EXECUTIVE SUMMARY

Introduction
Georgia is an important transport corridor connecting Europe and Asia and the development of the transport infrastructure has become a national priority. The Government of Georgia (GoG) requested the World Bank to support modernization of the East-West Transport Corridor. Three projects for the improvement of the E-60 East-West Highway are ongoing with the Bank financing. The Third East West Highway Improvement Project (TEWHIP) covers a section of the Highway between Sveneti and Ruisi. In the course of the TEWHIP implementation GoG requested the World Bank inclusion of additional works into the TEWHIP financing plan. These works include construction of a 3 km long bypass road and an additional bridge over the Liakhvi River. The bypass road and the additional bridge are to connect several local villages between each other and with agricultural plots as well as to provide them connection to the Groi-Tskhinvali road avoiding the Highway and without making long loop turns. The bypass is also essential for moving agricultural machinery and non-motorized transport within the project area. During construction works on the highway the bypass road and the additional bridge will serve as a detour for the mainstream traffic. Construction of the bypass and the bridge had not been included in the initial design of the TEWHIP, but later it was found essential for meeting the needs of local population and for facilitating works on the Highway. The World Bank agreed to include additional works into the TEWHIP upon request of the GoG, provided the high importance of the bypass road and the additional bridge.

A Regional Environmental Assessment (REA) and an Environmental Management Framework (EMF) were developed to cover the larger section of the Highway between Sveneti-Ruisi-Rikoti Tunnel. An Environmental Impact Assessment (EIA) was carried out for Sveneti-Ruisi section of the Highway, including an Environmental Management Plan (EMP). Once the additional works had been included into the TEWHIP, a supplementary EIA was commissioned to examine specific environmental impacts which these works may have in addition to or in difference from those covered by the original EIA, and to recommend respective mitigation measures.
The original EIA report had benefited from the Environmental Scoping Review undertaken by BT Ltd. in 2006 and the contributions by Kocks Consulting and Nippon Koei UK. The ancillary EIA was carried out by an individual consultant commissioned by the GoG.

**Technical and Environmental Standards and Regulations**

The proposed works will be implemented in compliance with the Georgian legislation and environmental standards, as well as the World Bank’s safeguards policies. These regulations required screening of the project with the purpose of its environmental classification, and determination of the scope and extent of its environmental assessment.

**Environmental Screening**

The proposed additional works include new construction and reconstruction of a local road (3 km total length) and works in a waterway (160 m new bridge over the Liakhvi River). Although these activities are smaller in scope and carry lesser environmental risks than a typical Category A operation, they will be implemented under the Category A TEWHIP and therefore fall under this same Category. According to the World Bank OP/BP 4/01 Environmental Assessment, the EIA was carried out for the additional works and an EMP was developed. Present EIA Report is subject to the State Ecological Expertise and requires environmental permit as per environmental legislation of Georgia.

**Public Participation**

The initial environmental overview of the original TEWHIP was carried out at the early stage of its preparation and the Report with its findings was publicly discussed on September 20, 2007 in the office of Gori\(^1\) municipality. The draft EIA Report was posted on the web page of the Roads Department of the Ministry of Regional Development and Infrastructure (RDMRDI on April 14, 2009. Several hard copies of the document were made available at the RDMRDI’s office and Gori municipality. RDMRDI organized the second round of public consultation meetings on June 29 and 30, 2009. One meeting was hosted by RDMRDI office in Tbilisi and the second meeting was held again in Gori municipality.

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\(^1\) Administrative center close to the TEWHIP site.
The present EIA Report, which supplements the EIA Report for the original TEWHIP to cover additional works for the construction of the bypass road and a bridge, will be disclosed in Georgian and English languages through the RDMRDI web page and several Georgian hard copies will be delivered to office of the Ortasheni\textsuperscript{2} local governing body. A public consultation meeting will be scheduled to discuss this draft EIA Report. The date and venue of such meeting will be advertised through the national and local media accessible for the affected communities. Representatives of the Ministry of Regional Development and Infrastructure, MEPNR, municipalities of Gori and Ortasheni, and the lead environmental NGOs will be additionally contacted for invitation. Feedback from the public consultation will then be incorporated into the draft EIA Report, after which the finalized document will be re-disclosed in country and the World Bank’s InfoShop.

**Sensitive Environmental Receptors and Potential Impacts**

The bypass road passes mostly through the significantly transformed landscape, away from protected areas and natural habitats. The main environmental impacts are expected at the construction phase and come from clearing of the right-of-way (RoW); arrangement and operation of the temporary access roads; operation and servicing of construction machinery; sourcing of construction materials; earth works and works in waterways; and generation of the construction and household waste.

Clearing of the RoW will be required for widening of road in the sections where the bypass alignment remains unchanged, and for cleaning route for the new sections. This would imply removal of topsoil, cutting of shrubs and trees, and clearing of some buildings. Operation of the construction camp and access roads would be associated with the generation of additional solid waste and waste water, compression of soil, and noise disturbance. Generation of the construction waste and excess material is also expected. Parking, operating, and servicing of the construction machinery will carry the risk of operational spillage of oils and lubricants, will generate some noise, vibration, dust, and emissions. Supply of asphalt, gravel, and sand carries the risks of damaging landscapes and river beds due to borrowing. Construction works will also have implications for the occupational health and safety of workers/personnel.

Impacts of the improvement of the bypass road during its operation phase are much less significant and diverse. Three environmental aspects of the road operation will be air

\textsuperscript{2} Central village of a cluster of local settlements which will be affected by construction works and also will benefit from the bypass road.
pollution from automobile emissions, noise, and pollution of soil and surface water with litter and drainage from the bypass. Impacts from the operation of the bypass road will significantly reduce once the main works on the Highway are completed and the mainstream traffic gets back to it.

**Project Alternatives**

No critical constraints for the construction of the bypass road and the bridge have been identified during the ancillary EIA and the anticipated impacts of the additional works can be managed by application of adequate construction standards and good environmental practices. Nonetheless, a “do nothing” option had been considered as an alternative. If no bypass is provided, the local communities would suffer inconveniences of poor internal connection, carrying negative social and economic implications for them. Also, managing traffic and ensuring safety on the Highway during works for its upgrading would be much more challenging if no bypass is provided. Finally, safety of the Highway during operation would be compromised if the local traffic involving substandard means of transportation and agricultural machinery is not removed from it. Due to these considerations, the “do nothing” alternative was dropped.

**Project Description**

The bypass road will be used as detour during construction works on the Highway, resulting in high traffic volumes and large proportion of heavy trucks on the road for the first eighteen months after construction of the bypass. Therefore part of the design parameters used in the design are based on the Georgian Standard for Geometric and Structural Requirements for Georgian Roads of Common Use (2009). The designed number of lanes for the bypass road is two, paved carriageway width makes 8.00 m (including safety strip), gravel shoulder width - 2 x 2.00m, the total road width - 12.00m, the minimum cross fall of the bituminous surfaced carriageway is 2.5 % and the maximum - 6 %. For the embankment height less than 3.00m, the embankment slope ratio makes 1:3, whereas for embankments higher than 3.00m, the slope ratio is 1:1.5. For the locations where private properties are affected by the slope ratio of 1:3, the 1:1.5 ratio was recommended to minimize land take.
The design speed of the bypass is 50 km/h due to the characteristics of the terrain and the adjacent settled area. Considering the design speed adopted for the bypass road, the main design parameters are as follows: minimum horizontal curve makes 80.00m, the minimum radius of crest curve - 10.50m, the minimum radius of sag curve - 12.00m, and the maximum grade is 8.0%.

The main design parameters of the proposed new bridge over the Liakhvi River are: 160.00m length, 8.00m+2x1.00m width, five pre-cast beams of 32.00m length each, and six supporting poles, two of which will be installed on the banks and four - within the river bed.

**Environmental Impact Assessment Methodology**
The EIA of additional works under TEWHIP is supplemental to the EIA carried out for the original TEWHIP. Therefore it commenced by defining what additional information and field work had been required for completing the baseline data. The main part of the baseline information is available from the original EIA Report and the present Report refers to that document in many instances. After filling in the specific baseline data related to the proposed additional works, their expected impacts were assessed, mitigation measures outlined, and the environmental management and monitoring plans developed.

**Public Attitude towards the Project**
The local population is generally in favour of the construction of the bypass road and the additional bridge, because they are the main beneficiaries of the bypass which will decrease distances and time required for them to travel between the neighbourhood villages, to access their agricultural land plots, and to connect with the Gori-Tskhinvali primary road. Temporary inconveniences for the local communities are typical impacts of construction comprising noise, dust, and movement of construction machinery; and re-routing of the mainstream traffic to the bypass during the works on adjacent section of the Highway. For a few affected households the most critical issue is the expected resettlement. A more comprehensive feedback from the local population will be received during the upcoming consultation meeting.

**Expected Impacts and Mitigation**
The results of the EIA show that majority of the potential environmental impacts of the additional works under the TEWHIP are associated with the construction phase and are
temporary in nature. The main approach of the EIA was to provide adequate recommendations for the prevention or mitigation of the expected negative environmental impacts. Most of the recommendations provided for the works originally planned under the TEWHIP are directly applicable to the additional works and some are modified to better fit the specific needs related to the bypass road.

- **Impact on vegetative cover:** Clearing of RoW will imply removal of vegetation, including cutting of shrubs and several trees. Loss of vegetation will be kept at the possible minimum. The trees removed from the State owned areas will be compensated at a ratio of 1:1.5, and those cleared from private land plots will be compensated in accordance with the Resettlement Action Plan.
- **Disturbance of local communities:** Movement of construction machinery, location of the temporary work camps, and temporary storage of construction materials and waste will be planned to avoid or minimize barriers for 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. Within the settlements operation of construction machinery will be limited to the regular working hours.
- **Operation of the work camp and access roads:** A work camp arranged for the needs of the original TEWHIP and located in proximity to the site of additional works will be used by contractor. If a need for an additional camp emerges, the contractor may apply to the supervision engineer for agreeing on its location and verifying applicable environmental and safety requirements. The temporary access roads will be arranged in the way minimizing impact on the landscape and nuisance for local residents.
- **Operation of construction machinery:** The technical condition of the construction machinery will be checked on regular basis to minimize air pollution from exhausts oil and soil/water pollution from leakage of fuel. The risk of operational and emergency spills of fuel and lubricants will be mitigated by designation of special parking and servicing sites, to be located away from waterways and other sensitive environmental receptors.
- **Earth works:** Prior to excavation, top soil will be removed and stored separately for later reinstatement of the area. Landscape restoration will be
carried out to prevent erosion and to harmonize the site with the natural setting. This would include seeding of grass and planting trees.

**Bridge construction:** Barriers of inert material will be used during straightening of the banks on the terrace side of the river Liakhvi. The technical conditions of vehicles and machinery working within the river bed and its terraces will be checked daily in order to prevent leakage of fuel and lubricants into the water. No works will be held within the river bed in the period of fish spawning, which lasts from April through mid September. No deposition of materials will be allowed in or near the waterway. During temporarily re-direction of the water flow in the river, arrangements will be made to ensure free movement of fish, as well as protection of the water quality in the flow.

- **Accumulation of construction waste:** Prior to commencement of works, contractor must obtain from the local authorities written permission for temporary storage and for permanent disposal of construction waste and excess material of various types in the designated locations. The plan for disposal of debris shall also be established and approved by construction supervisor. Before transporting construction waste to its final disposal site, it should be piled in places designated for temporary storage of waste.

- **Operation of quarries and borrow pits:** The extraction of the material from the soil and rock quarries can be carried out only in presence of a relevant license. Materials may be purchased only from the licensed legal or physical entities. Only the deposits approved by the environment protection body may be used. Management and reinstatement of quarries will be carried in accordance with all the relevant environment protection standards and principles. Excavation from quarries will be carried out under the thorough oversight of the supervision engineer and the environment protection agencies.

- **Historical, cultural, and archaeological sites:** Project implementation will not have any physical impact on any cultural /historical monuments which exist within the project area, as they are in a safe distance from the RoW, though there is a possibility of chance finds during excavation. In such cases works will be immediately taken on hold and relevant authorities under the Ministry of Culture contacted for further action. Works may resume only upon receipt of written communication from the supervision engineer.

- **Occupational health and safety:** Civil works contractor will be obligated to provide workers and employees with detailed information on the technologies
and equipment used, deliver specialized training in its safe use, give adequate instructions for action in case of contingency, and provide and ensure use of the personal safety gear.

**Environmental Management Plan**

This EIA Report contains the EMP with a full set of the proposed mitigation measures, as summarized above, and monitoring indicators. It also describes the role of RDMRDI in overseeing adherence of construction works with the recommended mitigation measures and identifies the needs for RDMRDI’s technical and institutional capacity building for ensuring full environmental compliance of the project. Institutional arrangements for the implementation of the EMP for the additional works are identical to those for the works under the original TEWHIP. They imply deployment of a supervision consultant to provide technical control and quality assurance of civil works, including environmental monitoring. RDMRDI will have an overall responsibility for ensuring due environmental diligence.

**Operation of the Bypass Road**

Once construction of the bypass road is completed, the mainstream traffic from the Highway will be re-directed to it for facilitating works on the Highway, including construction of two main bridges for each direction of the Highway lanes. During this period of time the bypass road will be loaded much above the expected regular traffic and the special regulations will be introduced to ensure safety of transportation and to provide adequate protection for the local population. Once works on the Highway are completed and the traffic reduces on the bypass, it will serve as a typical local road and the risks of its operation will drop significantly.