

Consultancy Services for PROJECT 1

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July 12, 2017**Ref.: DHK2-RD-1707-0161****To : Mr. Zaza Simonia
Deputy Chairman/Roads Department of Georgia****RE : Submission of Bi-annual Environmental Monitoring Report for January-June, 2017**

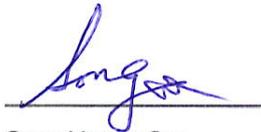
Dear Sir,

Pursuant to the provisions of the General Conditions of Contract (Clause 29), we hereby submit Bi-annual Environmental Monitoring Report for January-June, 2017 prepared for Kobuleti Bypass Road Construction Project (Lot-2).

The Report is being submitted 1 original and 1 copy each in English and Georgian languages respectively (total 4 copies).

We always thank you for your cooperation.

Yours Faithfully,



Song Young Soo

Team Leader

Consultancy Services for PROJECT 1

Loan No. 2560-GEO: ROAD CORRIDOR INVESTMENT PROGRAM – PROJECT 1

Encl.: Bi-annual Environmental Monitoring Report for January-June, 2017 (Lot-2) – 4 books, 2 CD

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2017 წლის 12 ივლისი
Ref.: DHK2-RD-1707-0161

ადრესატი : ბატონი ზაზა სიმონია/
თავმჯდომარის მოადგილე/
საქართველოს საავტომობილო გზების დეპარტამენტი

თემა : 2017 წლის იანვარი-ივნისის ნახევარი წლის გარემოს დაცვის
მონიტორინგის ანგარიშის წარმოდგენა

ბატონო ზაზა,

კონტრაქტის ზოგადი პირობების №29 მუხლის თანახმად, გიგზავნით 2017 წლის იანვარი-ივნისის ნახევარი წლის გარემოს დაცვის მონიტორინგის ანგარიშს, მომზადებულს ქობულეთის შემოვლითი გზის მშენებლობის პროექტისთვის (ლოტი 2).

ანგარიში შედგება 1 ორიგინალისა და 1 ასლისგან, თითოეული ინგლისურ და ქართულ ენებზე (სულ 4 წიგნი).

მადლობას გიხდით თანამშრომლობისთვის.

პატივისცემით,



Song Young Soo
Team Leader

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დანართი: 2017 წლის იანვარი-ივნისის ნახევარი წლის გარემოს დაცვის მონიტორინგის
ანგარიში (ლოტი 2) – 4 წიგნი და 2 CD

BI-ANNUAL ENVIRONMENTAL MONITORING REPORT

Loan No. 02560 – GEO
JANUARY – JUNE 2017



REPUBLIC of GEORGIA: ROAD CORRIDOR INVESTMENT
PROGRAM – PROJECT 1, CONSTRUCTION SUPERVISION OF
KOBULETI BYPASS ROAD

FINANCED BY THE ASIAN DEVELOPMENT BANK

Prepared by: DOHWA Engineering Co., Ltd. Korea
For: Roads Department of the Ministry of Regional Development and
Infrastructure of Georgia
Endorsed by: Mr. Zaza Simonia (Deputy Chairman)



June 2017

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EXECUTIVE SUMMARY AND CONCLUSIONS

1. A segment of the East-West Highway between Azerbaijan and Georgia and part of the Poti – Batumi – Sarpi road along the western coast of the country known as **Adjara Bypass Project** is being constructed by the Government of Georgia under loan financing from the Asian Development Bank. The Project was determined to be a **Category A** environmental project for which an EIA was processed. The total road length is around 45 km, mostly 2-lane (except in the vicinity of the Makhinjauri tunnel where it is connecting to existing 4-lane) with a number of bridges, culverts, retaining walls, and tunnels. Currently, out of the 4 Contract packages, Contract 1 construction work has been completed, and Contract 2 is actively being constructed with Sinohydro Company (China) as the Contractor and supervised by Dohwa Engineering Co., Ltd. (South Korea) as the Engineer.

2. Within the framework of the project's environmental management, the supervision tasks consist of continuous monitoring by the CSC (the Engineer), environmental monitoring and management of project implementation and assistance in ensuring the implementation of environmental management practices at each stage of the construction. The environmental monitoring is to be carried out by an International Environmental Specialist with the support of domestic environmental specialists. The specialists will develop an environmental auditing protocol for the construction period, formulate a detailed environment monitoring and management plan (EMMP), regularly supervise the environmental monitoring, and submit periodic reports based on the monitoring data and laboratory analysis reports. The specialist will also develop a program for hands on training of contractor's staff in implementing the EMMP.

3. During this current monitoring period, a number of environmental and safety issues were observed by the monitoring team and brought to the attention of the Contractor for corrective measures. During the Environmental Monitoring and Inspection Audit carried out in January-June, 2017 and April and May, correspondingly, which was attended by the head of Environmental Division of the Roads Department of Georgia Mr. G. Sopadze, ADB Country Environmental Focal Mr. Duncan Lang and International-Regional Environmental Consultant of RETA of the ADB Mrs. K. Dgebuadze, some environmental, health and safety (EHS) issues were observed which are generally categorized as follows: (i) Main road and access roads; (ii) Camp sites (iii) quarry site, (iv) Rivers crossing the main road (v) general safety concerns, (vi) Documentation and record keeping requirements.

4. Following the inspections of the environmental specialists, an Environmental Action Plan was drafted for the implementation of necessary measures, which is shown in table #12.

PART I: INTRODUCTION

PRELIMINARY INFORMATION

1.1 Project Background and Objective of the Environmental Monitoring Activity

5. The Republic of Georgia, with its 3.72 million people (as of January 1st, 2017 – except of occupied territories), is bounded on the north by Russia and the Caucasus mountain range, to the south by Armenia and Turkey, to the west by the Black Sea and the east by Azerbaijan. With reference to ADB's Project Data Sheet (PDS)¹, the Government of Georgia is intending to develop the subregional multi-corridor to make the most of the country's locational advantage as a transit hub for the Caucasus and for Euro-Asia road transport, particularly by providing a more efficient route for Turkey and Armenia related traffic. This sub-regional multi-corridor will also ensure Government's new strategic vision of the transport network security. The PDS identifies important of development objectives for an efficiently functioning multi-corridors such as (i) reduction of the cost of subregional and international transport, benefiting both the local economy and the economy of the subregion, and thereby stimulating the development of Euro-Asia trade links; (ii) the subregional multi-corridors also serve as principal domestic corridors linking the major cities, ports and tourist centers; (ii) and their development will enhance economic growth through more efficient passenger and freight transport, while enhancing safety.

6. In the ADB's Report Recommendation to the President (RRP, September 2009)² the development potentials of the East-West Highway between Azerbaijan and Georgia have been highlighted, with the ports of Poti and Batumi as the exit points in the Black Sea. These ports also serve the same function to the Agrak–Kapan–Yerevan–Bavra road in Armenia with two southern sections in Georgia. A major segment of this trade and tourist route is the 81 km Poti – Batumi – Sarpi road along the western coast of the country. This road segment, mostly located in the Adjara Autonomous Republic, is a key highway for international transit route in Georgia and a major link to beach resorts in Batumi and Kobuleti. During the tourist season, this road experiences a high volume of traffic and significant increase of accidents.

7. Because of these aforementioned issues and features, the Government of Georgia has decided with ADB's assistance, to construct the so-called Adjara Bypass Project along the Black Sea in Adjara region. The Project was determined to be a **Category A** environmental project for which an EIA was processed. The Project will construct a 2-lane new road (45km), except along a 1-km stretch near Makhinjauri tunnel, where it will merge with the existing 4-lane road. In addition, the Project will have a number of new bridges, culverts, retaining walls, and tunnels. The entire project road is packaged into 4 contracts³ for preparation of detailed designs and implementation as follows:

- Contract 1 – Km 0 to Km 12.4 bypassing Kobuleti Town – a new alignment; widening of existing road from Km 31.3 to Km 33 near Makhinjauri tunnel
- Contract 2 – Km 12.4 to Km 31.3 bypassing Kobuleti Town – a new alignment
- Contract 3 – Km 32.3 to Km 48.470 bypassing Batumi Town – a new alignment

8. For the implementation phase of the project, construction supervision scope has been tendered with the following objectives of ensuring that (i) high quality construction is achieved; (ii) designs are carried out to the appropriate engineering standards; (iii) all work associated

¹ ADB-PDS for 41122-023: Loan 2560-GEO: Road Corridor Investment Program - Project 1 (from <http://www.adb.org/projects/41122-023/main>)

² ADB. September 2009. RRP - Proposed Multitranchise Financing Facility Georgia: Road Corridor Investment Program

³ Government of Georgia. MORDI-Department of Roads. February 2012. Environmental Impact Assessment

with the project are carried out in full compliance with the designs and specifications; (iv) the EA's engineers and domestic consultants receive in-country and international training in selected areas of tunnel design and construction and pavement design; (v) resettlement, social, environmental, road safety, and monitoring are implemented in accordance with the recommendations of various studies, plans, analysis of the project.⁴ Contracts 1, 2, are covered in Tranche 1 while Contract 3 will be covered in Tranche 2.

9. As mentioned in the Terms of Reference (ToR) of the Construction Supervision, the environmental aspects would entail environmental monitoring and management of project implementation and assistance in ensuring the implementation of environmental management practices at each stage of the construction. In addition, the environmental specialist will develop an environmental auditing protocol for the construction period, formulate a detailed environment monitoring and management plan (EMMP), regularly supervise the environmental monitoring, and submit periodic reports based on the monitoring data and laboratory analysis reports. The specialist will also develop a program for hands on training of Contractor's staff in implementing the EMMP⁵.

1.2 The Project Area

10. The Kobuleti Bypass section is part of the so-called Adjara Bypass Project along the Poti – Batumi – Sarpı road located the western Black Sea coast of Georgia. The project road also forms part of the main road corridor East-West Highway between Azerbaijan and Georgia. Its connection with the Black Sea ports of Batumi and Poti and the tourist beaches in Kobuleti makes this road an important trade and tourism road for Georgia. Information and data on the Project Road has been extensively elaborated in the EIA documents for the project.

11. Focusing on the entire 45 km project road, the first 16 km and the last 4 km of the project road alignment traverses flat terrains of coastal plain with elevations ranging from 0 to 30 m. The rest of the project road runs through a rolling and hilly terrain with elevations ranging from 20 to 192m. In terms of geology, the project area shows manifestation of several tectonical features such as synclines and anticlines, folds and faults. It is underlain by bedrocks which are volcanogenic sedimentary rocks represented mostly by basalts with tuffa, gravellites and marls. The rocks show signs of intense weathering and disintegration due to the wet subtropical climate. As a result the surface strata generally consist of thick deposits of delluvial (loams and clay) and laterites (loam).

12. In terms of climate, the project area falls within the classification of seaside humid subtropical climatic zone with an average rainfall of 2000mm to 2800mm evenly distributed throughout the year, peaking in September and dipping in May. The average monthly temperature ranges from 5^oC in winter to 22.5^oC in summer; and the average monthly humidity ranges from 73 to 84%, with dominant northeasterly wind direction. The Project road traverses over four (4) major rivers of length more than 15 km, namely Natanebi, Choloki, Kintrishi, and Chakvistskali; five (5) smaller rivers of lengths between 10 and 15 km, viz. Ochkhauri, Achkva, Kinkishi, Dehkva, and Korolistskali; and 16 streams.

13. The recognized protected areas near the vicinity of the construction site is the Ispani mire, which is also a RAMSAR wetland site (number 894) located around 350 meters away from the Project road between Km 6 to 12 of Section 1. This wetland has an area of 770 ha and contains two parts – Kobuleti State Nature Reserve (Ispani II, the northern area – 331.25 ha) and Kobuleti Managed Reserve (Ispani I, the south west area- 438.75 ha). The Contractor is aware of this site and special attention is paid to avoid any direct impacts to this protected area.

⁴ ADB. 12 March 2010. Outline Terms of Reference for Consultants for Construction Supervision of Tranche I and Tranche II

⁵ Ibid

14. The project's ecosystem is generally characterized by pastureland with cornfields, rolling lands, and wetlands. There are 55 species of mammals in the area with the bats considered as the vulnerable terrestrial mammal. The area is considered also as one of the important sites for Western Palaearctic birds' migration, such as eagle, vulture, falcon, and owl; other fowl species found are duck, crane, grebe, pelican, etc. Out of the 54 species of reptiles recorded in Georgia, about 16 reptiles can be found along the Project alignment. Out of 12 species of amphibians that thrive in Georgia, 10 of them exist in the Project area. In terms of fisheries, there are 47 freshwater and anadromus fish species occur in rivers, and streams of Adjara. The Black Sea salmon (*Salmo labrax*) is an endemic and anadromus species that migrates up the rivers of Kintrishi, Chakvistkali, Charkha during the spawning season.

15. The baseline environmental information gathered during the drafting of the EIA for the project is as follows:

Table 1: Baseline Information for the Project Road

| Environmental Aspect | Parameter | Value |
|-----------------------|---|---------------------------------|
| Surface Water Quality | Total dissolved solids (TDS) | 44 to 164 |
| | Dissolved Oxygen (DO) concentration | 7.6 to 10 |
| | Nitrate content | 0.18 to 2.16 mg/l |
| | Hydrocarbons content | less than 0.2 mg/l |
| Groundwater Quality | TDS | less than 300 mg/l. |
| | TDS of spring water near Makhinjauri tunnel | 75 mg/l. |
| | Bicarbonate as the major anion | 36 to 246 mg/l |
| | Calcium as the major cation | 5 to 56 mg/l |
| | Total coliform content in the groundwater wells | 1,000 to 2,000 |
| | Total coliform in spring water | 50,000 |
| Noise Quality | Background noise levels | 27-32dBA |
| | Noise levels at a distance of 25m from the centre of the existing Poti – Sarpi road | 74dBA |
| Air Quality | Concentrations of dust (PM) | 0.025 to 0.89 mg/m ³ |
| | CO | 0.11 to 2.04 mg/m ³ |
| | No ₂ | 0.03 to 0.042 mg/m ³ |
| Soil Quality | Lead content | 8 to 19 mg/kg, |
| | Zinc content | 58 to 84 mg/kg |
| | Cobalt content | 10 to 21 mg/kg |
| | Copper content | 13 to 66 mg/kg |
| | Nickel content | 17 to 59 mg/kg. |

16. The estimated population based on January 1st 2017 in Adjara Region is around 339,000, consisting of 54% living in urban areas and 46% in rural areas. The ethnic groups are Georgian (97%), Armenian (2%), Russian (0.25%), Greeks, Abkhaz, etc. The most populated city is Batumi, with a population of 161,200. The Gross Domestic Product (GDP) of Adjara was estimated to be GEL 2,193 million, contributing to 8.1% of the GDP of Georgia. The main industries in Adjara are small scale industry, agriculture and tourism. There are around 41 archeological sites identified near the Project area. A number of cultural monuments were discovered during the archeological expeditions in the ravines of Rivers Choloki, Ochkhauri, Achkva, Kintrishi, Kinkishi, Chakvistkhal, Korolistkhal and Chorokhi. A map of the Project road is shown in Figure 1 below.

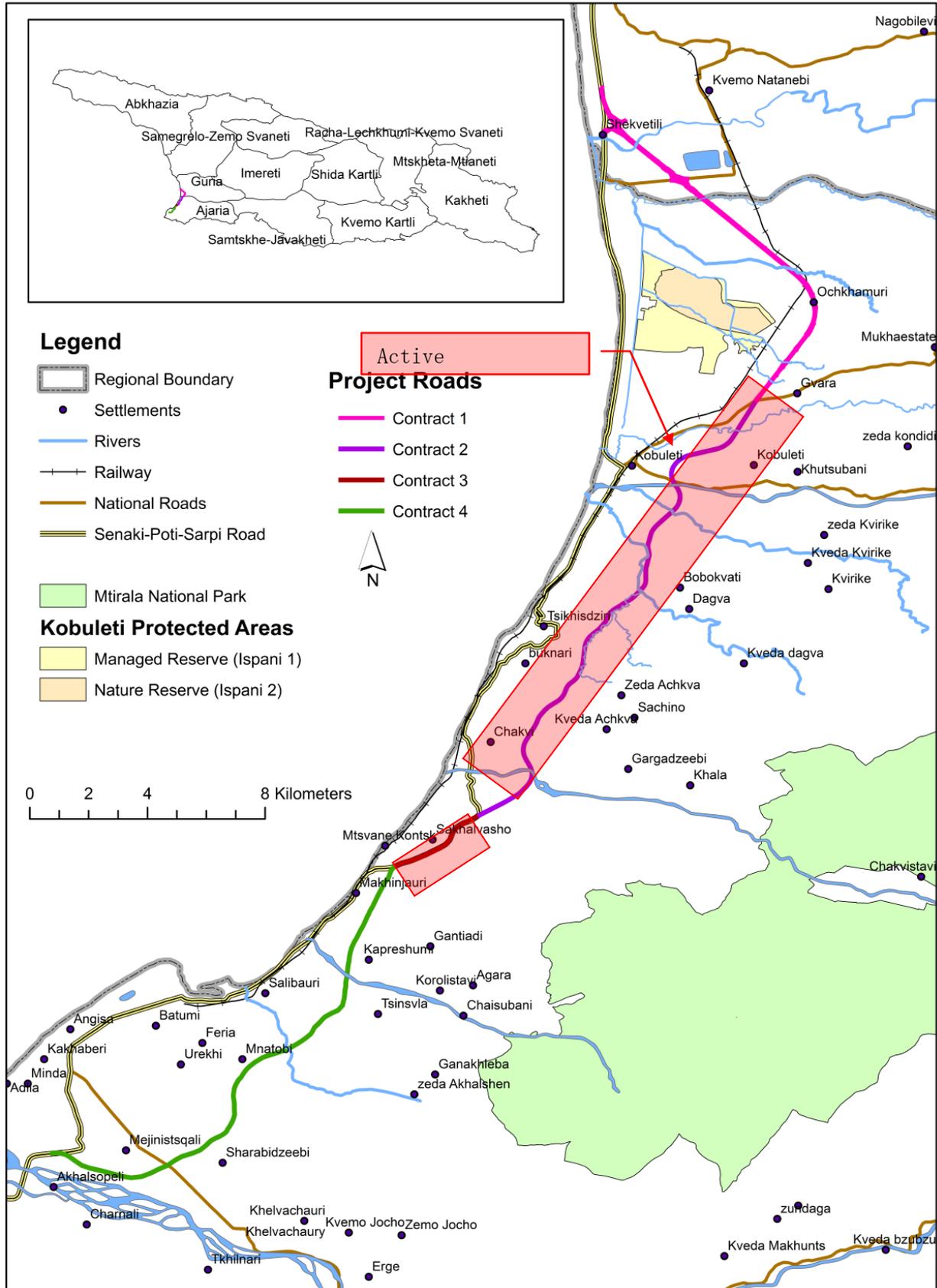


Figure 1: Location Map of the Project

1.3 Project progress for the reporting period

17. As of the current date, the construction is being carried out on section Km12+400 – Km31+259, bypassing Kobuleti Town. Construction progress since commencement of the works up to date is as follows:

Table 2: Construction Progress since commencement of construction up to date within the scope of Lot-2

(Source: Monthly Progress Reports, prepared by the Engineer for the Roads Department of Georgia)

| No. | WORK DESCRIPTION | UNIT | DESIGN | ACTUAL | % | REMARKS |
|---------------------------------------|--|----------------|-----------|------------|--------|---------|
| Setting Out and Site Clearance | | | | | | |
| 1 | Basic survey and detailed setting out of road and right-of-way: | | | | | |
| | On main road | km | 18.858 | 17.094 | 90.64 | |
| | On interchanges, junctions and local roads | km | 8.770 | 4.740 | 54.06 | |
| | Removal and disposal of wire mesh fences | m | 2,615 | 2,615 | 100.00 | |
| | Cutting of shrubs, uprooting and transportation | ha | 117 | 109.98 | 93.69 | |
| | Demolition of Walls | m ³ | 200 | 55.20 | 27.6 | |
| | Tree felling & removal of Trees greater than 0.1m in girth | each | 860 | 191.00 | 22.21 | |
| | Demolition of Buildings | m ³ | 7,650 | 4,463.86 | 58.35 | |
| | Removal & Disposal of Concrete Fences | m | 300 | 31 | 10.33 | |
| Earthwork | | | | | | |
| 2 | Removal of top soil, loading and transportation | m ³ | 265,434 | 265,434 | 100.00 | |
| | Excavation of soil and disposal (suitable for embankment filling and unsuitable) | m ³ | 759,655 | 759,655 | 100.00 | |
| | Shaping, leveling and compaction of roadbed surface | m ³ | 278,156 | 245,126.40 | 88.13 | |
| | Construction of embankment (from quarry to fill) | m ³ | 2,490,134 | 2,490,134 | 100.00 | |
| | Transport of Stockpiled topsoil and spread on embankment slopes | m ³ | 134,879 | 112,966 | 83.75 | |
| | Construction of vertical drainage in weak soils (PVD) | m | 548,857 | 308,406 | 56.19 | |
| | Sand blanket, 1500 mm thick | m ² | 55,553 | 54,419 | 97.96 | |
| | Laying geotextile, 250 g/m ² , in reinforced embankment | m ² | 55,533 | 42,845 | 77.12 | |
| Bridges | | | | | | |
| 3 | Construction of Reinforced Concrete Bored Piles (BR #1,#2,#3,#4,#5,#6, #7,#8,#9,#10,#11,#11.1,#11.2) | ea | 1,276 | 1,276 | 100.00 | |

| | | | | | | |
|---|--|----------------|-------|-------|--------|------------------------------|
| | Bridges #1, #2, #4, #5, #6, #7, #8, #9, #10, #11 Construction of Raft/Cap Foundations | unit | 82 | 82 | 100.00 | |
| | Bridges #1,#2,#4,#5,#6,#7,#8,#9,#10, #11 Construction of Pier Columns | unit | 164 | 156 | 95.12 | |
| | Bridges #1,#2,#4, #5,#6,#7,#8,#9, #10,#11 Construction of Cross Beams | unit | 82 | 77 | 93.90 | |
| | Bridges #1,#2,#3,#4,#5,#6,#7,#8,#9, #10,#11,#11.1,#11.2 Construction of Abutments bodies, Wing & Back Wall | unit | 30 | 27 | 90.00 | |
| | Bridges #1,#2,#3,#4,#5,#6 Concreting of cast-in-situ reinforced slab | m ³ | 2,721 | 2,721 | 100.0 | |
| | Bridges #1, #2, #3, #4, #5, #6, #7, #8, #8A, #9 #10 & #11. Installation of Pre-Cast Concrete Sidewalk | m | 6,052 | 6,052 | 100.0 | |
| | Bridges #1, #2, #3 and #4 Installation of transition slabs | m ³ | 207 | 207 | 100.0 | |
| | Bridge #7 #8 & #10 Cast In-Situ Concrete Slab | m | 1,440 | 1,440 | 100.0 | |
| | Bridge #9 Cast In-Situ Concrete Slab | m | 1,180 | 240 | 20.34 | Commenced (MSS) Sept. 2016 |
| | Bridge #11 Cast In-Situ Concrete Slab | m | 920 | 920 | 100.0 | Commenced (MSS) May 11, 2015 |
| Reinforced Concrete Culverts/Underpasses | | | | | | |
| 4 | Pipe culvert (pre-cast), d = 1.5 m | unit | 40 | 40 | 100.0 | |
| | Box culvert (pre-cast), 2.5 x 2.5 m, 4.0 x 2.5 m | unit | 16 | 14 | 87.50 | |
| | Cast-in-situ box underpass, 5.0 x 6.0 m, 4.0 x 4.0 m | unit | 14 | 14 | 100.0 | Corrugated Pipe #32 |

| Tunnels | | | | | | |
|----------------|---|------------------------|----------|----------|--------|--|
| 5 | (Tunnel #1) | | | | | |
| | Excavation and Removal of Soil (Main Tunnel NATM) | 100m ³ | 282.56 | 282.56 | 100.00 | |
| | Excavation and Removal of Soil (Cut & Cover Tunnel) | Soil 100m ³ | 279.77 | 221.00 | 78.99 | |
| | Earth anchor construction(Φ105, Φ12.7mm x 4 strand; 10,12&14m) | ea | 959 | 763 | 79.56 | |
| | Grating Block Concrete (1500x1500x400), Fill Improvement | 100m ² | 21.58 | 17.17 | 79.54 | |
| | Forepoling, Steel Frames, Waterproofing and Shotcrete Application | m | 255.00 | 255.00 | 100.00 | |
| | Drainage Pipes | m | 1,230.50 | 1,230.50 | 100.00 | |
| | Utility Box & Drainage Concrete | 100m ³ | 25.44 | 9.29 | 35.52 | |
| | Main Tunnel (NATM) Lining Concrete | 100m ³ | 36.07 | 36.07 | 100.00 | |
| | Cut & Cover Portal Lining Concrete | 100m ³ | 8.56 | 8.00 | 93.46 | |
| | Tunnel #1 Electrical Construction | l.s. | 1.00 | 0.31 | 31.00 | |

| | | | | | | |
|--|--|--------------------|--------|--------|-------|--|
| | (Tunnel #2) | | | | | |
| | Excavation and Removal of Soil (Cut & Cover Tunnel) | 1000m ³ | 183.49 | 178.05 | 97.04 | |
| | Earth anchor construction(Φ105, Φ12.7mm x 4 strand; 15,16&20m) | ea | 87 | 45 | 51.72 | |

| Asphalt Pavement | | | | | | |
|-------------------------|--|----------------|-----------|------------|-------|--|
| | <i>Asphalt Pavement – Main Road</i> | | | | | |
| | Provide and Construct Granular Subbase, 320mm thick | m ³ | 70,127 | 67,433.82 | 96.16 | |
| | Provide and Lay Granular Base Course, Compacted thickness 150mm | m ² | 181,014 | 175,157.63 | 96.76 | |
| | Provide and Apply Prime Coat as specified including preparation of surface | m ² | 173,378 | 155,557.64 | 89.72 | |
| | Provide and Lay Bituminous Base, compacted thickness 100mm | m ² | 172,678 | 151,693.34 | 87.85 | |
| | Provide and apply Tack Coat as specified including preparation of surface | m ² | 343,422 | 307,503.31 | 89.54 | |
| | Provide and Lay Asphalt Binder Course, compacted thickness 40mm. | m ² | 171,703 | 150,331.74 | 87.55 | |
| | Provide and Lay Asphalt Surface Course, compacted thickness 40mm | m ² | 171,155 | 155,363.97 | 90.77 | |
| | <i>Asphalt Pavement – Ramps at Intersection</i> | | | | | |
| 6 | Provide and Construct Granular Subbase, 260mm thick | m ³ | 22,807 | 6,851.96 | 30.04 | |
| | Provide and Lay Granular Base Course Compacted thickness 150mm | m ² | 64,514 | 38,755.54 | 60.10 | |
| | Provide and apply prime coat as specified incl. preparation of surface | m ² | 60,609 | 20,705.51 | 34.16 | |
| | Provide and Lay Bituminous Binder Course, compacted thickness 100mm | m ² | 60,253 | 20,094.50 | 33.35 | |
| | Provide and apply Tack Coat as specified including preparation of surface | m ² | 58,899 | 20,341.93 | 33.96 | |
| | Provide and Lay Asphalt Surface Course, compacted thickness 40mm | m ² | 59,757 | 20,212.57 | 33.82 | |
| | <i>Gravel Pavement – Service road for local transport</i> | | | | | |
| | Provide and Construct Granular Subbase, 200mm thick | m ³ | 3,089 | 2,530.87 | 81.93 | |
| | Provide and Lay Granular Base Course Compacted thickness 150mm | m ² | 12,885 | 10,616.23 | 82.39 | |
| | Provide and apply Tack Coat as specified including preparation of surface | m ² | 24,577.36 | 24,577.36 | 100.0 | |

| | | | | | |
|--|----------------|-----------|-----------|-------|--|
| Provide and Lay Bituminous Binder Course, compacted thickness 60mm | m ² | 11,826 | 10,530.22 | 89.04 | |
| Provide and Lay Asphalt Surface Course, compacted thickness 40mm | m ² | 13,694.45 | 13,694.45 | 100.0 | |
| <i>Granular Materials for shoulder</i> | | | | | |
| Provide, Lay and Compact Granular Material for shoulders | m ³ | 15,540 | 1,278.36 | 8.23 | |
| <i>Gravel Pavement – Local Road</i> | | | | | |
| Provide and Construct Granular Leveling Layer for Local Roads | m ³ | 1,180 | 1,162.45 | 98.51 | |

1.4 Changes in project organization and environmental management team

18. Environmental monitoring is overseen by the Roads Department, through a special unit called the Resettlement and Environmental Protection Unit. This unit reviews the EIAs and EMPs related to the Roads Department projects and perform monitoring of compliance of the contractor's performance with the approved EMPs, EIAs, environmental standards and other environmental commitments of the contractor. Environmental monitoring in the field is among the work scope of the Engineer (DOHWA), and the tasks of actual monitoring is undertaken by international environmental specialist and two (2) national environmentalists. Spot surveys and assessments of environmental situations and conditions of the project site were conducted to ascertain compliance of the Contractor to the EIA's EMP. Variances from the established baseline environmental parameters were noted and brought to the attention of the Contractor for corrective measures. Whenever necessary, certain modifications on the work program were recommended to assure compliance on the part of the Contractor (Sinohydro Company, China).

19. The Contractor had assigned an environmental, health and safety Director who would be responsible for environmental compliance based on the project EMP (found in the EIA). Likewise, the Contractor has to come up with its own EMP which served also as their guide for their own self-monitoring of the construction's environmental aspects. This is to ensure an efficient monitoring activity at all times.

20. Environmental issues arising from the construction activities should immediately be brought to the attention of the construction supervision team to coordinate efforts in order to immediately mitigate impacts, protect the environment, and safeguard the health and welfare of the local communities. All these are to be conducted within the framework of the overall construction management and supervision. Aspects in the environmental monitoring are reported in a monthly, quarterly and bi-annual basis to the RD (PIU) and ADB. The applied environmental monitoring work coordination set-up for the Project road is represented in Figure 2 below.

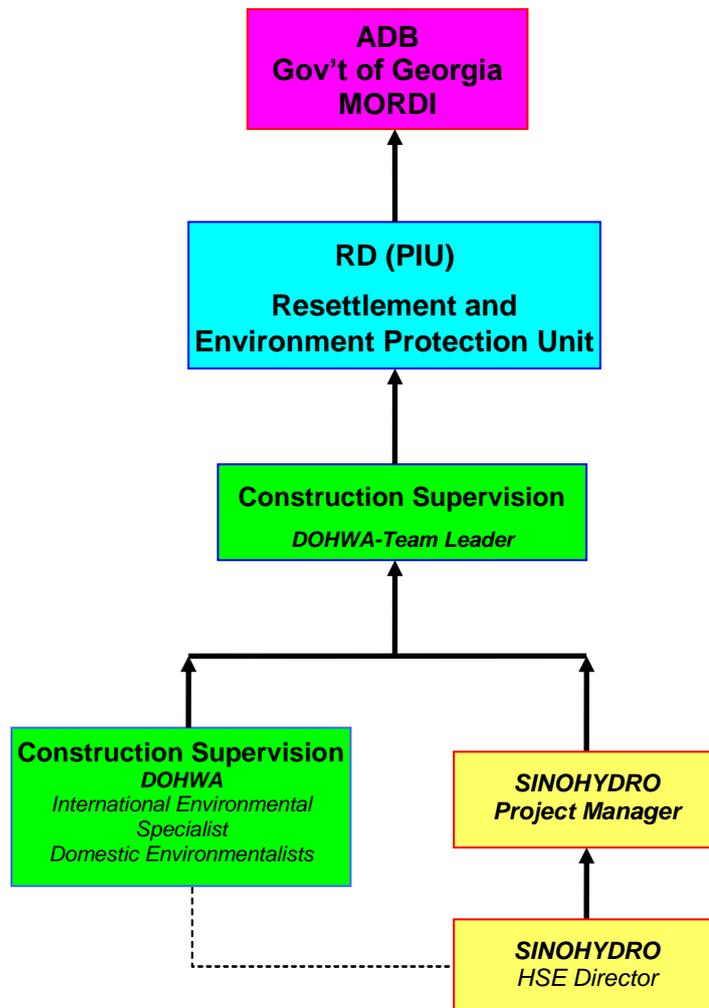


Figure 2: Environmental Monitoring Work Coordination Set-Up

PART II: ENVIRONMENTAL MONITORING

21. As stated in the Environmental Monitoring Plan of the EIA Report⁶ the Contractor should undertake quarterly parametric monitoring of (i) noise and vibration; (ii) surface water quality; (iii) drinking water quality; and (iv) air quality.

Actually, air quality and noise parametric monitoring is carried out on the monthly basis, vibration level in case of necessity, but surface water quality monitoring in case if rivers are effected due to bridge construction activities.

2.1 FRAMEWORK FOR ENVIRONMENTAL MONITORING

22. With reference to MFF 0034-GEO: Road Corridor Investment Program - Environmental Assessment and Review Framework⁷, it is stated that “an EMP will be part of the overall project monitoring and supervision, and will be implemented by the Contractor with oversight from the Supervision Consultant (the Engineer) and PMU. Progress on the preparation and implementation and compliance of an EMP (Contractor’s EMP) will be included in the periodic project progress reports. Specific monitoring activities defined in the IEEs or EIAs and EMPs will be carried out by the contractor and monitored by the PMU. RD will submit reports on EMP implementation to ADB for every six months to Category A and B sensitive projects and annually for Category C projects”.

23. The environmental monitoring and management activities for the project is based on the Environmental Impact Assessment (EIA) Reports drafted for the project road component namely the Environmental Impact Assessment Report. ADB Loan No. 2560-GEO - Road Corridor Investment Program (Tranche 1) - Kobuleti Bypass, Kobuleti-Batumi Section and Batumi Bypass Design Project. This EIA report applies to the sections where construction is ongoing. Based on the EIA’s EMP the environmental concerns which need to be monitored and managed are as follows:

Table 3: Environmental Aspects for the Management and Monitoring

| Environmental Aspect | Subtopics | Frequency & Location |
|-------------------------|--|--|
| 1. Protection of Flora | 1.1 Endangered species | Along the entire road section– twice a month. |
| | 1.2 Vegetation clearance | |
| 2. Protection of Fauna | 2.1 Construction activities | Along the entire road section– twice a month. |
| | 2.2 Poaching | |
| 3. Protection Fisheries | 3.1 Construction of Bridge Substructure | At the bridges: #2 (Riv. Achkva), #4 (Riv. Kintrishi), #5 (Riv. Kinkisha), #7-#8 (Riv. Dekhva), #11 (Riv. Chakvistskali) – once a month. |
| | 3.2 Construction works in the rivers and on the surrounding lands. | |
| 4 Waste Management | 4.1 General Waste | Campsites: Choloki, Ochkhamuri, Laituri, Bobokvati, Chakvi – once a month. |
| | 4.2 Spoil | |
| | 4.3 Hazardous Waste | |
| 5. Fuels and | 5.1 Fuels and hazardous goods. | Campsites: Choloki, |

⁶ Government of Georgia. MORDI-Department of Roads. February 2012. Environmental Impact Assessment

⁷ ADB. Updated on December 2011. MFF 0034-GEO: Road Corridor Investment Program - Environmental Assessment and Review Framework

| Environmental Aspect | Subtopics | Frequency & Location |
|--|---|--|
| Hazardous Goods Management | | Ochkhamuri, Laituri, Bobokvati, Chakvi – once a month. |
| 6. Water Resources Management | 6.1 Hazardous Material and Waste | Campsites and surface water near bridges: #2, 4, 5, 7, 8, 8.1, 9, 11 – once a quarter. |
| | 6.2 Discharge from construction sites | |
| | 6.3 Construction of Bridges/drainage structures in streams/ivers | |
| | 6.4 Soil Erosion and siltation | |
| | 6.5 Construction activities in water bodies | |
| 7. Drainage Management | 7.1 Excavation and earth works, and construction yards | Along the entire road section–once a month. |
| | 7.2 Fresh road cuts may immediately trigger intensive erosion during construction and drastic increase of sedimentation | |
| | 7.3 Ponding of water | |
| 8. Soil Quality Management | 8.1 Earth filling with borrow material | Along the entire road section–once a month. |
| | 8.2 Storage of hazardous and toxic chemicals | |
| 9. Top Soil Management Plan | 9.1 Land clearing, storage and further use | Along the entire road section–once a month. |
| 10. Topography and Landscaping | 10.1. Land clearing and earth works | Along the entire road section–once a month. |
| 11. Borrow Areas Development & Operation | 11.1 Degradation of borrow areas | Quarries at the territories of Vil. Zeda Sameba and Vil. Shuagele – once a month. |
| 12. Air Quality Management | 12.1 Construction vehicular traffic | At the bridges #1 - #11.2, tunnels #1 and #2 – once a month. |
| | 12.2 Construction machinery | |
| | 12.3 Construction activities | |
| 13. Noise and Vibration Management | 13.1 Construction vehicular traffic | At the bridges #1 - #11.2, tunnels #1 and #2 – once a month. |
| | 13.2 Construction machinery | |
| | 13.3 Construction activity | |
| 14. Road Transport and Road Traffic Management | 14.1 Construction vehicular traffic | Along the entire road section–once a month. |
| 15. Construction Camp Management | 15.1 Siting and Location of construction camps | Construction sites – every week |
| | 15.2 Construction Camp Facilities | |
| | 15.3 Disposal of waste | |
| | 15.4 Fuel supplies for cooking and heating purposes | |
| | 15.5 Site Restoration | |
| 16. Cultural and Religious Issues | 16.1 Construction activities near religious and cultural sites | There was no necessity in monitoring |
| 17. Worker Health and Safety | 17.1 Anthrax | Construction sites – every week |
| | 17.2 Best practices | |
| | 17.3 Water and sanitation facilities at the construction sites | |
| | 17.4 Trainings | |

24. In addition, the following laws and regulations are also considered and used as legal and regulatory framework related to road construction activities of the Contractor:

1. Georgian Law of Environmental Protection, 1996
2. Georgian Law on Ambient Air Protection
3. Law of Minerals, 1996
4. Wildlife Law, 1996
5. Law of Georgia "On the System of the Protected Areas, 1996
6. Law of Georgia on Water Resources, 1997
7. Code of Georgian on Water Resources, 1999
8. Law of Georgia on Soil Protection, 1994
9. Law of Georgia 'On the Red List and Red Book', 2003
10. Law of Georgia on Cultural Heritage, 2007
11. Environmental Standards and Norms: (i) Ambient Air Quality Norms; (ii) Noise Standards;
12. Law of Georgia "On Waste Management", 2015;
13. Technical Regulation on Environment, 2014

For the ambient air quality, the guidelines are as shown below⁸:

Table 4: Ambient Air Quality Guidelines in Georgia

| Parameter | Maximum Admissible Concentrations (MAC) mg/m ³ | Averaging Time |
|-------------------------------------|---|----------------|
| Nitrogen Dioxide (NO ₂) | 0.085 | 30 minutes |
| | 0.04 | Annual |
| Sulfur Dioxide | 0.5 | 30 minutes |
| | 0.05 | 24 hours |
| Carbon Monoxide | 5.0 | 30 minutes |
| | 3.0 | 24 hours |
| Soot (PM) | 0.5 | 30 minutes |
| | 0.15 | 24 hours |

25. Also in terms of the noise quality standards for residential areas ADB requires that the WB/IFC EHS guidelines are followed. According to the IFC, noise impacts should not exceed the levels presented in **Table 5** or result in a maximum increase in background levels of 3 dB at the nearest receptor location off site:

Table 5: IFC Noise Level Guidelines

| One hour L _{aeq} (dBA) | | |
|---|--------------------------|----------------------------|
| Receptor | Daytime 07:00 – 22:00 | Nighttime 22:00 – 07:00 |
| Residential; institutional; educational | 55 | 45 |
| Industrial; commercial | 70 | 60 |

⁸ Government of Georgia. MORDI-Department of Roads. July 2012. Environmental Impact Assessment Road Corridor Investment Program (Tranche 1) Kobuleti Bypass, Kobuleti-Batumi Section and Batumi Bypass Design Project

2.2 SUMMARY OF PERFORMED ENVIRONMENTAL MONITORING ACTIVITIES

26. Within the previous six (6) months, from January to June 2017, the Engineer's two (2) domestic environmentalists have been performing environmental monitoring as outlined in the EIA Report. The results of the monthly monitoring were incorporated in the Chapter "Environment" of the Engineer's monthly reports.

27. Primarily the environmental monitoring activities at various locations at the worksites focused on (i) the quality of atmospheric air; (ii) the quality of drinking water and river water; (iii) the condition of soil; (iv) flora and fauna; (v) the condition of construction equipment and transport; (vi) waste management; (vii) worker safety, hygiene and sanitation; (viii) community health and safety.

28. The Contractor carried out instrumental measurements for air quality and noise from January to June, 2017. Measurement of surface water and groundwater quality was carried out in March, 2017. Water quality measurements should be carried out on a quarterly basis, especially for groundwater in camp sites as this has direct impact on the health of the work personnel. The monthly environmental parameter measurements and observations are summarized below.

- (i) **Air quality** – Particulate matter only (PM); Due to the relatively low intensity of traffic and construction equipment and lack of residential settlements near to the project road no measurements conducted for Sulphur Dioxide, Nitrogen Oxide, and Carbon Monoxide. It is worth to mentioned, that the mentioned is the reason why the test on heavy metal concentration in the soil is not carried out.

The average PM measurements for the last six months construction campsites and construction sites monitored during the reporting period in 2017 indicate that the concentrations are below the threshold levels.

29. A PC-3A Respirable dust detector was used to measure the particulate data collected.

Table 6: PM Measurements (average values in mg/ m³) at selected sites for January-June 2017

| | Location | Permeable limit | Jan | Feb | Mar | Apr | May | Jun |
|---|-------------------------|-----------------|-------|-------|-------|-------|-------|-------|
| 1 | Choloki Campsite | 0.5 | 0.025 | 0.031 | 0,028 | 0.021 | 0.023 | 0.021 |
| 2 | Chakvi Campsite | 0.5 | 0.032 | 0.032 | 0,032 | 0.032 | 0.033 | 0.027 |
| 3 | Bridge #9 | 0.5 | 0.034 | 0.028 | 0,026 | 0.025 | 0.025 | 0.025 |
| 4 | Bridge #11.2 | 0.5 | 0.033 | 0.034 | 0,025 | 0.026 | 0.029 | 0.032 |
| 5 | Tunnel #1 | 0.5 | 0,033 | 0.031 | 0,021 | 0,024 | 0,027 | 0.031 |
| 6 | Tunnel #2 | 0.5 | 0.024 | 0.026 | 0,030 | 0.023 | 0.024 | 0.029 |

- (ii) **Noise Level** – only sites with active construction was taken for noise measurements. Noise measurements were carried out in January-June, 2017. Measurement data is listed in table 7 below. The measurements have been taken at the source locations (at the construction sites). Measurement shows that the noise level does not overcome permeable limits of noise.

30. A Hengsheng HS-5633 noise detection meter was used to collect the decibel readings.

Table 7: Noise Measurements (Average) at selected sites for Jan-June 2017 (dB)

| | Location | Permeable limit (for industrial zone) | Jan | Feb | Mar | Apr | May | Jun |
|---|-------------------------|---------------------------------------|------|------|------|------|------|------|
| 1 | Choloki Campsite | 70 | 53.3 | 55.0 | 45.5 | 55.3 | 55.4 | 55.2 |
| 2 | Chakvi Campsite | 70 | 47.0 | 55.8 | 62.1 | 62.9 | 63.5 | 61.5 |
| 3 | Bridge #9 | 70 | 57.6 | 57.8 | 54.4 | 64.4 | 64.4 | 64.5 |
| 4 | Bridge #11.2 | 70 | 64.2 | 64.5 | 61.9 | 61.4 | 63.0 | 63.7 |
| 5 | Tunnel #1 | 70 | 62.0 | 62.6 | 62.5 | 57.7 | 58.4 | 60.3 |
| 6 | Tunnel #2 | 70 | 61.7 | 62.5 | 64.9 | 52.8 | 54.4 | 56.4 |

(iii) **Ground Water Quality** - Ground water samples were obtained from the Choloki campsite and tested for potable water quality parameters on 7th March, 2017.

31. The water quality measurements indicate that all parameters were within acceptable limits. The results are summarized in Table 8.

Table 8: Potable / Ground Water Quality Measurements in Campsites (March 2017)

| Parameter | Acceptable Limits | Standard | Choloki Campsite |
|--|---|--------------|---------------------------|
| Odor | 2 units | ISO6658 | 0 |
| Taste | 2 units | ISO6658 | 0 |
| Color | 15° | ISO7887 | 15° |
| Turbidity | 3.5 units | ISO7027 | 2.3 |
| pH | 6.0-9.0 | ISO10523 | 7.64 |
| Chloride | 250 mg/l | ISO9297 | 19.6mg/l |
| Ammonia NH3 | 2.0 mg/l | ISO11905.1 | 0.8mg/l |
| Nitrite (NO ₂ -) | 0.2 mg/l | GOST4192 | No |
| Nitrate (NO ₃ -) | 50.0 mg/l | GOST18826 | No |
| Total Iron (Fe) | 0.3mg/l | ISO6332 | 0.17±0035mg/l |
| Total Copper (Cu) | 2.0 mg/l | ISO8288 | 3.08mg/l |
| Arsenic (As) | 0.01mg/l | GOST4152 | 0.006 |
| Lead (Pb) | 0.01mg/l | ISO8288 | 0.001 |
| Dry residue (TDS) | 1000-1500 mg/l | GOST18164 | 144.0mg/l |
| Permanganate index (COD) | 3.0 mg/O ₂ /l | ISO8467 | 2.20 mg/O ₂ /l |
| Calcium | mg/l | ISO7980 | 80 |
| Magnesium | mg/l | ISO7980 | 30 |
| Sodium | mg/l | ISO9964.1-93 | 45 |
| Sulfates(SO ₄ ²⁻) | mg/l | GOST4389-72 | 2.0 |
| Mesophylic aerobic and facultative anaerobic microorganism | 37°- ≤20 CFU 22°- ≤100 CFU (in 100ml) | ISO6222 | 37°c- 45 22°c- 10 |
| Coliform | in 300ml | ISO9308 | No |
| Ecole | In 300ml | ISO9308 | No |
| Fecal | In 250ml | ISO7899-2 | No |
| Salmonella | In 100ml | ISO6340 | No |

(iv) **Surface Water Quality** - Surface water samples were obtained from two rivers crossing the Lot 2 area and tested for selected surface water quality parameters in March 2017. Water samples have been tested from the Riv. Achkva and Riv. Shuaghele. The analytical results of the samples collected (see Table 9) indicate that the water quality parameters were within the regulated limits for both rivers.

Table 9. Surface Water Quality in Lot 2 Rivers (March 2016)

| Parameter | Acceptable Limits | Standard | Riv. Achkva | Riv. Shuaghele |
|--|-------------------------|-------------------------------------|--------------------------|--------------------------|
| Odor | 1 unit | ISO6658 | 0 (none) | 0 (none) |
| Color | 25° | ISO 7887 | 25 | 20 |
| Turbidity | 3.5 units | ISO 7027 | 3.9mg/l | 3.8mg/l |
| Rigidity | mg.eq/l | GOST 4151-72 | 2.0 | 3.43 |
| pH | 6.5-8.5 | ISO10523 | 7.42 | 7.32 |
| Sulfates(SO ₄ ²⁻) | mg/l | GOST4389-72 | 3.1 | 2.1 |
| Chloride Cl- | 300mg/l | ISO9297 | 27.44mg/l | 29.4mg/l |
| Ammonia and ammonium iodine | mg/l | GOST4192-82 | No | No |
| Nitrate NO ₂ ⁻ | 0.08-3.3mg/l | GOST 4192 | 0.28 | No |
| Nitrate NO ₃ ⁻ | 40-45mg/l | GOST18826 | No | 0.3 |
| Dissolved Oxid | mg /O ₂ / l | Collection of Shitskova p..50 .P -2 | 12.90 | 11.61 |
| Total copper (Cu) | 0.3mg/l | ISO 6332 | 0.14mg/l | 0.17mg/l |
| Arsenic (As) | 0.05mg/l | GOST 4152 | 0.008 | 0.007 |
| Magnesium (Mn) | 1mg/l | GOST4974 | 0.0012mg/l | 0.02mg/l |
| Permanganate Index (COD) | 4-6mg/O ₂ /l | ISO8467 | 2.23mg/O ₂ /l | 2.47mg/O ₂ /l |
| Dry particles (TDS) | 1000mg/l | GOS18164 | 68.0mg/l | 60.0mg/l |
| Polyphosphates | mg/l | GOST18309-72 | 0.01 | 0.014 |

PART III: ENVIRONMENTAL MANAGEMENT

3.1 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

32. The Environmental Management Plan (EMP) was designed to avoid, reduce, or at least minimize the adverse environmental impacts that could result from the activities during the implementation and operation of the project. As per the Technical Specification **3001.1 ENVIRONMENTAL MANAGEMENT PLANNING**, “The Contractor shall provide a detailed site-specific (or section-specific) Environmental Management Plan (EMP) which will be based on: (1) Generic/standard EMP structure and mitigation measures for the road construction; (2) Site/section-specific EMP requirements provided by the Employer in his EIAs. Hence, one major requirement is that the Contractor should produce his own EMP appropriate for the project and to be checked by the Engineer’s environmental specialist.

3.2 Site Inspections and Audits

33. As a matter of protocol, site inspections were conducted on various environmental aspects of the project and form part of the Monthly Progress Report. Regular inspections were undertaken by local environmental specialists. During the inspections, several environmental health and safety issues were observed and noted. These issues were subsequently brought to the attention of the Contractor’s personnel as well as discussed following the “Auditing Protocol” and EMMP. The main HSE issues observed were generally concerning with the disposal of unusable materials from the site, submission of waste management plan, complete restoration of excavated quarry, erosion created due to earthworks at Tunnel #2 and general safety issues.

34. Table 10 below shows the schedule of conducted audits and monitoring by PIU and SC during the reporting period.

Table 10: The schedule of conducted audits and monitoring in Kobuleti during the reporting period

| | Kobuleti Site visit | Organization | Date |
|----|----------------------------|---|-------------|
| 1 | Site audit | PIU/RD and DOHWA environmental specialists | 04.01.2017 |
| 2 | Site audit | DOHWA environmental specialists | 25.01.2017 |
| 3 | Site audit | DOHWA environmental specialists | 02.02.2017 |
| 4 | Site audit | DOHWA environmental specialists | 24.02.2017 |
| 5 | Site audit | DOHWA environmental specialists | 02.03.2017 |
| 6 | Site audit | PIU/RD and DOHWA environmental specialists | 28.03.2017 |
| 7 | Site audit | DOHWA environmental specialists | 04.04.2017 |
| 8 | Site audit | DOHWA environmental specialists, RD and ADB Environmental Specialists | 06.04.2017 |
| 9 | Site audit | DOHWA environmental specialists | 03.05.2017 |
| 10 | Site audit | DOHWA environmental specialists, RD and ADB Environmental Specialists | 23.05.2017 |
| 11 | Site audit | DOHWA environmental specialists | 05.06.2017 |
| 12 | Site audit | DOHWA environmental specialists | 25.06.2017 |

35. During the Environmental Monitoring, a number of HSE issues (non-compliances) were noted and brought to the attention of the Contractor. The Contractor's HSE Director joined local environmental specialists on-site inspections carried out along the road stretch under construction, camp sites, and quarry sites. An **Environmental Action Plan** was drafted and mitigation measures were jointly discussed to be implemented within the specified time frames. A summary of the identified issues is presented in the ensuing Table 12.

36. The results of the monitoring carried out in accordance with EMP procedures, which covers the Environmental situation of reports of first and second quarters of 2017 is presented in the chapters below:

3.2.1 Results of Monitoring and Audits

37. Sanitary hygienic condition of the campsites Choloki, Ochkhamuri, Laituri, Chakvi is satisfactory, but at the same time some issues/non-compliances were revealed:

Choloki Campsite

| EHS issues and non-compliances | Corrective measures |
|---|---|
| <ul style="list-style-type: none"> • There is a large number of used tires and scrap accumulated at the camp site; • Existing channels at the entrance of the Site are full of used tires and construction waste made up of rubber and steel; • Tanks full of oil and empty ones are placed exposed at the territory of the camp | <ul style="list-style-type: none"> – Used tires should be delivered to the haulage service and the place, liberated from the waste should be restored; - partly executed, but it needs to be done regularly – Ditch should be cleaned from the waste and construction waste should be delivered for the utilization or on a dump site - pending – Tanks should be placed in secondary containment to hold 110% max volume of oil/fuel stored to prevent oil/fuel spills - pending |

Ochkhamuri Campsite

| EHS issues and non-compliances | Corrective measures |
|---|---|
| <ul style="list-style-type: none"> • Household and construction waste is accumulated at the territory of the camp; | <ul style="list-style-type: none"> – Household and construction waste should be disposed to the dump site - pending |

Laituri Campsite

| EHS issues and non-compliances | Corrective measures |
|---|---|
| <ul style="list-style-type: none"> • Decommissioning of the camp is ongoing, although household and construction waste is still accumulated there; | <ul style="list-style-type: none"> – Household and construction waste should be disposed to the dump site - pending |

Bobokvati Campsite

| EHS issues and non-compliances | Corrective measures |
|---|---|
| <ul style="list-style-type: none"> • Decommissioning of the camp is ongoing, although household and construction waste is still accumulated there; | <ul style="list-style-type: none"> – Household and construction waste should be disposed to the dump site – in progress |

Chakvi Campsite

| EHS issues and non-compliances | Corrective measures |
|--|---|
| <ul style="list-style-type: none"> • Sedimentation basin of the Concrete Plant is not cleaned on a regular basis. | <ul style="list-style-type: none"> – Sedimentation Basin of the Concrete Plant should be cleaned on a regular basis – partly executed |
| <ul style="list-style-type: none"> • Household and construction waste is | <ul style="list-style-type: none"> – Household and construction waste |

| | |
|---|--|
| accumulated at the territory of the camp; | should be disposed to the dump site – partly executed |
|---|--|

3.2.2 Monitoring of road construction sites

38. The following non-compliance issues have been revealed during construction activities of the road:

| EHS issues and non-compliances | Corrective measures |
|--|---|
| <ul style="list-style-type: none"> Some places on the slopes, where facts of ravine formation are identified, are not covered with the top soil and backfilled with the sand-gravel; Grass seeding at the embankment slopes have not been commenced From the right side of bridge #9 muddy water use to flow down to the local road At some construction sites there are household waste scattered (paper, polyethylene bags, PET bottles) | <ul style="list-style-type: none"> Those places on the slopes, where facts of ravine formation have been identified, should be covered with the top soil and backfilled with the sand-gravel – pending Grass seeding shall be carried out in September-October 2017 period as per Technical Specifications Series 3000 – pending It is necessary to arrange water retaining barrier to avoid dirtying local road with muddy water – pending At the construction sites waste bins shall be installed to avoid dirtying territory - pending |

3.2.3 Monitoring of Tunnel Construction Sites

39. The following non-compliance issues have been revealed during construction activities of the Tunnel:

| EHS issues and non-compliances | Corrective measures |
|---|---|
| <ul style="list-style-type: none"> Construction and household waste are scattered at the first and second portals of Tunnel No.1 Erosion was created due to cutting slopes at the Tunnel #2 | <ul style="list-style-type: none"> Territory of Tunnel No.1 has to be cleaned from the residential and construction waste. It should be collected and transported to the Dump Site – partly executed, needs to be carried out regularly Slope shall be strengthened in order to avoid such processes from development - pending |

3.2.4 Monitoring of quarry sites

40. The following non-compliance issues have been revealed during monitoring of sand gravel quarry:

| EHS issues and non-compliances | Corrective measures |
|--|--|
| <ul style="list-style-type: none"> There is no copy of Act on completion of re-cultivation procedure on the quarry located in Vil. Zeda Sameba of Kobuleti Municipality. Quarry located at territory of Vil. | <ul style="list-style-type: none"> Copy of the requested Act has to be submitted to the Engineer - pending In order to restore Natural Habitats, Contractor has to plant bushes and trees and in case of necessity transport Top- |

| | |
|---|---|
| <p>Shuagele has not been completely re-cultivated. Contractor has only levelled surface of the Quarry and did not restore natural habitats (planting bushes and trees).</p> <ul style="list-style-type: none"> • Nowadays the Contractor does not operate any quarry. When necessary Contractor is purchasing sand-gravel materials through private sub-contractors, for restoration of which is the owner of a quarry | <p>Soil there and seed grass as well - pending</p> |
|---|---|

41. In order to solve revealed environmental problems, action plan of EHS non-compliances has been worked out which will be handed over to the Contractor. See table No. 15.

3.2.5 Visual assessment of the Rivers and Waters Stream Environment

42. Following rivers were assessed

| pk | Name of the River |
|----------------------|-------------------|
| Bridge #2 pk 16+20 | Achkva |
| Bridge #4 pk 44+84 | Kintrsihi |
| Bridge #5 pk 54+21 | Kinkishi |
| Bridge #7 pk 68+60 | Dekhva |
| Bridge #8 pk 81+73 | Dekhva |
| Bridge #8a pk 108+37 | Shuagele |
| Bridge #11 pk 170+44 | Chakvistkali |

43. Environmental condition, identified during monitoring of the rivers under the Bridges. Based on Visual assessment during monitoring of rivers and water flows on Lot-II it was concluded that configuration of the river banks of the above listed rivers have not changed as well as Turbidity monitoring has not been carried out, since the Construction of the bridges over the rivers had been completed in 2016.

| Environmental Issues/Condition | Condition | | | | | Shuagele | Chakvistkali |
|---------------------------------------|-----------|-----------|----------|-----------------|-----------------|----------|-----------------|
| | Achkva | Kintrsihi | Kinkishi | Dekhva pk 68+60 | Dekhva pk 81+73 | | |
| River Bank Erosion (Northern part) | Minor | Minor | Moderate | Minor-Moderate | Minor | Minor | Minor |
| River Bank Erosion (Southern part) | Minor | Minor | Moderate | Minor-Moderate | Moderate | Minor | Moderate |
| Sedimentation/ Precipitation | Moderate | Moderate | Moderate | Moderate | Minor-Moderate | Minor | Moderate |
| Construction waste | Abs | Abs | Abs | Abs | Minor | Moderate | Moderately high |
| Household waste (Iron, Plastics etc) | Abs | Abs | Abs | Moderate | Moderate | Minor | Moderate |

44. Recommendations for the improvement of the Rivers' condition and environmental protection:

- Removal of the household and construction waste from under the above listed bridges shall be carried out to the dump area.

Table 11: Status of Observed HSE Issues and Recommendations of Environmental Specialists

(A) Road Section km12.4-km31+250, Lot-II

| Discrepancies of the Health and Safety Issue | Recommended Corrective measures | Deadline for the implementation | Progress |
|--|---|--|---|
| Potable water is used irrationally at the first portal of Tunnel #1 | ➤ Ensure closing of tap of potable water while filling with water at the first portal of Tunnel #1 | December, 2016 | Executed in the 1 st Quarter of 2017 |
| Revised Waste Management Plan is not submitted as per Georgian law “on Waste Management” (which was entered in force since January 15, 2015) | ➤ Preparation and submission of new Waste Management Plan as per Georgian law “on Waste Management” | December, 2016 | Contractor declared that the case is being resolved by the HQ of Sinohydro. Based on the decision of the Georgian government submission deadline of the mentioned document has been postponed till July 1, 2017. |
| Quarry re-cultivation at Vil. Zeda Sameba has not yet commenced | ➤ Immediately start restoration of quarry located at Vil. Zeda Sameba | December, 2016 – January, 2017 | Based on the Contractor’s letter 0022 dated 25.02.2017 quarry has been re-cultivated which is approved by the regional environmental service unit. |

| | | | |
|--|--|--|---|
| <p>Some places on the slopes, where it was identified the facts of ravine formation are not covered with the top soil and backfilled with the sand-gravel.</p> | <p>➤ Those places on the slopes, where facts of initial ravine formation were identified should be covered with the top soil and backfilled with the sand-gravel.</p> | <p>December, 2016 – January, 2017</p> | <p>Partly executed</p> |
| <p>Logs of the trees cut during the construction activities are not disposed into the Dump Site as well. Cut trees are not transported to Chakvi Campsite</p> | <p>➤ Cut trees should be disposed into the Camp Site territories. As for the logs of the trees, scattered along the Design road, should be transported to the Dump Site.</p> | <p>January, 2017</p> | <p>Executed – wood logs are transported to dump site. It is remarkable that 97 cryptomeria trees were stored on temporary basis at the territory of Bobokvati Campsite. Under decree #1737 (dated 29.09.2014) of Georgian Government these tree logs were sold to Georgian Autocephalous Orthodox Church for a symbolic price.</p> |
| <p>Concrete mixer trucks are not washed out according to the established norms</p> | <p>➤ Wash out process of concrete mixer trucks shall be carried out according to the common ecological requirements</p> | <p>January, 2017 Regularly</p> | <p>Partly executed – mainly sediment traps are used</p> |
| <p>Biological or other type of restroom/toilet is not arranged at the second portal of Tunnel #1</p> | <p>➤ Arrangement of biological or other type of restroom/toilet at the second portal</p> | <p>January, 2017</p> | <p>Simple type of restroom/toilet has been ensured</p> |

(B) Choloki Camp Site

| Discrepancies of the Health and Safety Issue | Recommended Corrective measures | Deadline for the implementation | Progress |
|---|--|---------------------------------|--|
| There is large number of used tires accumulated on the camp site. | ➤ Used tires and Scrap Metal should be delivered/sold to outside material haulers and recyclers. | January, 2017 | Discharging of waste was initiated in connection with the closing of Choloki campsite (15.02.2017) |

(C) Ochkhamuri Camp-Site

| Discrepancies of the Health and Safety Issue | Recommended Corrective measures | Deadline for the implementation | Progress |
|---|---|---------------------------------|----------|
| Garbage bins are congested with household waste | ➤ Containers/bins shall be cleaned on the regular basis | Regularly | Executed |

(D) Bobokvati Camp-Site

| Discrepancies of the Health and Safety Issue | Recommended Corrective measures | Deadline for the implementation | Progress |
|--|--|---------------------------------|---|
| Construction waste is scattered at the territory of the camp | ➤ Territory of campsite shall be cleaned from the construction waste | January, 2017 Regularly | Construction waste has been discharged due to closing of campsite |
| Garbage bins are congested with household waste | ➤ Congested Containers/bins shall be cleaned | January, 2017 Regularly | Executed |
| During wash out of concrete mixer trucks, contaminated water is discharged at the adjacent territory | ➤ During wash out of concrete mixers it should be categorically prohibited to discharge contaminated water without discharging through the sedimentation traps | Regularly | Partly executed |

(E) Chakvi Camp Site

| Discrepancies of the Health and Safety Issue | Recommended Corrective measures | Deadline for the implementation | Progress |
|---|---|---------------------------------|---|
| Usable construction materials are not stored as they are scattered on the ground | ➤ Useful construction materials shall not be scattered on the ground, those shall be collected and sorted and stored | January, 2017 | Not executed, territory of campsite shall be cleaned and maintained during starting construction and other materials transported from Choloki campsite. |
| Basin of the Crushing Plant is full of silt and cannot perform its function in normal mode | ➤ Sedimentation Basin of the Concrete Plant should be cleaned from the silt and deepened. Silt should be disposed to the Dump Site. | ASAP Regularly | Executed |
| During filling up water reservoir water tap is not closed on time, which causes irrational use of water | ➤ The Contractor has to ensure timely closing of water taps during filling up water tanks in order to rationally use water resources. | January, 2017 | Executed |

(F) Territory of Laituri Crushing Plant

| Discrepancies of the Health and Safety Issue | Recommended Corrective measures | Deadline for the implementation | Progress |
|--|---|---------------------------------|---|
| Basin of the Crushing Plant is full of silt and cannot perform its function. | ➤ Basin should be cleaned from the silt and deepened. Silt should be disposed to the Dump Site. | January, 2017 Regularly | Crushing plant is demolished and is not functioning, sediment basin shall be destructed |

| | | | |
|---|--|----------------------------|----------|
| Large volume of household waste is accumulated. | ➤ Household waste should be disposed to the Dump Site on time. | January, 2017 Regularly | Executed |
|---|--|----------------------------|----------|

3.2.6 Evaluation of HSE Documentation and Record Keeping

45. Contractor has improved production of the Environmental, Health and Safety aspects which are reflected below as well as the pending issues which are yet to be solved.

| Positive Intervention | Main Environmental, Health and Safety Issues |
|---|--|
| <ul style="list-style-type: none"> • Construction of drainage chutes was actively ongoing in order to avoid wash out of embankment slopes; • Cut slopes were actively strengthened by means of gabion walls and bio Mac Matt; • #1 portal of Tunnel #1 has been maintained as the household and construction waste has been discharged; • Wooden logs scattered along the road were disposed to the dump site; the wooden logs were useless as it would not be possible to use as firewood as there are roots and wooden chucks. It is remarkable that 97 cryptomeria trees were stored on temporary basis at the territory of Bobokvati Campsite. Under decree #1737 (dated 29.09.2014) of Georgian Government these tree logs were sold to Georgian Autocephalous Orthodox Church for a symbolic price. • Cut trees have been counted and registered by special Act with attendance by representative of Forest Department of Kobuleti Municipality; • Trainings about Environment and Safety issues were regularly conducted for the Contractor's labor; • Each construction camps are equipped with precautionary signs; | <ul style="list-style-type: none"> – Some places on the slopes, where it was identified the facts of ravine formation are not covered with the top soil and backfilled with the sand-gravel. – Watering of road at IC #4 during construction did not take place which caused contamination of air by dust. – Contractor did not use appropriate time (March-May) for seeding works. – Waste Management Plan is not prepared for further submission to the Ministry of Environment – Laboratory analysis of potable and surface water are not conducted every quarterly basis. |

3.2.7 Evaluation of General Occupational Health and Safety Practices

46. In January-June 2017, no vital accident was identified.

| Positive intervention | Main Environmental, Health and Safety Issues |
|--|--|
| Warning signs posted at relevant locations (e.g., campsites, road construction sites). | Gaps between guardrails allow cattle to cross into road which is creates threat for motor accidents. |
| On-site clinic with first aid medications and a doctor (in Chakvi Campsite). | When working in high elevations from the ground, workers do not wear fall protection lanyards (PPE). |
| Restroom sanitary condition was improved - liquid soap box was installed. | Safety concerns related to electrical safety (e.g., poor wiring, exposed electrical systems, improper grounding etc.). |
| PPE given to workers to be used during work. Significant improvement in works wearing PPE especially in camp work sites. | Some workers ignore PPE during work. |
| Safety meetings held on a regular basis where safety issues are discussed (every 6 months). | |
| Recordkeeping improved. | |
| Training on PPE use held for workers. | |

3.2.8 Impact on Biodiversity

47. In January-June, 2017 no negative impact on flora and fauna has been identified. No cases of poaching have been fixed.

48. Cut trees within the RoW have been registered, which was concluded by the special Act by attendance of the representative of Forest Department of Kobuleti Municipality. The Act has been handed over to the managers of Kobuleti Municipality in order to consider handing over the trees to the vulnerable group of people as construction or heating materials.

3.3 Non-Compliance Notices

Correspondence about the improvement of non-compliances issues

49. In the first half of 2017, Contractor has received following letters regarding the problematic environmental issues identified during the Environmental Monitoring process. See Table No.13.

Table No.12 - Correspondence about the improvement of non-compliances issues

Status of execution the non-compliances mentioned in the table below is reflected in the tables #11, 13 and #15.

| Letter No. | Date | Subject | Summary |
|------------|------------|--|--|
| 0017 | 26.01.2017 | Regarding restoration of quarry (as per gov't direction #2138 and #1074) | Contractor was instructed to carry out complete restoration of the quarry. |
| 0034 | 24.02.2017 | Regarding Waste Management Plan | The Contractor was informed that due to the change in new law "on waste management", the Contractor has to submit Waste Management Plan to the Ministry of Environment and Protection of Natural Resources by July 1 st , 2017. |
| 0035 | 24.02.2017 | Concerning filling quarry with inert materials | Contractor was requested to submit copy of agreement with the owner of the quarry and the license of excavation issued to the owner of the quarry. |
| 0038 | 25.02.2017 | Concerning seeding grass and planting bushes | Contractor was advised that the most suitable period for grass seeding is from March 1 till May 31, and as for planting trees and bushes March-April. Contractor was instructed to follow Series 3000, 3001, 3003, 3004 of the Technical Specifications |
| 0039 | 25.02.2017 | Regarding laboratory test results of water | Contractor was instructed to carry out laboratory testing of water in the first and following quarters |
| 0049 | 11.03.2017 | Regarding Waste Management Plan | Despite numbers of requests, Contractor was unable to make sorting and stocking of waste and prepare appropriate Waste Management Plan. Contractor was once again reminded to take necessary measures to fulfill the above request. |
| 0050 | 11.03.2017 | Regarding ecological issues | Contractor was requested to resolve those environmental issues which were identified during monitoring process. Particularly, special Act on re-cultivation of the quarry located at the territory of Vil. Zeda Sameba was not submitted; concerning household waste scattered near portal #1 of the Tunnel #1 and others. |
| 0099 | 05.05.2017 | Regarding ecological | Contractor was requested to resolve those |

| | | | |
|------|------------|--|---|
| | | issues | environmental issues which were identified during monitoring process. Particularly, permission for storing cut soil during excavation works of Tunnel #2 was not submitted; at many sections embankment slopes were not covered by topsoil etc. |
| 0114 | 25.05.2017 | Regarding seeding grass on the embankment slopes | Contractor was informed about requirements of Technical Specifications Series 3001-3005 in order to take into consideration when carrying out seeding works. |
| 0116 | 25.05.2017 | Concerning tires scattered on the embankment at BR-01 (Kobuleti Interchange) | Contractor was instructed to dispose used tires which were scattered at the embankment slope |
| 0131 | 12.06.2017 | Regarding Waste Management Plan | Contractor was instructed to prepare waste management plan and submit it to the Ministry of Environment and Natural Resources of Georgia. |

Remarks: Mainly, communication with the Environmental Specialists of the Contractor was made during joint audits and regular Weekly Meetings verbally.

3.4 Corrective Action Plan

50. The Contractor failed to fulfill corrective measures of environmental health and safety issues in a timely manner which is reflected in the Table Nos.11 and 13.

Table 13: Corrective action plan

| Impacted objects | Problems | Mitigation Measures | Implementation date | Status of the activities |
|--------------------------------|---|---|---------------------|--|
| Quarry Sites | Re-cultivation of the Shuagele quarry has not been completely done. | Mentioned Quarries should be re-cultivated ASAP according to the submitted re-cultivation plan. Restoration of natural habitats shall be done (planting of bushes and trees) | January-April, 2017 | Partly executed ground has been leveled close to the original shape of the quarry |
| Slopes of Cuts and Embankments | At many places of the road, embankment slope are gullied. Cut slopes are not planted with grass | Grass should be seeded and bushes planted on the cut slopes. Places with ravine formation should be filled with the sand gravel material, compacted, covered with the top soil and seeded with the grass. Cut slopes shall be strengthened by means of gabion walls and GeoMat armored by gabion net | March-April, 2017 | Partly executed. Some places were filled with sand-gravel materials and drainage chutes have been constructed |
| Construction site | Cut trees/timber is stored along the road | Cut trees should be stored at the designated places | Past 6 months | Partly executed, Dozen of trees have been stored and handed over to the relevant organization |

| | | | | |
|--|--|---|----------------------------------|--|
| Camp sites | Household and construction waste are identified at the Camp sites, which shall be cleaned up due to decommissioning of them. | Camp sites shall be cleaned from all types of wastes and maintained due to decommissioning of them. | Past 6 months | Partly executed. negotiation with haulers is in active stage |
| Sedimentation traps at the concrete plants | Sedimentation basin is full of silt and cannot perform its function | Cleaning of sedimentation basin shall be carried out on a regular basis | January-March, 2017 regularly | Partly executed. It was cleaned only once in March, 2017 |
| Ground and Surface Water | Potable Water tanks are not cleaned regularly at the territories of camp | Water tanks shall be cleaned regularly and disinfected. Laboratory testing to be carried out on time | January-March, 2017 | Partly executed. Water quality test has been carried out in March, 2017 |
| Household and Construction waste | Sometimes household and construction waste is disposed from the camps with delay | Waste shall be disposed regularly and on time | January, 2017 regularly | Partly executed. Waste is disposed with delay, there are congested waste bins |
| Waste Management Plan | Waste Management Plan has not been prepared | It is necessary to maintain stock of waste, prepare waste management plan and submit it to the Ministry of Environment and Protection of Natural Resources of Georgia | July 1 st , 2017 | Not submitted. HQ of Sinohydro will take care of the mentioned issue according to the Contractor. |

51. Above mentioned issues are reflected on the Pictures (See Appendix No.1)

52. Recommendations for the Environmental, Health and Safety issues which failed to have been executed are reflected in the non-compliances and corrective action plan in the table under paragraph 37 and Table No.15.

53. For the pending issues further recommendations are as follows:

Table 14: Recommendations to Address HSE Issues

| Recommendations | Responsible Party |
|---|--|
| Main Road (Lot 2) | |
| Sections of the Project road where wash out processes have started should be filled with sand and gravel and covered with topsoil; For stabilizatiton of cut and embankment it is necessary to seed grass on slopes of embankment and plant bushes on slopes of cut; | Contractor to perform physical interventions; Engineer to monitor progress. |
| Cut trees within the construction project shall be identified with attendance of the representative of Forest Department of Kobuleti and transported to the temporary storage place so designated | Contractor to perform physical interventions; Engineer to monitor progress. |
| Sections of road where big amount of dust is accumulated due to movement of the Contractor's heavy equipment should be regularly and intensively watered. | Contractor to perform physical interventions; Engineer to monitor progress. |
| Camp Sites (Choloki, Ochkhauri, Laituri, Bobokvati and Chakvi) | |
| Used material (scrap metal, tires etc.) should be hauled offsite for recycle/beneficial reuse on a regular basis. The territory freed from the used material should be organized accordingly; | Contractor; Engineer to perform weekly inspections |
| Waste material dumped in the channels of Bobokvati campsites must be taken out and transported for utilization or to the dumpsite; | Contractor; Engineer to perform weekly inspections |
| Used material (scrap metal, tires etc.) should be hauled offsite for recycle/beneficial reuse on a regular basis. Records of material hauled offsite for recycling and/or beneficial reuse should be maintained; | Contractor; Engineer to perform weekly inspections |
| Cleaning of sedimentation basins at Chakvi and Bobokvati campsites shall be carried out and transported to the dump site | Contractor; Engineer to perform weekly inspections |
| Quarry Sites | |
| Recultivation of the quarry located in Vil. Shuagele shall be done completely in accordance with the quarry restoration plan submitted by the Contractor. In order to restore natural habitates at the, trees and bushes must be planted. If necessary the Contractor must spread topsoil, seed grass and etc. | Contractor; Engineer to perform inspections before restoration |
| Bridge construction at the rivers | |
| At bridge #9 construction site waste bins and containers must be supplied for collection construction waste and trash. | Contractor; Engineer to perform weekly inspections |
| At the right side of Bridge #9 muddy water is flowing down to the existing local road, which shall be prevented | Contractor; Engineer to perform weekly inspections |
| Tunnels | |
| Territory of Tunnel #1 and #2 shall be cleaned from household and construction waste and transported to the dump site. | Contractor; Engineer to perform weekly inspections |

| | |
|--|---|
| Due to cutting slope at Tunnel #2 erosion of the slope was initiated. It is necessary to strengthen the slope in order to avoid such processes from development | Contractor; Engineer to perform weekly inspections |
| HSE Documentation and Recordkeeping | |
| The following documentation/records should be initiated and maintained on site: <ul style="list-style-type: none"> – Waste Management Plan shall be submitted in July, 2017 for further agreement with the Ministry of Environment and Natural Resources of Georgia – Log of used material (tires, scrap metal etc.) hauled offsite for reuse/recycling. – Vehicle maintenance and accident records (already initiated but must be maintained). | Contractor; Engineer to check; Roads Department of Georgia; Ministry of Environment and Natural Resources of Georgia Contractor; Engineer to perform monthly inspections |

3.5 Actions taken to reflect the findings of ADB mission carried out on 6 April and 23 May 2017:

54. During the Environmental Monitoring Missions carried out on 6 April and 23 May 2017 by the RETA/ADB International-Regional Environmental Consultant – Ketu Dgebuadze and ADB Country Environmental Focal – Mr. Duncan Lang, which was attended by the head of Environmental Division of the Roads Department of Georgia Mr. G. Sopadze, some environmental, health and safety (EHS) issues/non-compliances were observed and appropriate plan for resolution of non-compliances was made which was subsequently shared with the Contractor for execution. The plan is shown in the Table 15 below.

Table 15: Status of Findings of ADB Mission Carried Out on 6 April and 23 May 2017

| Non-Compliances/Findings | Deadline for submission/Implementation | Implementation Status |
|---|--|--|
| 6 April, 2017 - site visit | | |
| 1. The Contractor failed to remove used tires and construction waste accumulated in Choloki and Chakvi camp sites. Municipal waste management at Choloki, Chakvi and Bobkvati camp sites has to be improved as well. Improper municipal waste management was observed at Choloki and Chakvi campsites. In order to improve situation in waste management at camp sites the Mission instructed SC Environmental Specialist to immediately issue Non-Compliance Notice with incorporated corrective action plan and deadlines for corrective activities for CC. In addition, it was decided to conduct on-job | Till the end of June 2017. | Disposition of waste from Choloki and Chakvi campsites are partially executed. According to the Contractor complete resolution of the issue will be done until the end of 2017 due to decommissioning processes of campsites. Household waste will be disposed from Choloki campsite in July due to decommissioning of the campsite. Household waste is disposed from the Chakvi campsite on a regular basis. Contractor was instructed verbally |

| | | |
|--|--------------------------------|---|
| <p>training for CC/SC environmental specialists in May 2017 by RETA Consultant. SC was requested to monitor performance of CC and reflect in monthly report as of April 2017.</p> | | <p>as well as in written and given corrective measures concerning improvement of waste management issues.</p> |
| <p><u>2. Quarry sites:</u> For Re-Cultivation of Quarry located in Vil. Shuaghele, contractor is negotiating with LTD „Solo”, who should make effective re-cultivation of the mentioned territory and should plant trees and bushes there. Restoration of natural habitats at the territory of the Quarry site will be carried out in April 2017, which is the optimal period for the mentioned works. As for the Re-Cultivation of used Quarry located in Vil. Upper Sameba, Contractor has executed some actions for the Rehabilitation works and Contractor was asked to submit proper documentation, describing their activities on the Quarry, approved by the local Environmental Protection Agencies (Letter No. 1702-0035). Currently, CC has the right to use Quarry in Vil. Meria till the end of 2017, determined for the construction of Lot-I. The mentioned Quarry is located on Riv. Natanebi. Owner of the Quarry is LTD „Gima” with whom, the Contractor has signed the Contract, concerning the purchasing of the Quarry Material (Contract No. GEO-KB2-GG-92). According to the Item No.3.3.5, of the mentioned Contract, owner (LTD „Gima”) of the Quarry is responsible for the Re-Cultivation and protection of the Quarry Site.</p> | <p>September-October, 2017</p> | <p>Optimal period for planting trees and bushes is September-October, which is also considered in the Series 3000-3004 of the Technical Specification.</p> |
| <p>3. The issue of cut trees disposed at Bobokvati #4 camp site has not been yet resolved. After obtaining the permit from the Ministry of Economy and Sustainable Development the cut trees will be delivered to the population.</p> | <p>Until the end of 2017</p> | <p>The issue is being resolved by the superior body</p> |
| <p>4. Company Waste Management Plan for Lot 2 to be submitted in May 2017 to PIU and RETA Consultant for review/comments. Final Company Waste Management Plan has to be submitted to the MoENRP for approval in June 2017.</p> | <p>May-June, 2017</p> | <p>Supervision Consultant has requested the Contractor to submit the mentioned document on time, but unfortunately the document has not been received till date, despite Contractor’s statement that the HQ of Sinohydro is taking care for submission of the Waste</p> |

| | | |
|---|---------------------|--|
| | | Management Plan. |
| 23 May, 2017 – Site visit | | |
| 5. <u>H&S</u> - Non-compliances have been revealed during the site visit in health and safety for the project workers. The team on top of the bridge platform had no fall-arrest harness or ropes attached and one also was without a hard hat. | As soon as possible | Contractor's foreman was warned to resolve the issue without delay. The issue was resolved in May. |
| 6. <u>Temporary Drainage</u> - Please get an engineer to have a look at the construction areas and check that temporary drainage, erosion and sediment controls are in place as appropriate. At the bridge 9 it was clear erosion and sediment from rain were being washed down and could cause some significant problems to the local road, so this site and any others similar need to be looked at in detail and appropriate measures implemented. | June-August, 2017 | The issue was considered with the Contractor, concerning which specific engineering decision will be made shortly. |

3.6 Consultations and Complaints

3.6.1 HSE issues reported through the Grievance Redress Mechanism (GRM) Process

55. Nature of complaints received by the GRM during the second half of 2017 is described below.

56. The community Focal Person (Mamuka Gelekva) is hired by the PIU/RD for dealing with grievances and complaints at all three camps. There are Books of Complaints and Suggestions at all camps as well as local municipalities prepared according to the ADB template. In February-March 2017 a total of 98 persons have submitted 18 categories of grievances to the GRC out of which 78 grievances have been resolved as of February, 2017. People mostly (29 Nos.) applied for inclusion of their residential houses or land plots remained outside but adjacent to the project right of way. So far 23 of them are solved. Some people complained over destroying of crops (9 Nos.) land plot (14 Nos) and structures (13Nos) by the contractor during movement of construction machineries or other ways out of which 8 cases about destroying crops, 7 cases about damaging land plot and 11 cases about damaging structure have been already solved at local level within established timeframe.

Other particular categories of claims received by the GRM during commencement are as following:

- a) Queries related to SSEMP e.g. boundaries of current allowed project footprint,
- b) Nuisance complaints from noise, vibration, dust, air quality, spills during construction
- c) Damage to property or roads, access issues (illegal access from contractor, parking on private land or blocked access to property/premises)
- d) Use of unapproved roads

- e) Issues relating to community safety such as speeding, use of illegal vehicles, dangerous activities,
- f) Lack of safety signage, lighting, safety barriers, safe access to property/crossings
- g) Unsafe site conditions for community such as open excavations (particularly children)

In total 9 claims have been identified during the reporting period, out of which 6 have been solved and 3 are still pending. The issues are not serious and represents working process of infrastructure process. Resolution of the remaining 3 issues are in progress 2 of which are related to encroachment of the Contractor to the private land and 1 dumping cut soil near the entrance of the private land.

3.5.2 Health and Safety issues, raised by the local Government Institutions

57. Based on the information provided by the Supervision Service of Department of the Environmental Protection of Adjara, there were two incidents identified violating Administrative Code of Georgia in the first half of 2017.

- Clause 61¹ violation of usage of water resources, cadastral production of state water resources (penalty rate is GEL 50-200)
- Clause 82¹ delay in submission of records on air contamination with hazardous materials (penalty rate is GEL150)

3.5.3 Trainings

58. In the first half of 2017 the following trainings have taken place:

- In the monthly report of the Contractor chapter “Health, Safety & Environment” it is mentioned that trainings are regularly conducted concerning the mentioned issues.
- In June highway engineers of the Consultant were given training on “environmental aspects during construction and rehabilitation of motor roads”.
- Mrs. Ketevan Dgebuadze – Regional Environmental Specialist of the ADB provided information about SSEMP Site Monitoring Plan and structure to the local Environmental Specialists.
- In May 2017 subcontractor “Solo” Ltd. introduced contractor’s manpower about technological process sequence of GeoMat armored by the gabion net for strengthening of cut slopes.

PART IV – Action Plan for the Next Period

- Preparation of Company Waste Management Plan for Lot 2 (according to new GEO legislation) to be submitted to MoENRP (Ministry of Environment and Natural Resources Protection of Georgia) for approval until end of June, 2017.
- In terms of the defined action plan for the mitigation measures to be undertaken during the next period please see table 12.

ANNEXES

I. PROJECT PHOTOS

**ANNEX 1
PHOTO CATALOG
(January-June 2017)**

Environmental, Health and Safety Issues



Photo 1: Strengthening of cut slope by means of gabion walls and Geo Mat



Photo 2: Strengthening of cut slope by means of gabion walls and Geo Mat

**Environmental, Health and Safety
Issues**



Photo 3: Strengthening of cut slope by means of gabion walls and Geo Mat



Photo 4: Strengthening of cut slope by means of gabion walls and Geo Mat

**Environmental, Health and Safety
Issues**



Photo 5: Abandoned container near portal #1 of Tunnel #1



Photo 6: Used tires accumulated at the Chakvi campsite

**Environmental, Health and Safety
Issues**



Photo 7: Used tires accumulated at the Chakvi campsite



Photo 8: Scattered scrap at Choloki campsite

**Environmental, Health and Safety
Issues**



Photo 9: Contaminated soil with oil at Chakvi campsite



Photo 10: Contaminated soil with oil at Chakvi campsite

**Environmental, Health and Safety
Issues**



Photo 11: Embankment slopes without top soil



Photo 12: Embankment slopes without top soil