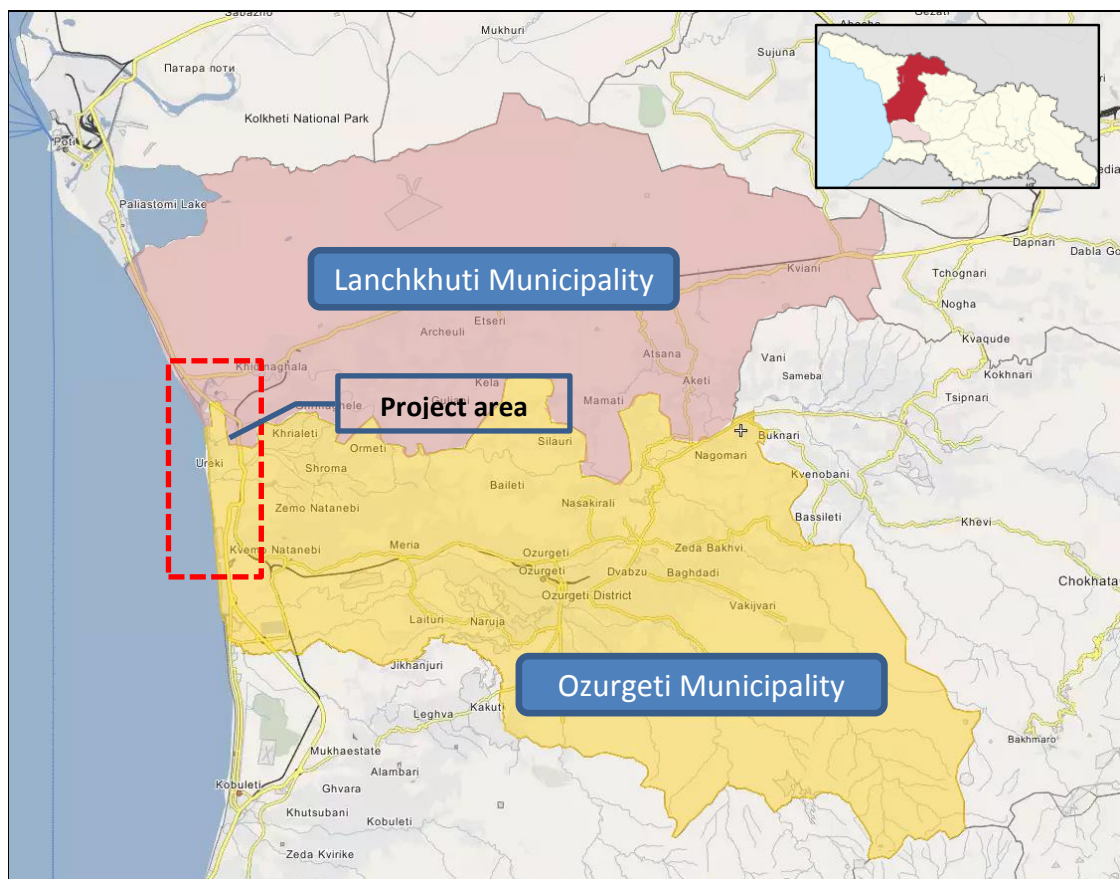


Figure 1. Location of the project

6. SENSITIVE ENVIRONMENTAL RECEPTORS AND POTENTIAL IMPACTS

Main receptors on impact are plants and animals (terrestrial and aquatic) in the project area, local residents, physical environment (water, soil).

The main environmental impacts are expected at the construction phase and come from clearing of the right-of-way (RoW), establishment/operation of work areas, camps (if contractor decides to organize them) and temporary access roads, operation/servicing of construction machinery, works near and in the waterways during construction of bridges, construction of overpass/underpasses and other road infrastructure.

Clearing of the RoW will be required in the new route sections. Establishment of construction camps and access roads is associated with generation of solid waste and wastewater, compression of soil, and noise related nuisance. Parking, operating and servicing of construction machinery will carry the risk of operational spills of oils and lubricants (i.e. the risk of soil pollution) and generation of noise, vibration, dust, and emissions. It is expected that the construction material will be purchased from suppliers licensed to operate quarries. License for use of natural resources - in case the contractor decides to use own quarries - will be obtained by the contractor from the Ministry of Environment and Natural Resources Protection (MENRP). Construction works will also have implications for the occupational health and safety of workers/personnel. Construction of bridges may have impact on aquatic and water-related biodiversity.

Impacts of the new road during its operation phase are less diverse. Environmental aspects of the highway operation will be air pollution from automobile emissions, and pollution of soil with litter and drainage from the highway as well as water pollution with liquid/powder cargo and/or fuel and lubricants from the cars as a result of traffic accidents on the road section and runoff from the road.

Project design brings the risks of negative impacts on environment to the feasible minimum. Provision for road safety and control over the traffic regulation will contribute to managing risks of accidents. Installation of noise barriers is planned. Diversion of the traffic from existing road will affect businesses (shops, petrol stations, restaurants) and vendors along the road. Finally, traffic safety will be an important issue with health, social, and environmental implications.

7. TECHNICAL AND ENVIRONMENTAL STANDARDS

Technical design of the highway improvement meets the Trans-European Motorway (TEM) standards. The project will be implemented in compliance with the Georgian legislation and environmental standards, as well as the World Bank's safeguard policies. The project triggers World Bank OP/BP 4.01 Environmental Assessment, OP/BP 4.11 Physical Cultural Resources, OP/BP 4.12 Involuntary Resettlement; and OP/BP 4.20 Gender and Development.

8. PROJECT ALTERNATIVES

Three alternative alignments have been evaluated to choose the option less damaging for biophysical and social environment. Various alternatives of the highway alignment carry different levels of environmental risks, which has been critical in environmental analysis of project alternatives.

No "showstoppers" have been identified during ESIA and the anticipated impacts can be managed by application of adequate construction standards and good environmental practices. No action (a "do-nothing" option) was considered at previous stage of assessment as one of the project alternatives. While it has no environmental and social impacts resulting from

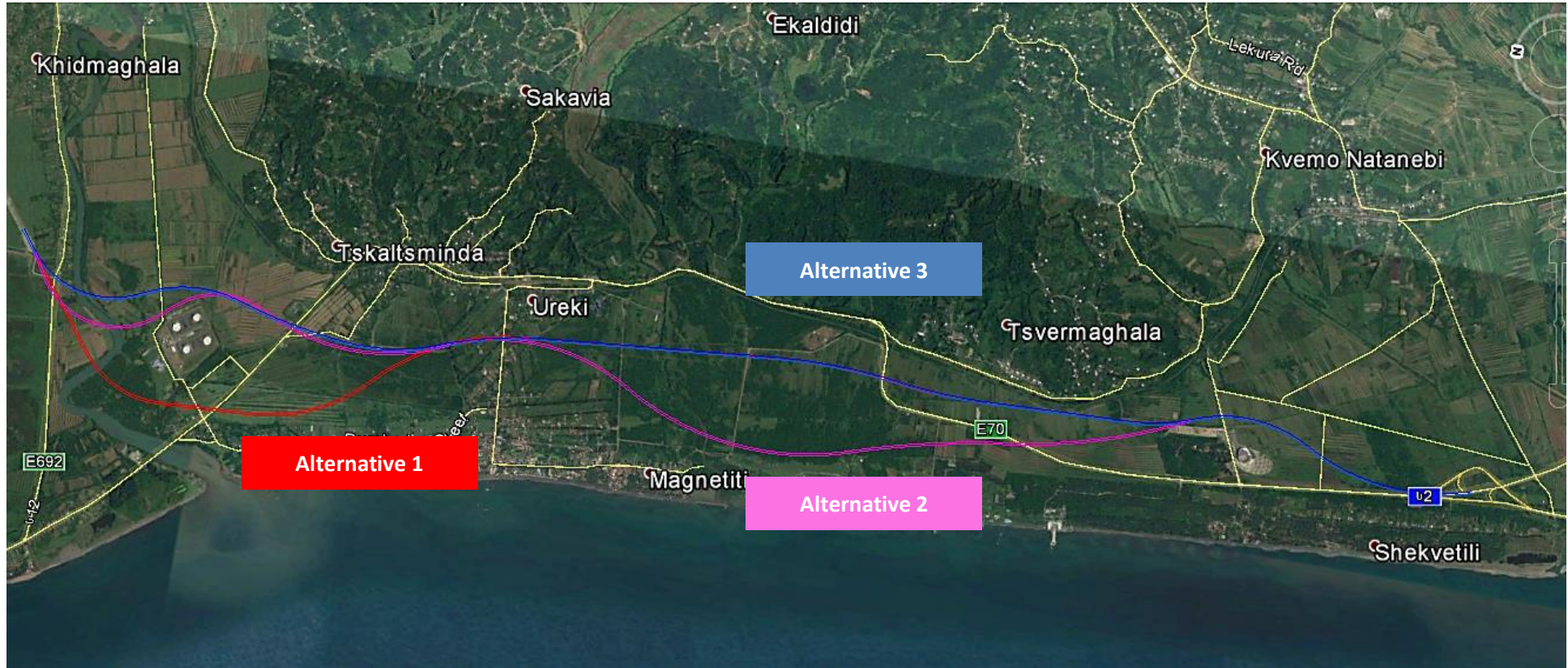


Figure 2. Alternative alignments
(in the section from Ureki up to the Black Sea Arena Alternatives 1 and 3 coincide)

construction works, operating the highway in its current poor condition has negative environmental and social impacts from traffic jams, noise, low speed, and high emission. In the future with consideration of increase traffic flow, the situation will worsen. On the global scale, under the "do-nothing" scenario, local communities would lose opportunity of benefiting from all positive effects associated with the highway improvement, including profits resulting from increased cargo turnover and tourism. Therefore, as the potential positive impacts of the project surpass its possible negative impacts, the "do-nothing" option was discarded.

Out of the three alternative alignments an alternative alignment with minimum impact on recipients was selected.

9. PROJECT DESCRIPTION

As mentioned above the project (Alternative 1) will be a completely new section of the highway. The total road length will be 14.1km. The project will include bridges over Supsa, Sepa and tributary. The longest structure is planned to be the bridge over Supsa (165m). The new road will be 26.5m wide. This includes 4 lanes (2 lanes per direction) 3.75 m wide each, central reserve - 4m, paved and unpaved shoulder 2.5 and 3m wide respectively and 0.75m wide walkways. The central reservation will separate two pairs of the highway lanes. Paved shoulders will be provided for breakdown and emergency use. Surface water drains, safety barriers, lighting and signage will be arranged for safe operation of the upgraded section of the highway. According to the project 4 interchanges (Trumpet like, Partial clover type, Clover modified using nearby quadrants' and Diamond type) will be built, existing interchange, a part of the newly built Kobuleti bypass will be adapted to the new conditions – one new ramp and few changes of two existing ramps will be required.

The design speed of 120km/h is applied. 40 km/h, 60 km/h, 80 km/h or 100 km/h depending on the solution is adopted for the interchange.

The new section runs through agricultural lands and small forested areas with mainly secondary vegetation. Alignment starts on the right bank of the Supsa river, crosses the river, bypasses Supsa Oil Terminal from the west, running between the terminal and the residential buildings located west to the alignment. (Distance from the nearest building and the terminal area to the axle of the new road is 20m and 21m respectively). After the bridge the road overpasses small abandoned cemetery. Alignment crosses the road to the terminal and the E-70 highway. In these sections two underpasses are planned. The straight section is followed by interchange and a left curve (R=1,500m) leading to the local Ureki-Magnetiti road and crosses the mentioned road. This crossing is the only point where impact on residential houses can be avoided. Starting from the crossing site the road goes straight, than has two curves (R=5,000m and R=-5,000m), crosses Sepa river, its tributary, E-70 highway, overpasses existing road, has another straight section, curves leftwards (R=1,500m), than has a right curve (R=12,000m), crosses the road near the Black Sea Arena and connect to the Kobuleti bypass road. (see Figure 2)

Based on experience gained from the implementation of other similar road projects, it may be assumed that the construction may involve a total workforce of about 200. Out of these workers 60% to 70 % may be local workforce, which could be hired as semi-skilled or unskilled workers during the construction period.

Land acquisition needs and resettlement issues are considered in a separate document - Resettlement Action Plan. Summary of the land acquisition document is incorporated in the final version of the ESIA report.

10. ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

The ESIA process included the following activities

- Review of available technical information and planning/specification of the scope of works;
- Baseline data gathering and analysis;
- Assessment of expected impacts;
- Outlining of mitigation measures; and
- Development of environmental management and monitoring plans.

The ESIA process was a combination of desk work and field work, comprising literature review, data collection from various agencies, visual observation (flora and fauna survey) and fact finding along the RoW, noise and air modelling and analysis of the collected information.

Results of engineering-geological and topographic survey and technical information provided by design team were considered. Impacts of the project activities to be implemented outside the RoW - such as construction camps, temporary access roads, car stationing area - have been considered as well. On the initial stage of the ESIA, spatial boundaries of the study area were defined to allow identification and assessment of the expected impacts and to enable comparative assessment of project alternatives in a given environment.

11. ENVIRONMENTAL BASELINE

The ESIA report presents information about the physical, biological, and socio-economic characteristics of the environment alongside the project alignment. The purpose of this description is to establish environmental baseline, to identify potential sensitivities, and to suggest adequate response through measures that are appropriate to avoid, minimize, or mitigate potential adverse impacts.

The baseline studies included the following components:

- Climate and meteorology;
- Geology, geomorphology;
- Hydrology, hydrogeology;
- Soils, landscape and land use;
- Air quality and noise;

- Seismic conditions and natural hazards in the area;
- Habitats, flora and fauna;
- Historical and archaeological sites; and
- Social environment.

The new section of the highway passes through rural areas, where industrial pollution of environment is insignificant. No polluting or noise-intensive industries exist in the region nowadays.

Physical environment around the subject section of the highway is not rich in biodiversity (species composition is meant). There are no designated protected areas near the project site. Botanical survey has not revealed any protected tree species in the forested and other areas under the direct impact zone of the project. However, it should be mentioned that alignment in the section near the Supsa River (left bank of the river, near Supsa Terminal) runs close to the waterlogged area near the river delta. In existing river crossing, on the left bank of the Supsa river, and in the waterlogged areas in Shekvetili - Spring snowflake has been registered. The plant is not protected, though has decorative value and used to be harvested and sold, providing minor, but still, a certain source of income for local residents. The plant is found in damp woodlands, scrub, hedges and meadows over a range of altitudes. It is often found in hilly areas on calcareous soils. Another plant worth to mention in this section and other areas cut up with the drainage canals is rare freshwater species - Colchis Water-Chestnut. This species is endemic to the Kolkheti lowland and is mainly found in the Abkhazeti, Guria, Adjara and Samegrelo floristic regions. These two species are considered as requiring particular attention on pre-construction and construction stages. In the forest areas species registered in the direct impact are represented mainly by Alder, lianas such as Perfoliate honeysuckle, Common ivy, Silkvine and Blackberry bushes.

As for fauna, protected fish species in the river has been mentioned as sensitive recipients to be paid particular attention to. Of terrestrial animals Marsh turtle protected under international protected species (IUCN) is widely met in waterlogged areas and ponds within the limits of the project area.

Research of the social baseline revealed several sensitive human aspects of the project implementation such as land alienation, relocation, and impact on the roadside businesses caused by diversion of the traffic flow to the new alignment. Subsistence of the majority of affected households considerably depends on the land plots and small businesses the ownership and use of which will be altered in the course of the project implementation. This finding emphasizes the importance of diligent planning and timely provision of adequate compensation and restoration of livelihoods by developing and implementing of a Resettlement Action Plan (RAP) in accordance with the guiding principles provided in the Resettlement Policy Framework (RFP).

12. EXPECTED IMPACTS AND MITIGATION

May risks and impacts are expected to be observed during construction. Risks of the construction phase include impact on surface water, vegetation and soil, disturbance of terrestrial wildlife, noise and emissions, physical relocation, agricultural land take, and disruption of economic activity for several roadside traders. Operation during operation of the road will be limited to noise and emissions creating nuisance for the residents living closest to the new road and disturb animal world.

During impact assessment all risks, including technical, environmental and social, were carefully examined in order to develop a safe and less damaging alternative. The risks related to the selected alternative have been ranked as moderate.

According to assessment most environmental impacts are manageable through the developed technical solutions, implementation of relevant mitigation measures and adherence to conventional good construction practice.

Taking into account the location and sensitivity of human settlements and environmental receptors, the following mitigation measures were developed to mitigate the main risks associated with the project implementation:

- Impact on vegetative cover, fauna and habitats: Relocation of protected species encountered in the project corridor to similar habitat outside the impact area. Clearing of the RoW for the new alignment will imply removal of vegetation, including cutting of trees. Loss of vegetation will be kept at the possible minimum. Removal of trees for project needs will not cause functional damage to the ecosystem, however compensatory tree planting has been recommended within the road corridor at the ratio of 1:3 (except for the trees cleared from the private land plots). Selection of species for planting will be based on the natural composition of local flora.. Greening of the construction sites along the RoW, as well as maintenance of the re-planted areas for three years will be included in the contractor works. RD will be responsible for further maintenance of plantations. Recultivation of disturbed areas, including re-planting, will enable to mitigate disturbance of animal species. The selected alignment does not affect any critical habitat.
- Disturbance of local communities: Movement of construction machinery, location of the temporary work camps (if required), and areas for temporary storage of construction materials and waste will be planned to avoid or minimize barriers for a free movement of the local population. Deterioration of the air quality near populated areas will be controlled through oversight on the technical condition of construction machinery. Operation of engines in idle regime will be discouraged. Operation of construction machinery will be limited to the regular working hours. Local roads and/or properties, if affected by movement of construction machinery and heavy vehicles, will be restored to the original condition or improved, as feasible, before contractor leaves the work site.
- Operation of work camps and access roads: Work camps (if arranged) and temporary access roads will be located preferably in the already transformed areas to minimize landscape and ecosystem degradation. The camps will be organized to have

designated areas for storage of materials and waste, and will be equipped with septic tanks. Offsite maintenance/servicing and fuelling of machinery will be encouraged. In case not feasible, the areas designated for fuelling/servicing of machinery will be provided with ground lining and barriers preventing release of spillage. Similar precautions will be taken at the areas allocated for storing of hazardous substances. After completion of works contractor will be obliged to remove all temporary facilities from the site, clean up and restore the area to the original state to the extent possible under the circumstances.

- Air pollution: Air pollution can appear during earthworks, gravel crushing, concrete mixing, and transportation in case of improper maintenance and operation of equipment, inadequate storage of fine-grained materials, and movement of vehicles on unpaved or dusty surfaces. To reduce generation of dust and emissions, construction equipment will be maintained in good working condition. Mixing equipment will be sealed. Concrete mixing plant location will be selected by construction company, the units will be installed at least 300 m away from settlements windward. Speed limits will be set for construction vehicles and all loose material will be covered with tarpaulins when transported off-site with trucks. All unpaved roads and significant areas of uncovered soil will be sprinkled during working hours in dry weather conditions.
- Operation of construction machinery: Technical condition of the construction machinery will be checked on regular basis to minimize air pollution from exhaust, and soil pollution from leakage of fuel/oil. The risk of operational and emergency spills of fuel and lubricants will be mitigated by designation of special parking and servicing sites. These sites to be located away from waterways and other sensitive environmental receptors. The sites will be equipped with wastewater/spill capturing and treatment facilities.
- Impact on soil: With consideration of the landform cuts will not be required. Construction works may cause loss of topsoil and trigger erosion of the riverbed in river crossing areas if not properly managed. These impacts will be mitigated by removal and storage of topsoil for its use for later reinstatement of the area. Landscape restoration will be carried out to ensure stabilization of embankment slopes. This would include seeding of grass. In river crossing sections - planting trees as an option to stabilise the slope may be used as alternative to grass seeding. Discharge of untreated waste water will be prohibited.
- Impact on surface water: No works will be carried out directly in waterways. In river crossings special attention will be paid to safety measures enabling to avoid pollution with spilled fuel/oil from machinery, reduce risk and duration of turbidity increase in these sections of the road. Technical condition of machinery operated near/in the waterway will be checked on daily basis to avoid leakage and operational spills of fuel and lubricants. No stockpiling of construction materials and waste will be allowed in or nearby the waterways. According to the design drainage ditches and settling/treatment unit to avoid pollution of the stream with carriageway (including bridge) runoff and/or in case of road accidents during operation.
- Accumulation of construction waste: Temporary short term storage of waste will be organized by separating household solid waste, inert construction and hazardous waste. The latter, comprising used filters, tires, and lubricants from machinery, will be

kept in a closed and isolated storage. Transportation of waste from the construction sites will follow a time-bound schedule. Hazardous waste will be removed/utilized by licensed contractors. Contract with Solid Waste Management Company will be signed to dispose solid waste and household garbage to the nearest licenced landfill area. Sites for temporary storage of excess material will be agreed with local municipalities. Volumes of disposable waste will be minimized to the extent possible through recycling/reuse and back-filling as feasible. Material importation will be organised so to avoid accumulation of excess material on the sites.

- Operation of quarries and borrow pits: Purchase of inert construction materials will be allowed only from the licensed legal and/or physical bodies. Contractor may also hold or wish to obtain a resource use license and operate own quarries. Opening of new borrow pits will be avoided if those already in operation can be used instead. Operation of quarries and borrow pits, as well as extraction of gravel from river terraces, will be carried out in accordance with the conditions of a license issued by the MENRP. Contractor will be responsible to develop, agree and strictly adhere to quarry/borrow pit operation and re-cultivation plan. Disturbed area must be re-cultivated after completion of material extraction activities. Performance of license holders will be subject to inspection by the Department of Environment Protection Oversight of the MENRP.
- Works near historical, cultural, and archaeological sites: All known historical and cultural monuments along the RoW were identified during the ESIA. The Highway alignment will not cause physical or aesthetical damage to these monuments. To avoid any damage to potential archaeological sites, chance find procedure will be enforced. If an artefact is encountered by a works contractor, all activities on site will be immediately taken on hold and cultural heritage protection authority will be urgently notified. Works will resume only upon receipt of written communication from the latter.
- Occupational health and safety: Work camps (if organised) will be established and operated to ensure the maintenance of adequate hygiene and sanitation. Emissions, discharges and wastes generated by work camps will be controlled by the Department of Environment Protection Oversight. Workers and other personnel will be provided with personal protection equipment and gear. They will receive training on the safety rules and course of action in case of emergencies. Workers who operate heavy machinery will be requested to be licensed and insured.

13. ENVIRONMENTAL MANAGEMENT PLAN

This ESIA report includes the EMP with a full set of the proposed mitigation measures, as summarized above, and monitoring indicators. It also describes the role of the RD in overseeing adherence of construction works to the recommended mitigation measures and identifies the needs for the RD's technical and institutional capacity building for ensuring full environmental compliance of the project.

A supervision consultant will be hired by the RD to provide technical control and quality assurance of civil works. Environmental monitoring will be an integral part of the consultant's assignment and information on the compliance with the EMP will be included into the

supervisor's regular reporting to the RD. The RD will have an overall responsibility for applying due environmental diligence. This will include ensuring quality of the supervision consultant's performance, site inspections, timely response to any issues identified by the consultant or by the RD inspectors, and record keeping on all environmental aspects of the project implementation. Various units of the MENRP will perform monitoring and control of key environmental parameters within the project area as part of their general mandate and annual work plans. The Ministry will also exercise oversight on the adherence to the terms of environmental permit to be issued for the designed works on EWH.

Before commencement of works, the selected contractor will be asked to develop and to have agreed by the RD and the Bank a works organisation plan, waste management plan (including spoil disposal), traffic management plan, health and safety plan, recultivation plan (including borrow pits/quarries (if any) and other disturbed areas) and emergency response plan as listed in technical specifications for bidders. The contractor will also develop and have agreed by the client a plan of greening and landscape reinstatement at a relevant stage of contract implementation. Development of site specific environmental management plans by contractor will be encouraged

14. OPERATION OF THE HIGHWAY

The improvement of the highway aims at minimizing the need of interventions during its operation and maintenance. Ensuring safe and good environmental performance will be a high priority at the operations stage and will comply with the requirements of the national legislation and the best international practices.

Traffic related noise modelling carried out for operation stage of the project showed that noise level in the residential areas will be exceeded in several locations, where installation of noise barriers is planned.

RD, through an outsourcing arrangement, will permanently maintain and, in a longer term, improve greening along the RoW. Regular collection of solid waste along the highway will be organized by contractor identified by the RD. State technical control of the road through regular oversight and inspection by RD will be provided.