

Environmental Monitoring Report

Semestral Report
October 2013

GEO: Urban Services Improvement Investment Program – Project 2

Prepared by United Water Supply Company of Georgia, LLC, Government of Georgia for the Asian Development Bank.

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BI-ANNUAL ENVIRONMENTAL MONITORING REPORT

Project Number: 43405
June 2013

Georgia: Urban Services Improvement Investment Program (Tranche 2)

Financed by the ADB

PREPARED BY "UNITED WATER SUPPLY COMPANY OF GEORGIA", LLC

TBILISI, GEORGIA

**For: The Ministry of Regional Development and Infrastructure of Georgia and
the Asian Development Bank**

ABBREVIATIONS

ADB	Asian Development Bank
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EIA	Environmental Impact Assessment
EIP	Environmental Impact Permit
EMP	Environmental Management Plan
GoG	Government of Georgia
USIIP	Urban Sector Improvement Investment Program
IA	Implementing Agency
IEE	Initial Environmental Examination
MDF	Municipal Development Fund
MFF	Multi-tranche Financing Facility
MoE	Ministry of Environmental Protection
MoRDI	Ministry of Regional Development & Infrastructure
UWSCG	United Water Supply Company of Georgia

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I. INTRODUCTION

1. The present Bi-annual Environmental Monitoring Report covers the time period from January 2013 till June 2013.

2. The Urban Services Improvement Investment Program was developed as the Government's response to the lack of adequate and/or safe water supply, sewerage and sanitation in urban areas of Georgia. This is intended to optimize social and economic development in selected urban areas through improved urban water and sanitation services, and will be financed by the ADB through its Multi-tranche Financing Facility. Ministry of Regional Development and Infrastructure is the Executing Agency and United Water Supply Company of Georgia, LLC is the Implementing Agency of the Investment Program. UWSCG is a 100% state-owned company.

3 The Investment Program will improve infrastructure through the development, design and implementation of a series of subprojects, each providing improvements in a particular sector (water supply and/or sewerage) in one town. Subprojects will rehabilitate existing infrastructure and/or create new and expanded infrastructure to meet the present and future demand.

4 Tranche 2 of the Investment Program includes the construction of Anaklia and Mestia Water Supply and Sewerage Distribution Networks, and the construction of Anaklia Wastewater Treatment Plant.

5 The following projects are financed under Tranche 2:

Contract-1 (UWSC/ICB/CW/2012/ANA-01) Anaklia Water Supply and Sewerage Distribution Networks. The construction/rehabilitation of approximately 69 kilometers of water supply and 70 kilometers of sewerage network includes the extension of the networks to all residents and hotels defined for the year 2040 as well as the connection to Ganmukhuri village with a total projected population of about 25,600 people.

The construction works under Contract 1 started on 16th of January 2012 and scheduled to be completed on 1st of April 2013. The proposed Bi-Annual Environmental Monitoring Report is prepared considering the time period from January 2013 to June 2013.

Contract-2 (UWSCG/ICB/CW/2011/MES-02) Construction of Mestia Water Supply and Sewerage Distribution Networks. The construction/rehabilitation of approximately 30 kilometers of water supply and 46 kilometers of sewerage network will cover the whole town of Mestia including the historic center and the future touristic zones covering all residents and hotels defined for the year 2040 thus benefiting total projected population of about 25,300 people.

The Contract for Construction of Mestia Water Supply and Sewerage Distribution Networks was signed with Joint Venture of New Energy LTD – Georgia and Enguri 2006 LTD – Georgia (From 11 April 2013 the name of Enguri 2006 LTD has been

changed into - New Construction LTD) 31 October 2011. The construction works under Contract-2 is scheduled for completion on 30 October 2013

Contract-3 (Package-REG-02): The scope of works includes Construction of Wastewater Treatment Plant in Anaklia (the treated wastewater to be discharged into Enguri River).

The bidder is required to bid for the design and construction of the first stage of a modular wastewater treatment plant (WWTP) in Anaklia. The design is to cater for the full flow and pollution loads for the 2040 population equivalent of 25,611PE but the first stage of construction is to provide all treatment processes for only half of the flow and loads calculated for 2040. In addition to the WWTP, the Contractor shall design and build the pressure lines leading from the collector network to the WWTP and from the WWTP to the outlet into the river.

As REG-02 is a two-stage bidding process, the evaluation of technical proposals was ongoing as of this reporting period. After completion of technical evaluation the responsive bidders will be invited for submission of financial bids. Contract award is planned in the fourth quarter.

6. The Project's Environmental Impact Monitoring and Mitigation is carried out in accordance with the Environmental Management Plans prepared by the UWSCG / Consultant. Final EMPs are prepared in consultation with the Contractor. The construction activities affecting the environment are as follows: (As the contract for REG-02 has not been awarded as of this reporting period, only ANA-01 and MES-02 are reported on in this report)

- a. Contractor's mobilization and site installation;
- b. Excavation works;
- c. Removal of soil;
- d. Pipe installation;
- e. Surface water drainage during rains;
- f. Backfilling and compaction.

7. The following items are monitored during the implementation of the project:

- a. Air Quality;
- b. Noise;
- c. Groundwater Disposal;
- d. Loss of Top Soil.

8. The only parameters monitored during the construction period were dust control to keep air quality at acceptable level, noise, loss of top soil and groundwater disposal. Dust control issue is working positively to avoid complains from local residents.

9. The subproject construction sites under both Contracts 1 and 2 are located in Government-owned land. There are no protected areas, wetlands, mangroves, or estuaries. There are no land acquisition and resettlement issues involved. Trees, vegetation (mostly shrubs and grasses), and animals in the subproject sites are those commonly found in built-up areas.

A. Construction activities and Project Progress during previous 6 months

10. Overall physical progress of the work under **Contract-1 (Anaklia Site)** is 69%. The activities which were carried out by the Contractor 1 in the past 6 months (January – June 2013) are as follows:

Sewerage network

- Installation of sewerage collectors (pressure and gravity trunks): 1,500 m installed from Jan. 1st to June 30th 2013; cumulative: 70,000 m out of total 70,400 m (cumulative progress: 99 %);
- Installation of sewerage manholes (sewerage network): 1 no. installed from Jan. 1st to June 30th 2013; cumulative: 1,180 nos. out of total 1,300 nos. (cumulative progress: 91 %);
- Installation of sewerage service manholes (households): 380 nos. installed from Jan. 1st to June 30th 2013; cumulative: 600 nos. out of total 600 nos. (cumulative progress: 100 %);
- Installation of sewerage pumping station: 3 nos. installed from Jan. 1st to June 30th 2013; cumulative: 3 nos. out of total out of 41 nos. (excluding E&M works) (cumulative progress: 7%)
- Water tightness test for gravity sewer pipes: 1,000 m. tested from Jan. 1st to June 30th 2013; cumulative: 2,000 m out of 42,800 m (cumulative progress: 5%)
- Manhole infiltration tests: 67 nos. tested from Jan. 1st to June 30th 2013; cumulative since start: 67 nos. out of total 1,900 (cumulative progress: 3.5%)
- CCTV inspection: not started yet (0%) (target: 42,800 m)

Water network:

- Installation of water network: 600 m installed from Jan. 1st to June 30th 2013; cumulative since start: 61,800 m installed out of target 69,900 m (cumulative progress: 88%);
- Installation of water meter chambers: 343 nos. installed from Jan. 1st to June 30th 2013; cumulative since start: 600 nos. (progress: 100%); however, meters not installed yet;
- Installation of fire hydrants: 120 nos. installed from Jan. 1st to June 30th 2013; cumulative since start: 120 nos. (cumulative progress: 100%)

Construction of Service Center:

- No started yet (0%)

11. Overall physical progress of the work under **Contract-2 (Mestia Site)** is 36%. The activities which were carried out by the Contractor in the past 6 months (Jan. – June 2013) are as follows:

Sewerage network:

- Installation of sewerage collectors (pressure and gravity trunks): 10,510 m installed from Jan. 1st to June 30rd 2013; cumulative: 24,452 m out of total 45,600 m (cumulative progress: 52 %);
- Installation of sewerage manholes (Sewerage network): 374 nos. installed from Jan. 1st to June 30^d 2013; cumulative: 617 no. out of total 974 nos. (cumulative progress: 63 %);
- Installation of sewerage pumping station: 0 nos. installed from Jan. 1st to June 23rd 2013; cumulative: 0 no. out of total of 2 nos. (cumulative progress: 0%);
- Water tightness test for gravity sewer pipes, CCTV Inspection for sewer pipes: not started yet;
- Manhole infiltration tests for manholes: 375 nos. completed out of 1,200 nos. (cumulative: 31%);
- CCTV inspection: not started yet (0%) (target: 45,600 m.)

Water network:

- Installation of water network: 4,410 m installed from Jan. 1st to June 30rd 2013; cumulative since start: 7,220 m installed out of target 30,980 m (cumulative progress: 23%);
- Installation of water meters (target is 925 nos.), hydrants (target is 50 nos.) and sewerage connection pieces (target is 450 nos.): no started yet

Construction of Service Center:

- No started yet (0%)

B. Environmental Management Team

12. The new Division of Resettlement and Environmental Protection was created at the Design Department of UWSCG. Mr. Beso Nibladze was appointed to the position of Head of Division. The Company has also hired Mr. Georgi Mshvidobadze as Head of Resettlement Unit.

13. Ms. Ketevan Chomakhidze is employed by UWSCG to play an advisory role to UWSCG in handling environmental tasks and issues in compliance with the ADB

safeguard Policy requirements and Georgian environmental regulations. She is hired per requirements of EARF.

14. Temporarily responsible for environmental management under Contract-1 is Mr. Gocha Gvinjilia. He is proposed by contractor PERI to attend the upcoming training course on “Improving of Environmental Safeguards in Central and West Asia” financed by ADB and to be carried out by Ltd “Eco-Spectri” (Georgia).

15. The following works were performed by the environmental management team:

- On-site supervision of construction activities;
- Monitoring and implementation of the EMP;
- Ensuring that the contractors understand what is to be done to rectify and address any issues identified through monitoring.

C. Project Organization

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

Contract #	Employer	Contractor
Contract-1 (UWSC/ICB/CW/2012/ANA-01)	UWSCG	Joint Venture of Peri Ltd and Modern Business Group LLC
Contract -2 (UWSCG/ICB/CW/2011/MES-02)	UWSCG	Joint Venture of New Energy LTD – Georgia and Enguri 2006 LTD (From 11 April 2013 the name of Enguri 2006 LTD has been changed into - New Construction LTD)

II. ENVIRONMENTAL MONITORING

17. During the last six months no environmental issues or complaints were received from the local residents.

18. The Contractor kept records of industrial safety, environmental considerations at the construction sites, air quality, noise, loss of top soil and groundwater disposal. Within the reporting period, no adverse environmental impacts related to the works were noted or observed.

19. Within the reporting period, PERI monitored and addressed the issue of air quality, noise, loss of top soil and groundwater disposal.

20. During the reporting period several joint site visits have been carried out by the members of Division of Resettlement and Environment Protection of United Water Supply Company of Georgia, who worked with the service centers’ representatives and temporarily responsible persons for the environmental management of contractors.

21. Independent supervision and on-site monitoring of the Environmental Management Plan had been undertaken by Eptisa's environmental specialist, Mr. Irakli Legashvili, who regularly visited the sites.

The monitoring of EMP had been carried out by the environmental specialist of UWSCG on a regular basis as well.

Anaklia:

A. Air quality

22. Material (aggregate and sand) was brought to the site when required. Speedy completion of work and proper site clearance after completion are ensured. Wheels and undercarriage of haul trucks were washed prior to leaving construction site.

23. In order to limit soil disturbance, the access to the site was limited to construction workers and the site was fenced.

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

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

B. Noise

26. The Contractors employed practical means to minimize noise resulting from construction work. The plan of transportation routes were agreed with Municipality and Police. Wheels and undercarriage of haul trucks were cleaned.

27. Drivers were informed to limit speed to 20-25 KPH to avoid use of horn in the town. Local population was informed about project works. No nighttime activities took place.

C. Water quality

28. For Contract-1: No water sampling and analyses program was carried out during the reporting period; however, it is suggested that a program of sampling and analysis should be established at the 2 existing wells (after the pressured filters and existing chlorination station) at pre-commissioning of the network system. In case of compliance with Georgian and European water quality regulations, the system can be commissioned. Supervision consultant will also coordinate with UWSCG and Contractor to check if any repair works is required at the chlorination station, prior to commissioning the water network system.

D. Groundwater disposal

29. The groundwater pumped from the trench is discharged into the nearby surface water drain with virtually no settlement of solids. This is leading to a buildup of sediment in the bottom of the drain with an associated environmental impact.

30. In order to remove any solid matter, groundwater from the trenches is pumped with water pumps, and they installed a filter that would not let any settlement of solids to flow through with water.

E. Loss of top soil

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

Note on Air and Noise Quality Monitoring (for ANA-01):

32. No baseline data is provided in IEE of Anaklia WWS project for air and noise. As the main construction works are finalized project has modest impact on environment that may be easily mitigated, therefore monitoring was limited to inspections to verify compliance with mitigation requirements.

Mestia:

F. Air Quality:

33. Material (aggregate and sand) was brought to the site when required. Some sections of the pipeline works and reservoir works were not completed as per agreed schedule by Contractor;

34. Site clearance and reinstatement after backfilling trenches remained partially completed;

35. Dust was controlled through watering the roads where driving could easily generate dust. Excavated mounds of soil were damped down by water spray, however only occasionally. Tarpaulins were used to cover loose materials that were transported to and from the site by trucks.

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

G. Noise

37. The Contractor did not employ at all times practical means to minimize noise resulting from construction work. Wheels and undercarriage of haul trucks were not systematically cleaned.

38. Drivers were informed to limit speed 20-25 KPH to avoid use of horn in the town. No nighttime activities took place. Local population was informed about the subproject works; however, overall awareness on subproject outcomes and benefits

is very limited since no awareness activities have been started so far; however, the comprehensive public awareness campaign is envisaged in the nearest future based on the prepared Public Awareness Strategy by the awareness specialist of Eptisa, and UWSCG's PR department will be involved in the process.

H. Water quality

39. For Contract-2: No water sampling and analyses program was carried out during the reporting period; however, it is suggested that a program of sampling and analysis should be established at Lanchavil reservoir site by measuring residual chlorine level. If commissioning of the network system occurs during the next period, a sampling and analysis of residual chlorine shall also be made during the pre-commissioning tests (before the customers are connected) to ensure there will be no public risks for consumers. Decision on the use of the Tsrniashi spring and Mestiachala river (for the headwork system) will be made in the next period with UWSCG under Tranche 1, based on sampling and analysis of these sources (under Tranche 1).

Note on Air and Noise Quality Monitoring (for MES-02)

40. No baseline data is provided in IEE of Mes-02 project for air and noise. Project has modest impact on environment that may be easily mitigated, therefore monitoring was limited to inspections to verify compliance with mitigation requirements.

Mobilization of Contractor

41. In order to complete construction works before the onset of winter time (and thus speed up disbursement for MES-02), maximum mobilization of human and technical resources was undertaken by the Contractor. Up to 150 workers had been mobilized on the relatively small and narrow streets of the mountain city of Mestia. Despite the fact that environmental recommendations/instructions had been given to the Contractor (see Annex V), in some cases negative impact on the environment couldn't be avoided.

42. To improve the situation a comprehensive on-site training is planned for early August for the Contractor's staff – this shall be carried out by Supervision Consultant Eptisa. A Training manual and materials are already drafted. The Environmental Specialist of UWSCG will be fully involved in the training process, together with the representatives of the DREP team of the Company.

43. It should be mentioned also that the person responsible for environmental management will attend the training on "Improving of Environmental Safeguards in Central and West Asia " organized by ADB.

III. ENVIRONMENTAL MANAGEMENT

A. Site Inspections

44. The Contractors' field inspectors performed daily site visits to the project sites. UWSCG Environmental team visited subproject sites minimum once a month. Environmental Consultant performed weekly site inspections.

B. Reporting

45. The UWSCG/environmental management team prepares bi-annual and annual Environmental monitoring reports based on the information submitted by the Contractor.

C. Corrective Action Plans

46. Several corrective actions were recommended during the reporting period of January 2013 – June 2013 (see Annex V).

D. Consultation and Complaints

47. No complaints by local populations were received during the reporting period.

48. There is foreseen to be conducted special Environmental trainings by Eptisa for environmental specialists of Contractors

19 August 2013
10 September 2013
2 October 2013
<i>Further trainings will be scheduled based on needs</i>

IV. ANNEX A: MONITORING DATA

No	Impacts	Mitigation measures	Implementation/Compliances
Anaklia Site			
Construction			
1	Impacts caused by excavation and generation of waste soil	<ul style="list-style-type: none"> Utilize surplus/waste soil for other construction activities or to raise the ground-level of low level sites 	<p>Surplus soil material was used by local population for their own house yard purposes and for road surface covering works.</p> <p>However, at pump site pits excavated material was not systematically evacuated, thus creating traffic problems at times.</p>
2	Loss of top soil	<ul style="list-style-type: none"> Top soil of about 1 ft depth (0.3 m) shall be removed and stored separately during excavation work, and after pipeline construction the same soil shall be replaced on the top 	<p>Currently main construction works of water supply and sewage system are finalized, hence no topsoil removal took place. Filled trenches were mostly covered with vegetation (grass). However, contractor is instructed to import and place new topsoil around service manholes.</p>
3	Groundwater disposal	<ul style="list-style-type: none"> In order to remove any solid matter it is recommended to install a settlement tank between the groundwater pump and the discharge point. This mitigation measure will minimize any negative environmental impact on 	<p>The main construction works are finalized.</p> <p>Disposal after pressure testing is made using washouts, without disinfection at this stage.</p> <p>However, at some hydrant sites,</p>

No	Impacts	Mitigation measures	Implementation/Compliances
		the surface water as well	manhole pits and pump station pits during heavy rains of June, several trenches were filled with water and occasionally spilled onto the streets.
4	Erosion due to excavation/refilling	<ul style="list-style-type: none"> • No trees shall be removed on the slopes; clearing of shrub, bushes and grass shall be limited to actual construction area only; no clearance is allowed for activities such as material/waste storage, concrete mixing, etc.; • Proper compaction of refilled soil the material shall be refilled in layers and compacted properly layer by layer; • In the steep slopes, local grass species shall be planted on the refilled trenches 	At the construction site there was no need for removal of vegetation, trees or bushes.
5	Impacts due to construction in the river	<ul style="list-style-type: none"> • Schedule the construction work during low flow season avoiding rainy and summer seasons; work may preferably be conducted after rains and before (May/June) or in November; • Water flow shall not be interrupted completely/diverted; work shall be conducted on the one-side of the stream, that water to flows on the 	The main construction works are finalized. Also it is to be noted that operation was performed far from river that does not require special mitigation measures.

No	Impacts	Mitigation measures	Implementation/ Compliances
		<p>other side;</p> <ul style="list-style-type: none"> • Enclose the construction area (e.g., with sand bags) so that water does not enter construction site; 	
6	Impact on surface water bodies due to construction under rain	<ul style="list-style-type: none"> • Avoid scheduling excavation work during the rainy season; • Complete pipe laying work in excavated stretches and refill before monsoon; • Complete the excavation and foundation during dry season; • In unavoidable circumstances, protect open trenches from entry of rain water by raising earthen bunds with excavated soil; • Confine construction area including the material storage (sand and aggregate) so that runoff from upland areas doesn't enter the site; • Ensure that drains are not blocked with excavated soil 	<p>Since main construction works are finalized and no open trenches are available there is no danger of surface water penetrating the trenches.</p> <p>Also there is no danger of blocking drainage ditches anymore, because of finalized construction activities.</p>
7	Impact on air quality due to dust generation	<ul style="list-style-type: none"> • Cover or damp down by water spray excavated mounds of soil to control dust generation; • Apply water prior to leveling or performing any other earth moving activity to keep the soil moist 	<p>During reporting period the main construction works are finalized, hence there is no excavation, transportation of fillers and inert materials, movement of heavy trucks;</p>

No	Impacts	Mitigation measures	Implementation/ Compliances
		<p>throughout the process;</p> <ul style="list-style-type: none"> • Bring the material (aggregate and sand) as and when required; • Ensure speedy completion of work and proper site clearance after completion; • Use tarpaulins to cover loose material that is transported to and from the site by truck; • Control dust generation while unloading the loose material (particularly aggregate and sand) at the site by sprinkling water/unloading inside barricaded area; • Clean wheels and undercarriage of haul trucks prior to leaving construction site; • Restricted access to the work area except workers to limit soil disturbance and prevent access by fencing the site 	<p>accordingly the danger of dust generation is minimal.</p>
8	Removal of vegetation/trees for construction and impacts due to presence of open trenches	<ul style="list-style-type: none"> • Avoid tree cutting by small change of layout plan/alignment; • In unavoidable cases, plant two trees of same species for each tree that is cut for construction; 	<p>No tree, bush or vegetation cover was removed in the reporting period except in the private properties of customers to allow installation of water and sewerage manholes.</p>

No	Impacts	Mitigation measures	Implementation/ Compliances
		<ul style="list-style-type: none"> • Bushes and grasses shall be cleared only in actual construction area all other preparatory works (material storage) shall be conducted on barren lands where there is no vegetation; • Use excavated soil for refilling the pipeline trench; avoid sand layer on the top of the pipe in inaccessible areas to avoid importing material and related disturbances; • Trench construction shall be taken up in small segments, so that work (excavation, pipe laying and refilling) in each segment is completed in a day. No trenches shall be kept open in the night/after work hours. This will prevent any safety risk to wild animals 	
9	Disturbance to business, people, activities and socio-cultural resources due to construction work	<ul style="list-style-type: none"> • Inform all residents and businesses about the nature and duration of any work well in advance so that they make necessary preparations; • Limit dust by removing waste soil quickly; by covering and watering stockpiles, and covering soil with tarpaulins when carried on trucks; • Provide wooden walkways/planks across trenches for pedestrians 	Since main construction activities are finalized and currently there is water/sewage network checking process, there is no need for special activities relating to disturbance to population.

No	Impacts	Mitigation measures	Implementation/ Compliances
		<p>and metal sheets where vehicle access is required;</p> <ul style="list-style-type: none"> • Increasing workforce to complete the work in minimum time in the town 	
10	Disturbance/nuisance/noise due to construction activity including haulage of material/waste	<ul style="list-style-type: none"> • Plan transportation routes in consultation with Municipality and Police; • Schedule transportation activities in a way to avoid peak traffic periods; • Use tarpaulins to cover loose material that is transported to and from the site by truck; • Control dust generation while unloading the loose material at the site by sprinkling water; • Clean wheels and undercarriage of haul trucks prior to leaving construction site; • Educate drivers: limit speed between 20-25 KPH and avoid use of horn in the town; • Earmark parking place for construction equipment and vehicles when idling; no parking shall be allowed on the roads which may disturb the traffic movement; 	Since main construction activities are finalized and currently there is water/sewage network checking process, there is minimum noise generated.

No	Impacts	Mitigation measures	Implementation/ Compliances
		<ul style="list-style-type: none"> • Provide prior information on works to local people about work to local residents; • No nighttime construction activities including material/waste haulage; 	
11	Socio-economic benefits from employing local people in construction work	<ul style="list-style-type: none"> • To the extent possible labor force must be drawn from the local community; • Contractor should source at least 50% of unskilled labor force from local communities 	The Contractor took best efforts to meet the requirements.
12	Impacts due to import of labor and establishment of temporary labor camps	<ul style="list-style-type: none"> • In unavoidable case of sourcing labor from other areas, provide adequate housing facilities so that there are no impacts and conflict with the local people; • Establish temporary labor camps in consultation with the local authority; • belabor camps to be located away from water bodies; • No clearance of trees vegetation shall be allowed for establishment of camps; • Provide all basic amenities (water supply and sanitation, waste collection & disposal, first aid facilities, etc.); 	<p>No new camps /accommodation were built that would impact on environment.</p> <p>Workers lived in hired local resident houses where all communal services were provided.</p> <p>Workers used local resident houses for communal services including sanitation.</p>

No	Impacts	Mitigation measures	Implementation/ Compliances
		<ul style="list-style-type: none"> • Contractor shall provide fire wood and no worker shall be allowed to cut any tree; • Ensure regular and clean maintenance of the camp; 	
13	Safety risk for local residents and workers	<ul style="list-style-type: none"> • Follow standard and safe procedures for all activities – such as provision of shoring in deep trenches (>2 m); • Exclude public from the site – enclose construction area, provide warning and sign boards, security personnel; • Provide adequate lighting to avoid accidents; • Ensure that all workers are provided with and use safety - helmets, hand gloves, boots, masks, safety belts (while working at heights etc); • Maintain accidents records and report regularly 	<p>Contractor's safety advisor controlled the sites. All workers were equipped with relevant PPE.</p> <p>Safety belts were not required as there were no works performed on heights.</p> <p>No accident was reported; One major accident occurred to one worker during June (heart disease-related) – Case was documented by EPTISA's RE.</p> <p>Territory for storage of equipment and materials was poorly fenced but had 24 hour security; however, there were no special warning/informational signs at the entrance.</p> <p>There were some specially dedicated containers for non-hazardous waste at the storage site.</p> <p>At the storage site, equipment was not properly kept and there were no proper measures undertaken to prevent rain water from penetrating the storage area.</p>

No	Impacts	Mitigation measures	Implementation/ Compliances
14	Historical, archeological chance finds during excavation	<ul style="list-style-type: none"> • Contractor shall put in place a protocol for conducting any excavation work, to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved. This should involve: <ul style="list-style-type: none"> ○ Excavation observed by a specialist with archaeological field training; ○ Stopping work immediately to allow further investigation if any finds are suspected; ○ In case of suspected archeological find contact archeological authority and take any action they require to ensure its removal or protection. 	During these three months no finding was discovered. In case of any findings all mitigation measures will be closely followed.
15	Cumulative impacts – repeated disturbance to roads and people	<ul style="list-style-type: none"> • Harmonize the schedule of construction works in harmony with other ongoing works; • Schedule the water transmission line work before road work 	During last three months no complaints were received.

No	Impacts	Mitigation measures	Implementation/ Compliances
Mestia Site (MES-02)			
Construction			
1	Impacts caused by excavation and generation of waste soil	<ul style="list-style-type: none"> Utilize surplus/waste soil for other construction activities or to raise the ground-level of low level sites 	Surplus soil material stayed on site (for water pipelines and sewerage collectors) for extended periods; Material on occasions was not evacuated systematically; however it was satisfactory on main roads; In smaller streets surplus was used for road works – however, without proper compaction. Also such work in some cases was not coordinated with Roads Department of Municipality.
2	Loss of top soil	<ul style="list-style-type: none"> Top soil of about 1 ft depth (0.3 m) shall be removed and stored separately during excavation work, and after pipeline construction the same soil shall be replaced on the top 	<p>Although UWSCG has made numerous verbal/oral instructions, in some locations topsoil stripping and storage was not properly carried out;</p> <p>Top soil was not used as per ERQ although instructed by the Engineer (EPTISA) at the place of trenches;</p>
3	Groundwater disposal	<ul style="list-style-type: none"> In order to remove any solid matter it is recommended to install a settlement tank between the groundwater pump and the discharge point. This mitigation measure will minimize any negative environmental impact on the surface water as well. 	Groundwater from the trenches were pumped out with water pumps; however, on occasions (heavy rains) some trenches were not dewatered systematically.
4	Erosion due to	<ul style="list-style-type: none"> No trees shall be removed on the 	Proper refilling did not happen on site with compaction, or it happened only occasionally;

No	Impacts	Mitigation measures	Implementation/ Compliances
Mestia Site (MES-02)			
Construction			
	excavation/refilling	<p>slopes; clearing of shrub, bushes and grass shall be limited to actual construction area only; no clearance is allowed for activities such as material/waste storage, concrete mixing, etc.;</p> <ul style="list-style-type: none"> • Proper compaction of refilled soil: the material shall be refilled in layers and compacted properly layer by layer; • In the steep slopes, local grass species shall be planted on the refilled trenches 	<p>Erosion will be a major problem along several water/sewerage lines because no proper compaction was done in general.</p> <p>No planting of local grass species was observed as yet on the refilled trenches in the steep slopes – this will further aggravate erosion.</p>
5	Impacts due to construction in the river	<ul style="list-style-type: none"> • Schedule the construction work during low flow season avoiding rainy and summer seasons; work may preferably be conducted after rains and before (May/June) or in November; • Water flow shall not be interrupted completely/diverted; work shall be conducted on the one-side of the stream, so that water to flows on the other side; • Enclose the construction area (e.g., with sand bags) so that water does not enter the construction site; 	<p>Construction works for water and wastewater network did not include any works that might impact / disturb the river at this stage. However, at the 5 bridge crossings and particularly at the 2 new bridges new foundation pillars were built in river course to install pipe crossings; Some disturbance occurred at first bridge under construction, however, without affecting at this stage the course or quality of river stream</p> <p>If any potential risks identified all mitigation measures must be considered.</p> <p>Contractor has not yet made a survey of households (about 50 nos.) which cannot be connected to sewerage system and would need individual septic tanks as per contract. How the</p>

No	Impacts	Mitigation measures	Implementation/ Compliances
Mestia Site (MES-02)			
Construction			
		<ul style="list-style-type: none"> • Water collected in the trench shall be disposed off safely so that silt water does not get mixed with the river water. 	<p>overflow of these tanks connecting to river will be done is not yet clear.</p> <p>Also method from Contractor for arrangement at terminal discharge of effluent has not be presented.</p> <p>EPTISA in consultation with UWSCG estimates that environmental degradation and people complaints (due to smell) will occur as soon as wastewater system is commissioned; therefore some mitigation measures should be brought up by Contactor, EPTISA and UWSCG.</p>
6	Impact on surface water bodies due to construction under rain	<ul style="list-style-type: none"> • Avoid scheduling excavation work during the rainy season; • Complete pipe laying work in excavated stretches and refill before monsoon; • Complete the excavation and foundation during dry season; • In unavoidable circumstances, protect open trenches from entry of rain water by raising earthen bunds with excavated soil; • Confine construction area including the material storage (sand and 	<p>During rainy period excavation works were interrupted.</p> <p>In some cases trenches were left open for some periods of time especially for sewerage collector installation or manhole installation until testing took place.</p> <p>No protection measures from runoff water were observed at any of the sites of MES-02 during the reporting period, except during ADB delegation visits or visit of environment unit of UWSCG.</p>

No	Impacts	Mitigation measures	Implementation/ Compliances
Mestia Site (MES-02)			
Construction			
		aggregate) so that runoff from upland areas doesn't enter the site; <ul style="list-style-type: none"> • Ensure that drains are not blocked with excavated soil. 	
7	Impact on air quality due to dust generation	<ul style="list-style-type: none"> • Cover or damp down by water spray excavated mounds of soil to control dust generation; • Apply water prior to leveling or performing any other earth moving activity to keep the soil moist throughout the process; • Bring the material (aggregate and sand) as and when required; • Ensure speedy completion of work and proper site clearance after completion; • Use tarpaulins to cover loose material that is transported to and from the site by truck; • Control dust generation while unloading the loose material (particularly aggregate and sand) at the site by sprinkling water/unloading inside barricaded area; • Clean wheels and undercarriage of 	<p>Dust was controlled by watering the roads through the populated areas where driving could easily generate dust; however, such measure was not carried out systematically during the construction operation.</p> <p>Tarpaulins were used to cover loose material that was transported by truck.</p> <p>Restricted access measures for non-staff on work area was not observed.</p> <p>No truck wheels cleaning was observed at the construction site; however, such measure was undertaken at the equipment parking/storage site.</p>

No	Impacts	Mitigation measures	Implementation/ Compliances
Mestia Site (MES-02)			
Construction			
		<ul style="list-style-type: none"> haul trucks prior to leaving construction site; • Restricted access to the work area except for workers to limit soil disturbance, and prevent access by fencing the site. 	
8	Removal of vegetation/trees for construction and impacts due to presence of open trenches	<ul style="list-style-type: none"> • Avoid tree cutting by small change of layout plan/alignment; • In unavoidable cases, plant two trees of same species for each tree that is cut for construction; • Bushes and grasses shall be cleared only in actual construction area; all other preparatory works (material storage) shall be conducted on barren lands where there is no vegetation; • Use excavated soil for refilling the pipeline trench; avoid sand layer on the top of the pipe in inaccessible areas to avoid importing material and related disturbances; • Trench construction shall be taken up in small segments so that work (excavation, pipe laying and refilling) in each segment is completed in a day. No trenches shall be kept open 	No tree, bush or vegetation cover was removed in the reporting period, except in the customer's private properties (removal of vegetation for installation of water and sewerage chambers or connections).

No	Impacts	Mitigation measures	Implementation/ Compliances
Mestia Site (MES-02)			
Construction			
		in the night/after work hours. This will prevent any safety risk to people and wild animals.	
9	Disturbance to business, people, activities and socio-cultural resources due to construction work	<ul style="list-style-type: none"> • Inform all residents and businesses about the nature and duration of any work well in advance so that they can make necessary preparations; • Limit dust by removing waste soil quickly; by covering and watering stockpiles, and covering soil with tarpaulins when carried on trucks; • Provide wooden walkways/planks across trenches for pedestrians and metal sheets where vehicle access is required; • Increasing workforce to complete the work in minimum time in the town. 	<p>Contractor provided information to the local residents verbally before the works were undertaken;</p> <p>For crossing trenches by vehicle and people, temporary metal or wooden planks were provided in poor standards.</p> <p>Considering tourism period is approaching, Contractor has been instructed by Eptisa and UWSCG to be more carefully with disturbance to population centers or old town areas where most hotels are located.</p>
10	Disturbance/nuisance/noise due to construction activity including haulage of material/waste	<ul style="list-style-type: none"> • Plan transportation routes in consultation with Municipality and Police; • Schedule transportation activities so as to avoid peak traffic periods; • Use tarpaulins to cover loose material that is transported to and from the site by truck; 	<p>Transportation routes were not systematically agreed with Municipality/Police although preliminary discussions took place.</p> <p>Parking of vehicles was provided at the storage area which avoided disturbing traffic movement.</p> <p>No resettlement plan has yet been elaborated for ca. 4 plots that will be affected by installation of principal main from Lanchavil reservoir to the Zone 2 network.</p>

No	Impacts	Mitigation measures	Implementation/ Compliances
Mestia Site (MES-02)			
Construction			
		<ul style="list-style-type: none"> • Control dust generation while unloading the loose material at the site by sprinkling water; • Clean wheels and undercarriage of haul trucks prior to leaving construction site; • Educate drivers: limit speed between 20-25 KPH and avoid use of horn in the town; • Earmark parking place for construction equipment and vehicles when idling; no parking shall be allowed on the roads which may disturb the traffic movement; • Provide prior information on works to local people; • No nighttime construction activities including material/waste haulage. 	<p>Information on works was provided to local residents prior to start of works; however, problems were not solved when some customers were denied access to site (e.g., with municipality councilors);</p> <p>No night time construction activities were carried out.</p>
11	Socio-economic benefits from employing local people in construction work	<ul style="list-style-type: none"> • To the extent possible labor force must be drawn from the local community; • Contractor should source at least 50% of unskilled labor force from local communities. 	The Contractor took best efforts to meet the requirements.
12	Impacts due to import of	<ul style="list-style-type: none"> • In unavoidable case of sourcing labor 	Contractor provided workers with required

No	Impacts	Mitigation measures	Implementation/ Compliances
Mestia Site (MES-02)			
Construction			
	labor and establishment of temporary labor camps	<p>from other areas, provide adequate housing facilities so that there are no impacts and conflict with the local people;</p> <ul style="list-style-type: none"> • Establish temporary labor camps in consultation with the local authority; • The labor camps shall be located away from water bodies; • No clearance of trees vegetation shall be allowed for establishment of camps; • Provide all basic amenities (water supply and sanitation, waste collection & disposal, first aid facilities, etc.); • Contractor shall provide fire wood and no worker shall be allowed to cut any tree; • Ensure regular and clean maintenance of the camp. 	<p>accommodation and in some cases incurred additional expenses.</p> <p>No new camps /accommodations were built to avoid impact on environment.</p> <p>Workers live in hired local resident houses where all communal services are provided.</p>
13	Safety risk for local residents and workers	<ul style="list-style-type: none"> • Follow standards and safe procedures for all activities – such as provision of shoring in deep trenches (>2 m); • Exclude public from the site – enclose construction area, provide warning and sign boards, security personnel; 	<p>Despite numerous verbal/oral and written instruction made by Environmental Team of UWSCG:</p> <ul style="list-style-type: none"> - open tranches (water and sewerage pipelines but also service connections inside the properties of customers) were not

No	Impacts	Mitigation measures	Implementation/ Compliances
Mestia Site (MES-02)			
Construction			
		<ul style="list-style-type: none"> • Provide adequate lighting to avoid accidents; • Ensure that all workers are provided with and use safety paraphernalia – helmets, hand gloves, boots, masks, safety belts (while working at heights, etc.); • Maintain accidents records and report regularly. 	<p>provided with safety signs (special warning lines) to prevent accidents.</p> <ul style="list-style-type: none"> - Most workers were seen without wearing helmets. - Territory for storage of equipment and materials was fenced and has 24 hour security; however, there were no special warning/ informational signs at the entrance and on site as well. There were also no sign boards informing the public about the subproject. It is recommended 2 sign boards installation to be made separately for MES-02 and MES-01). <p>A total of 9 Health & Safety Plan Monitoring notices were issued to Contractor requesting compliance to basic safety measures, often without response by Contractor.</p> <p>No accident was reported;</p>
14	Historical, archeological chance finds during excavation	<ul style="list-style-type: none"> • Contractor shall put in place a protocol for conducting any excavation work, to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved. This should involve: <ul style="list-style-type: none"> ○ Excavation observed by a 	During this reporting period no historical and archeological findings were discovered.

No	Impacts	Mitigation measures	Implementation/ Compliances
Mestia Site (MES-02)			
Construction			
		<p>specialist with archaeological field training;</p> <ul style="list-style-type: none"> ○ Stopping work immediately to allow further investigation if any finds are suspected; ○ In case of suspected archeological find contact archeological authority and take any action they require to ensure its removal or protection. 	
15	Cumulative impacts – repeated disturbance to roads and people	<ul style="list-style-type: none"> ● Harmonize the schedule of construction works with other ongoing works; ● Schedule the water transmission line work before road work. 	<p>During last three months few complaints were received from individuals who either could not access their plot or rejected connections to the new systems.</p> <p>Contractor informed EPTISA verbally on a case-by-case basis. It was advised to contractor to maintain a register of claims.</p>

V. ANNEX B: CORRECTIVE ACTIONS INSTRUCTED FOR PROJECT-2 (MESTIA) BY SUPERVISION CONSULTANT

Nº	DATE	CORRECTIVE ACTION	ORIGIN	Status
	13.04	Removal of earth/stones from reservoir site. Protection of workers in trenches.	RE RE	Not corrected as of 30/6/2013. Not corrected as of 30/6/2013.
	15.04	Employ more local residents in the works. Provide safety equipment to all workers.	ARE ARE	Corrected, more staff employed for trench excavation in places where no access by JSB is possible.
	20.04	Establish temporary labor camps in consultation with the local authority; Ensure access and proper storage and cleaning of new camp at all times.	RE	Corrected to some extent; camp cleaned and internal storage improved; however, pipe storage not corrected.
	22.04	Plan transportation routes in consultation with Municipality and Police for water and sewerage network of Zones 1 & 2; Execute works at this section during non-peak hours.	RE	Corrected
	30.04	Provide wooden walkways/planks across trenches for pedestrians and metal sheets in Sections 1 & 2.	CWI	Corrected in some places, still pending in others.
	01.06	Staff to wear helmets, gloves, jackets, etc. Trenches to be fenced.	RE	
	06.06	Trench of pipeline and sewers to be protected and no access of local residents to sites.	ARE	Not corrected. Corrected partially.
	15.06	Trench compaction and reinstatement to be made according to approved standards and methods.	ARE	Corrected for Zone 3 only
	21.06	Fence to be installed at trenches. Intake to be fenced; Workers to wear helmets, gloves, vests.	RE	Corrected for a few sections only, most reinstatement pending.
	26.06	Control dust generation while unloading loose material.	CWI	Corrected partially. Not corrected. Not corrected for workers at Zone 2. Corrected at times

V. ANNEX C: PHOTO LOG

Anaklia Site



Side road vegetation after pipeline construction and refilling



Completed works in the private yard



Left construction materials at the road nearby places



Fuel container on the ground at storage site



Improperly placed waste containers



Workers wearing PPE

Mestia site



MES 02 - Improperly placed sewage system loop



MES 02 - Improperly placed sewage construction materials



MES 02 - Tranche without safety measures