Sub-Project: Construction of the Qvevri Workshop in Ikalto

Environmental and Social Review

WORLD BANK FINANCED
REGIONAL DEVELOPMENT PROJECT

Tbilisi, Georgia
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ABBREVIATIONS

CH	**Cultural Heritage**
EIA	**Environmental Impact Assessment**
EMF	**Environmental Management Framework**
EMP	**environmental management plan**
ER	**Environmental Review**
MDF	**Municipal Development Fund**
MoCMP	**Ministry of Culture and Monument Protection**
MoENRP	**Ministry of Environment and Natural Resources Protection**
MRDI	**Ministry of Regional Development and Infrastructure**
RAP	**Resettlement Action Plan**
RDP	**Regional Development Project**
RPF	**Resettlement Policy Framework**
SECHSA	**Strategic Environmental, Cultural Heritage, and Social Assessment**
WB	**World Bank**

Environmental Screening

The Sub-project (SP) envisages construction of the new Qvevri House in village Ikalto of Telavi municipality, Kakheti Region. The main purpose of the SP is popularization of one of the old Georgian tradition of wine making in Qvevri counting centuries. Making wine in Qvevri, determines special flavor, taste and velvet feeling of the wine. Restoration of traditional Qvevri making methods and creation of a Qvevris-Sakhli (Qvevri House) school was decided and Village Ikalto has been selected for setting up the school. The territory given to "Qvevri House" has all the preconditions to create a learning-manufacturing (workshop) and cultural center that will be equipped with high-class modern technologies. The goal of the present SP is to turn the Qvevri House into the structural part of Ikalto Monastery complex and its adjacent territory, implying to the Gold Road. This will help to develop historical-cultural, tourist-recreational and educational functions of the village Ikalto. It will also help to revive the neighborhood and transform it into an active public zone, on top of employment opportunities for local residents.

The SP site is located in the Eastern part of Georgia. Access to the construction sites from Tbilisi is possible through Tbilisi-Telavi-Akhmeta motorway and distance from Tbilisi is approximately 110 km. The 5407.55 m^2 area of the land plots (Cadastral Codes 53.12.35.108; 53.12.35.064 and53.12.35.064) have been allotted for construction of "Qvevri House" by Telavi Municipality Sakrebulo (Council). There are buildings located on these plots, which will be demolished prior to commencement of construction works. These buildings have been constructed in the 40th early years of the 20th century and were used as residential housing in the past. The buildings were in use by the local collective farm and were the State property. The Soviet-time members of the collective farmers and their families lived in these buildings. Only one man, a son of the former collective farmer, lives in one of these buildings and needs relocation from his current place of residence. The affected person will be fully compensated.

The buildings are constructed using Georgian break and for roofing. According to the demolition plan, it is desirable to perform demolition of the building by hand. As it is recommended dismantling will take place within the temporarily fenced area, some construction materials (such as bricks, timber and any others fit for re-use) shall be diverted out of the waste, peeled and stored separately on the site. The most part of old materials will be re-used during construction works of the Qvevri House. The territory is characterized by sloped topography. The average elevation makes 640 m above sea level.

The Qvevri House school will be a complex type building, combining three main components: cultural-educational, manufacturing, and tourist-recreational. Guided by experienced specialists,

the school students from various regions of Georgia will be taught not only traditional way of Qvevri making, but also various methods of making old Georgian drinking pottery and wine vessels. In order to learn traditional and modern methods, lecture courses and practical classes will be held for all interested persons. Georgian ceramic manufacturing will be popularized. It is not ruled out that manufacturing of old Georgian brick will also be revived. Making various ceramic details for restoration works is also possible.

(A) IMPACT IDENTIFICATION

Has sub-project a tangible impact on the environment?	The SP will have a modest short term negative environmental impact related to the generation of dust, noise, and vibration and construction waste during demolition of the existing buildings and construction of a new infrastructure on the SP site. As the SP site is located in the urban area with already modified environment, no impacts on natural habitats and/or water bodies are expected.
What are the significant beneficial and adverse environmental effects of sub-project?	The SP will have a long-term positive social outcome through improving living conditions of the local population. The successful implementation of the SP will contribute to the further development and accomplishment of rural infrastructure. SP will contribute to the revival and popularization of old traditions of Georgian ceramic manufacturing. It will give a basis to further improvement of the current neighborhood. The expected negative environmental and social impacts are likely to be short term and typical for small to medium scale construction works in modified landscape: noise, dust, vibration, and emissions from the operation of construction machinery; generation of construction and hazardous waste. As the roofing materials of existing buildings, subject to demolition, do not include asbestos material, there is no risk of generation of this type of waste.

	The further impacts expected from operation and maintenance of the Qvevri School will be related to the generation of waste and wastewater. The existing buildings are not equipped with the individual water supply system and waste water collection and treatment facility, therefore generation of waste related to the mentioned systems is not expected. There is no municipal sewerage system in the village Ikalto. The risk related to the increased sewage generation from the Qvevri School and wastewater discharge will be mitigated by the installation and appropriate maintenance of the individual wastewater treatment facility (septic tank).
May the sub-project have any significant impact on the local communities and other affected people?	The long-term positive social impact will be beneficial for local community. The SP will help to develop historical-cultural, tourist-recreational and educational functions of the village Ikalto. It will also help revive the neighborhood and transform it into an active public zone. The implementation of SP will effect positively on the local population, through creation of job opportunities during construction and operation of the Qvevri school. It will facilitate to the growth of tourist flow, attraction of private sector investment in tourism infrastructure (hotels, restaurants, shopping, entertainment, etc.). Negative impacts are short term and limited to the construction site. They are related to the possible disturbance described above. No new land take and relocation are expected. The land plot is registered in the Public Register, as an asset in the State ownership with the specified area 5407.55 sq.m. Cadastral code 53.12.35.108; 53.12.35.064 and 53.12.35.065 (See attached file – Cadastral information). No permanent impacts are envisaged on adjacent agricultural lands.

(B) MITIGATION MEASURES

Were there any alternatives to the sub-project design considered?	Given that the SP has been initiated by the local government which will be implemented on the land allotted and owned by the Telavi municipality Government and envisages construction of the new building no alternatives have been considered.
What types of mitigation measures are proposed?	The expected negative impacts of the construction phase can be easily mitigated. ✓ The construction waste will be disposed on the nearest municipal landfill in accordance with written agreement with the Solid Waste Management Company of Georgia Ltd.; ✓ Natural construction materials will be procured from licensed producers or be obtained by contractor from the existing quarries to the extent feasible. ✓ The disturbance of population (noise, dust, emissions) will be avoided through proper work/supplies scheduling, good maintenance of the construction machinery, etc. ✓ To avoid water pollution from the septic tank, it will be serviced following operational instructions. The infrastructure of Qvevri School will be transferred to the entity that owns the land under it, i.e. the Telavi Municipality Government. This entity will have overall responsibility for adequate operation and maintenance of the infrastructure.
What lessons from the previous similar projects have been incorporated into the sub-project design?	MDF has a vast experience for implementation of medium and large scale buildings rehabilitation and construction projects financed by IFIs. Based

	on the lessons learned from previous similar projects, design envisages not only construction of the new building but also arrangement of resting areas for visitors and auto parking sites, landscaping of the SP area and installation of individual waste water treatment facility (septic tank) for sewerage.
Have concerned communities been involved and have their interests and knowledge been adequately taken into consideration in sub-project preparation?	The SP was developed by the Telavi Municipality in consultation with the Sakrebulo of Telavi Municipality. SP EMP will be made available for village Ikalto population and local clergy and will be discussed in a consultation meeting prior to the commencement of works.

(C) RANKING

Based on the screening outcomes,

Subproject is classified as environmental Category A ☐

B ■

C ☐

Conclusion of the environmental screening:

1. Subproject is declined ☐
2. Subproject is accepted ■

If accepted, and based on risk assessment, subproject preparation requires:

1. Completion of the Environmental Management Checklist for Small Construction and Rehabilitation Activities ☐
2. Environmental Review, including development of Environmental Management Plan ■

Social Screening of Sub-projects

Social safeguards screening information		Yes	No
1	Is the information related to the affiliation, ownership and land use status of the sub-project site available and verifiable? (The screening cannot be completed until this is available)	✓	
2	Will the sub-project reduce people's access to their economic resources, such as land, pasture, water, public services, sites of common public use or other resources that they depend on?		✓
3	Will the sub-project result in resettlement of individuals or families or require the acquisition of land (public or private, temporarily or permanently) for its development?	✓ *	
4	Will the sub-project result in the temporary or permanent loss of crops, fruit trees and Household infra-structure (such as ancillary facilities, fence, canal, granaries, outside toilets and kitchens, etc.)?		✓
If answer to any above question (except question 1) is "Yes", then OP/BP 4.12 Involuntary Resettlement is applicable and mitigation measures should follow this OP/BP 4.12 and the **Rresettlement Policy Framework**			

*ne of the buildings in the indicated area is occupied by an informal local dweller Irakli Shatirishvili. This person has no other place to live. For resettlement purposes an alternative housing was selected for his family and a notarized deal (with local representation) was concluded

1. Introduction

1.1. Background Information

Government of Georgia is implementing a Regional Development Project (RDP) in Kakheti with the support of the World Bank. A number of sub-projects (SPs) are being planned and financed from the proceeds of RDP.

The main purpose of the present SP is popularization of one of the oldest Georgian tradition of wine making in Qvevri dating back to centuries. This old tradition of making wine in Qvevri, determines special flavor, taste and velvet feeling of wine. Restoration of traditional Qvevri making methods and creation of a Qvevris Sakhli (Qvevri House) school was decided to and Village Ikalto has been selected for setting up the school. The territory given to "Qvevri House" has all the preconditions to create a learning-manufacturing (workshop) and cultural center that will be equipped with international high-class modern technologies. The goal of the present SP is to turn the Qvevri House into the structural part of Ikalto Monastery complex and its adjacent territory, implying to the Gold Road. This will help develop historical-cultural, tourist-recreational and educational functions of the village of Ikalto. It will also help revive the neighborhood and transform it into an active public zone on top of employment opportunities for local residents. The infrastructure of Qvevri School to be provided at the SP site will be transferred to the entity that owns the land under it, i.e. the Telavi Municipality Government. This entity will have overall responsibility for adequate operation and maintenance of the infrastructure.

There are located three one story and one two story buildings, and old fence on the construction site which should be destroyed. The aggregate floor area of these buildings is 610.34 m^2. These buildings have been constructed in the 40th early years of the 20th century and were used for dwelling in the past and are currently unusable for living. The owner of the SP territory and buildings located on them was local soviet collective farm which was under the state ownership. It should be mentioned that the land plots along with the buildings located on these plots always had been owned by the local municipality government. The soviet collective farmers and their families were living in these buildings. Only one man, son of the old soviet collective farmers lives in one of these buildings and needs relocation from his current place of residence. According to the WB OP/BP **4.12 Involuntary Resettlement Policy** and the **Resettlement Policy Framework (RPF)** the above mentioned person indwelling on the SP territory will be fully compensated.

The Qvevri House school will be a complex type building, combining three main components: cultural-educational, manufacturing, and tourist-recreational. Guided by experienced specialists, the school students from various regions of Georgia will be taught not only traditional way of Qvevri making, but also various methods of making old Georgian drinking pottery and wine vessels. In order to learn traditional and modern methods, lecture courses and practical classes will be held for all interested persons. Georgian ceramic manufacturing will be popularized. It is

not ruled out that manufacturing of old Georgian brick will also be revived. Making various ceramic details for restoration works is also possible.

SP for the Construction of the Qvevri School in village Ikalto is a part of the RDP and shall be prepared, reviewed, approved, and implemented in agreement with the requirements of the Georgian legislation and the World Bank policies applicable to the RDP.

1.2. Institutional Framework

The Municipal Development Fund of Georgia (hereinafter: the MDF) is a legal entity of public law, the objective of which is to support strengthening institutional and financial capacity of local government units, investing financial resources in local infrastructure and services and improving on sustainable basis the primary economic and social services for the local population (communities). MDF is designated as an implementing entity for the RDP and is responsible for its day-to-day management, including application of the environmental and social safeguard policies.

MDF prepares and submits to the World Bank for approval the Subproject Appraisal Reports (SARs), with safeguards documents attached. These may include, as case may be, an Environmental Review (ER) along with an Environmental Management Plan (EMP), an EMP prepared using the Environmental Management Checklist for Small Construction and Rehabilitation Activities, and a Resettlement Action Plan (RAP).

Key Stakeholders:

Grant Recipient/ Borrower**:**	Government of Georgia represented by the Ministry of Finance
Local Representation:	Municipality of city Telavi
Sources of Funding/Financing:	Word Bank (WB) and Municipal Government (MG)/Government of Georgia (GOG)
Implementing Agency**:**	Municipal Development Fund of Georgia (MDF)

Financial Arrangements

The estimated project costs for construction of Qvevri School and its infrastructure are 2,554,856.12GEL (including VAT). The costs for Purchase and installation of technological equipment are not included in the mentioned project costs.

1.3. Implementation Structure

World Bank (WB) Loan Agreement with the Government of Georgia; Project Implementation Agreement between the Borrower (Georgia) and MDF for the project; Investment Financing Agreement (IFA) between MDF and the Municipal Government (MG) of city Telavi for funding of the construction of the Qvevri House, in particular construction of new school building and Qvevri shop, arrangement of auto parking sites, toilets, access road, inner and outer water supply, power supply, gas supply and sewerage (including waste water treatment facility) and drainage systems.

2. Legislation and Regulations

According to the law of Georgia on Permit on Environmental Impact (2008) the subproject does not belong to the activity subject to the ecological examination (paragraph 1 of Article 4) and no preparation of EIA and obtaining of Permit on Environmental Impact is required.

The SP triggers to the OP/BP 4.01 Environmental Assessment, OP/BP **4.12 Involuntary Resettlement** and OP/BP 4.11 Physical Cultural Resources of the World Bank.

According to the above mentioned safeguard policies and the Environmental Management Framework adopted for the current program, the SP has been classified as B (+) category and requires preparation of Environmental Review (ER) including environmental Management Plan (EMP). During preparation of the presented ER with EMP the recommendations of SECHSA developed for RDP have been used.

The SP has been adopted by the Telavi municipality Sakrebulo.

3. Subproject Description

3.1. Brief Information on Proposed Subproject

The SP envisages construction of new 3-level building of Qvevri House.

The preparation phase includes safe demolition of the existing buildings located on the construction site and clean up the site. According to the Demolition Project prepared especially for the current SP, three one story and one two story buildings, and old fence should be destroyed, with their aggregate floor area making 610.34 m^2 and their volume totaling 1755.12 m^3. The buildings have been used for dwelling in the past. The owner of the SP territory and buildings located on them was local soviet collective farm which was under the state ownership. The soviet collective farmers and their families were living in these buildings. Only one man, son

of the old soviet collective farmers lives in one of these buildings and needs relocation from his current place of residence. According to the WB OP/BP 4.12 Involuntary Resettlement Policy and the Resettlement Policy Framework (RPF), respectively, the above-mentioned person indwelling on the SP territory will be fully compensated.

According to the demolition plan, it is desirable to perform demolition of the building by hand. As it is recommended dismantling will take place within the temporarily fenced area, some construction materials (such as bricks, timber and any others fit for re-use) shall be diverted out of the waste, peeled and stored separately on the site. The most part of old materials will be re-used during construction works of the Qvevri House. The other remains will be temporarily stored on the construction site and removed from the site along with the other construction waste and disposed on the nearest municipal landfill in accordance with written agreement with the Solid Waste Management Company of Georgia Ltd.

The construction materials used for existing buildings do not include asbestos or other hazardous material. There are no existing water supply and sewerage systems in these buildings. Therefore there is not risk for generation of hazardous construction waste during demolition of buildings.

Construction phase

The project envisages construction of 3 story craft school building, arrangement of water, power and natural gas supply, sewerage, drainage and ventilation systems for designed building, and landscaping of SP site as well.

The new 3 story building will have rectangular shape, without any balconies or loggias, with two staircases. Mean floor height will make 3.40 m. There will be no basement. It is a frame building with wall filled in with block-work and rubblework finished with Georgian brick. Floors will represent cast-in-situ reinforced concrete slabs. Stairs also will be of cast-in-situ reinforced concrete, with steps paved with Kursebi granite and basalt slabs. The roof rested upon wood rafters will be of profile roofing sheets and ceramic roofing tiles.

Pursuant to the peculiarities of the technological process taking take place in a pottery, the industrial section of the building will be divided into three main portions/bays: 1. Clay preparation and storage bay. 2. Main kiln for firing Kvevri, big enough to hold 4 earthenware pots at one time. 3. Qvevri manufacture bay which by stained-glass windows is separated from the wine sampling hall from where the visitors can watch the Qvevri shaping process as if they were immediately involved in it. Volunteers will also be given an opportunity to participate in making diverse earthenware vessels. The wine sampling hall is adjacent with an entrance lobby and WCs. The ground floor will also house a dishwashing room and the bar service premises accessible from the hall and provided with an independent entrance.

Via a stairway, we will get from the wine sampling hall to the first floor of the building, given to offices and a museum. A beautiful display in a small exhibition hall will give the visitors a certain idea on the history and originality of Georgian pottery. An open veranda adjacent to the show space is the upper floor of the shop where Qvevri vessels are made and fired; it will house an open-air museum and used as a classroom for summer sessions. Via a metal stair we can go down to the courtyard where the clay delivered for pottery-making is received and sorted in special hoppers and where fired Qvevri vessels are stored.

Next to the museum, there will be an entresol connected with the former via a stairway. This mezzanine will house a library and a room for designers' creative work, with a minor conference hall/meeting room. There will be one more stairway leading from the library to another veranda serving, with its splendid pergola, as a recreation space.

Design solution of the industrial bay meets provisions of the sanitary and hygienic norms currently in force: these premises are provided with WCs, shower cubicles, and changing rooms). Special attention is given to industrial safety measures. In the attic of the pottery burning shop, plastic fire water tanks will be installed. Stained glass units and windows are framed with wood-effect metal-plastic into which window panes are inserted.

The walls of the building will first be plastered with dry plaster (drywall) and lime-cement plaster and then be painted with high quality paint. The floor in the entrance lobby on the first floor will paved with ceramic granite floor tiles while in the space housing the industrial bay mosaic floor will be laid. On the floors on the second floor and in the attic, Class 32 laminated flooring board will be laid. WCs, kitchens and lobbies, including the entrance lobby at the front door will be paved with ceramic tiles. In WCs, false ceiling of plastic profiles will be installed. Interior doors will be made of medium-density fiberboard (MDF).

Facades of the building will be trimmed with Georgian brick whereas the rear façade opening to the courtyard will be stuccoed with lime-cement mortar and painted with brick-and-concrete paint. At the main entrance to the building, a ramp intended for the disabled will be provided.

The building design has been in some way determined by its technological features and adopted construction system characteristic to Kakheti region and some elements traditional to ethnic residential buildings (slate-stone, Georgian brick) was used. During demolition of old buildings, available construction materials should be preserved as much as possible for its further usage.

The power and natural gas supply of Qvevri School will be provided from local power and natural gas supply systems.

Water supply system

Water supply system with cold water will be provided from the water supply wells to be arranged outside of the designed building, using of pump. The design envisages arrangement of water reservoir inside of the building which will be filled with water from the wells. The hot and cold water supply of the water supply network will be provided using special pumps.

Hot water will be provided from boiler-room located in the designed building, using boiler and calorifier.

Cold and hot water supply system are foreseen to be organized using polypropylene pipes and the pipe protection by insulation. The design envisages to lead out a d = 50 mm pipe from water reservoir (located in the building) outside the building, firefighting purposes.

Sewerage system

The internal sewerage system is envisaged to be arranged using plastic thick-skinned pipes and the plastic corrugated pipes are foreseen for arrangement of outward network.

The horizontal d = 100 mm standpipes through outputs will be connected with sewage wells located in the yard, after the sewage network will be inserted in the sewage treatment unit which will be set up outside, 115 m far from the designed construction.

A biological treatment unit (daily capacity $6m^3/d$) based on modern technologies will be used for treatment of the sanitary sewage. The unit consists of a cylinder made of polypropylene, hermetically sealed from the bottom. It is lined with polypropylene from inside and divided into several areas of treatment. It is characterized with:

1. High quality of waste water treatment.
2. Electric power saving technology.
3. Fully automatized. No necessity of permanent supervision. The process of treatment of waste waters is fully automated, which enables optimization of the process of treating. It means that in the process of treatment of waste waters it can switch according to the flow automatically to the first, second and third saving modes. And moreover, it can operate in forced mode. The facility is equipped with emergency warning system when:
    - Electric power is switched off.
    - Any unit fails.
    - Filling of the receiver cell with large, rough items.
4. The sewer can be operated remotely from the watch house.
5. No need for cesspool truck for removing of waste. Accumulation of excess active slime is made in the bag inside the treatment facility, which is removed manually and put into a closed container. A new bag is put in its place.

6. Water treatment technology is made so that methane and hydrogen are not liberated, which enables the treating facility to be close to the building. Moreover, the process of nitrification and gentrification is repeated there several times, which enables reducing of phosphorus and nitrogen in the treated water.
7. In case of power outages, it can push earlier treated water from its sewer and continue working as multistage sediment chamber, which enables purification of waste waters from grease and floating waste. Upon restoration of power supply the facility starts operating in the normal mode.
8. A sewer is made by means of controllable lifts, which is expected to receive maximum volley expenditures, enabling avoidance of leakage of untreated water from the facility.
9. The facility is made of polypropylene, which is not chemically active. It does not corrode, it is hermetic, it is small and light-weight.
10. With new technical solutions, high reliability, long-term service, low power consumption and high quality treatment of waste water.

The treating facility envisages chlorination of waste water; it is located under the manhole. Supply of already prepared hypochlorite is performed automatically.

Technical characteristics of the treatment facility

Data	Characteristics of treating facility	
	Input	Output
J b ml, mg O_2/l	≈390	5÷7
J q. m, mg O_2/l	≈480	≤50
NH_4 mg/l	20	≤1
Particles mg/l	220	≤5÷8
Coli index	>100 000	1 000

The treated water after processing in the septic tank will be discharged the ravine located in adjacent to the construction site.

The Drainage System

the water from the pitcher workshop and clay processing plant will flow down to the precipitations, from where water will flow down in storm water receiving wells, where will be gathered water from atmospheric precipitations.

The storm water from the yard will be discharged in the existing ravine outside of the territory, after processing in the reinforced concrete drain sump.

The Ventilation System

The key systems will be arrange using D = 100 mm thin-walled plastic pipies and fixed household block ventilators installed in the WCs.

Landscaping

The asphalt pavement around the building, survived for today shall be partially removed, and the space made available thereby, shall be planted with greenery. On the side of the street, open-air car parks trimmed with decorative tiles will be arranged. Access and site motor roads will be

separated from one another with concrete curbs. To provide natural drainage of rainwater, a special road grade has been designed.

Schedule of Construction Machines, Mechanisms, Gears & Tools

Item No.	Description	Brand	Qty, units
1	2	3	4
1	Container dump truck and special mobile machinery/motor vehicle for transportation of construction cargoes	Various	1
2	Mobile compressor plant	SO-48	1
3	Electric welding and cutting plant	Unit	1
4	Autogenous welding and cutting plant	Plant	1
5	Metal roof cleaning/brushing machine	PKU-35	1
6	"Ivanovets" class mobile truck crane	-	1
7	Pneumatic tools: drill, screwier etc.	Kit	2
8	Steel sectional scaffold	Kit	1
9	Track crane		1
10	Erection crane	ТП-3А	1

Approximate duration of the Sp – 18 months.

Operation of the Qvevri House

The infrastructure to be provided at the SP site will be transferred to the entity that owns the land under it, i.e. the local government of the Telavi Municipality. This entity will have overall responsibility for adequate operation and maintenance of the infrastructure. Towards this goal they would consider outsourcing operation and maintenance function to private sector. All infrastructural elements (access road, parking lots, outdoor illumination, cafes, Qvevri shop and WCs) will be considered as a single lot which will be outsourced as a full package. Failure of an operator to keep any element of infrastructure in good functional state may lead to termination of an outsourcing agreement for the entire package.

4. Baseline Environmental Conditions

The SP site is located in village Ikalto of Telavi municipality, Kakheti Region, Eastern Georgia. Access to the construction sites from Tbilisi is possible via Tbilisi-Telavi-Akhmeta motorway and distance from Tbilisi is approximately 110 km. The site is located to the right of the Telavi-Akhmeta motorway, adjacent to the road used for accessing of Ikalto Academy. The land area (Cadastral Codes 53.12.35.108; 53.12.35.064) alloted for construction is 5407.55 m^2 in total. The

territory is characterized by sloped topography. The average elevation makes 640 m above sea level

To determine potential risks of environmental and social impacts and develop special measures to mitigate expected impact, it is important to discuss existing baseline environmental and social conditions of the region and area of SP location. The presented ER will discuss baseline information regarding cultural heritage to avoid impacts on the monuments of cultural heritage located nearby the SP site.

4.1. Physical-geographical Description, Geology, Geomorphology, Hazardous Geological Processes

4.1.1. General physical-geographical description

Kakheti Region is situated in the eastern part of Georgia. The Kakheti Region is bordered by Russian Federation from the north (Republics of Chechnya and Dagestan), Azerbaijan from the east and south and Georgian regions - Mtskheta-Mtianeti and Kvemo Kartli from the west.

The area of Kakheti is 11040,6 km^2 constituting 16,6% of the whole territory of Georgia. Kakheti includes 8 administrative regions.

Telavi is the city in the Eastern Georgia. It is located in the bottom of the north-east side of Gombori Mountain, on Alazani valley. It is the administrative center of Kakheti region and Telavi Municipality. Telavi is the final destination of Tbilisi-Telavi railroad. It is located 550-800 m. above the sea level and distance from Tbilisi is 158 km. Telavi was established and received its status as a city in 1801. The population of Telavi is 21.8 thousand people (according to 2002 census).

There are 24 villages in Telavi municipality.

4.1.2. Morphological, geological, tectonic and hydrogeological conditions

According to the tectonics, Kakheti region includes three large geotectonic blocks: the eastern zone of subsidence of loess schistous slates stratum of anticlinorium of the Caucasioni main ridge;

Kazbegi-Lagodekhi zone of the Lower and Middle Jurassic slates of the folded system of the Caucasioni southern slope and Mestia-Tianeti zone of the Upper Jurassic and Cretaceous carbonate flysch, which is divided into two sub-zones (Zhinvali-Gombori and Alazani subsidence zones);

Eastern subsidence zone of Georgian lump (intermountain depression) is presented by outer Kakheti sub-zone within the limits of Kakheti.

The landscape of Telavi is scenic. The city is wrapped in picturesque landscapes from all sides. Telavi faces the Tsiv-Gombori Range to the south and south-west and borders on the Alazani Valley to the north and east. The Greater Caucasus mountain range, which runs to the north of the Alazani Valley, can be seen from most of Telavi.

Tsiv-Gombori Range is a large young anticline developed on the substrate of Pliocene Molassa deposits. The given deposits are situated in an unconformity on the Cretaceous and Paleogene complex-folded flysch deposits. In the crest part of Tsiv-Gombori ridge and upper step of its northern slope, there are fragments of plain-wavy watersheds and denudation surfaces survived. Its surfaces are dissectioned by breakthrough gorges and all of them are characterized by the development of strong mudflow processes;

Geological-Engineering Survey of the Construction Site

In September 2013, the Geological Engineering Survey Department of the AKHALI SAKKALALMSHENPROEKTI LTD, commissioned by "STUDIO 4" LTD (Order No. 233/2013), carried out geotechnical exploration of the sites allotted for construction of a Qvevri craft school/pottery and a Qvevri shop in the village of Ikalto under Telavi Municipality.

The exploration was aimed at studying geotechnical conditions of the sites allocated for construction and at determination of foundation conditions for the buildings to be erected.

Currently available technical characteristics of the design buildings, specified so far are brought in the Specification of Requirements attached herein.

No data or records concerning any earlier geological surveys ever performed within the sites proper are available.

Based on the Specification of Requirements supplied by the Client and on the provisions of the relevant regulatory documents (SNiP1.02.07-87, Design norms PN 02.01-08 and PN 01.01-09) currently in force in Georgia, 6 boreholes, No.1÷6, were drilled within the sites. The boring pattern (location of boreholes) had been proposed by the Client. The boreholes included 4 ones (No.1÷4), 10 to 11 m deep, drilled within the site intended for the Qvevri school site, and 2 ones (No.5 & No.6), each of 6 m in depth, drilled upon the Qvevri shop site. The aggregate boring footage totaled 55.0 running meters.

The boring was performed by the dry machine core-drilling method, by a UGB-1VS soil sampler with its rig up to 160 mm in diameter, in shortened flights with continuous core production.

The samples of the material taken from the boreholes and forwarded to laboratory testing included 12 undisturbed soil samples which were studied at the Geotechnical Laboratory of the SKMP Engineering Survey Department. The findings of the above studies have been enclosed with this Report as a soil summary table.

The topographic plan scaled 1:1000, supplied by the Client and showing the boring pattern has served as the base both for the geodetic connection of the boreholes and drawing-up of topographical profiles of the sites.

The sites thereby surveyed lie on the right-hand side of the Telavi-Akhmeta motor road, adjacent to the road leading to the Academy of Ikalto.

Geomorphologically, the area under investigation lies within the extremity of the northern slope of the Gombori mountain range. It represents a part of the right-hand terrace of the river of Ikalto, and its relief is generally inclined northwards.

Based on the data obtained as a result of the survey, lithological sections of both the boreholes and sites were drawn up.

As obvious from the sections enclosed herein, the material participating in the lithology of the area (within the depth interval from 6 to 11 m below ground surface) are represented by 2 different soil types of proluvial-deluvial genesis (dpQIV): clayey soil and coarse detritus. The clayey soils are represented by brown clays of hard and semi-hard consistency and insignificant gypsum content, with pebble and crushed stone inclusions making 10 to 15 percent of the bulk (Layer 2).

The coarse detritus is represented by roughly shaped pebble stones of different sizes, mainly filled in with clayey soil making 40 to 45 percent of the bulk (Layer 3).

Thicknesses of the above-mentioned clayey soil layer and the coarse detritus layer would vary considerably (between 0.2 m and 4.20 m) and mutually replace each other quite irregularly, both vertically and horizontally. The content of the above layers varies, too – sometimes the clayey soil prevails, and sometimes the coarse detritus does.

The proluvial-deluvial material prevailing in the geology of the sites is overlain with a made ground layer of 0.5 up to 2.5 m in thickness (tQIV) – i.e. filled soil representing mix of clay, pebbles, crushed stone, brick rubble and ceramic fragments (Layer 1).

No ground water has been found on the sites within the depth range surveyed thereby.

4.1.3. Geo hazards

Southern part of Kakheti region is located within earthquake intensity of 7 grade, the central part comprising Dedoplistskaro and Sagarejo falls within 8 grade, Signangi and Gurjaani is located at the boarder of 8 and 9 grade zones and the Northern part of Kakheti, including Telavi, Ikalto, Akhmeta, Kvareli, as well as Tusheti falls within the most high risk zone of 9 grade earthquake intensity.

There are no geo hazard areas and hazardous geological processes at the project area.

4.1.4. Climate

Telavi municipality belongs to the moderately humid subtropical climate district. Alazani valley formed hot humid summers and moderately cold winters. Mein annual air temperature is 12 ^{0}C, the absolute maximum of 39 ^{0}C, 700-800 mm precipitation per year.

4.1.5. Hydrology

A main river of Telavi municipality is river Alazani. City Telavi is located in the catch basin of river Alazani which is the second largest river in Georgia, heads on the southern slopes of the Caucasioni at 825 m altitude above sea level, at the point where two rivers, the Tsiplovaniskhevi and Samkuristskali merge at village Kadori. The river flows into Mingechauri water reservoir at the eastern ending of outer Kakheti plateau. The length of the river Alazani is 351 km, its total fall is 745 m, its mean slope is 2,1‰ and the area of its catch basin is 11800 km^2.

4.1.6. Soils

On the left sate of the Alazani valley is developed meadow-forest noncarbonated alluvial soil and on the right side the alluvial carbonate soil. In the foothill zone is developed the brown soil. In the Caucasus range and in the lover of slopes under broad-leaved forest is developed gray forest soil.

4.1.7. Flora and Fauna

The SP site is located in the urban, already transformed area, with poor natural landscape. It is important to be mentioned that on the construction site are located 4 cypress trees. To avoid any adverse impact on the important species of trees, the cypresses, have been integrated into the design of new building and its infrastructure, which also will give the aesthetic appearance to the newly arranged infrastructure.

4.1.8. Cultural Resources

There are many significant monuments of cultural heritage in the Telavi Municipality. One of the most important among the about ten small and medium size churches located on the territory of village Ikalto is St. Nino church which is located in the close proximity of construction site. The most important monument of cultural heritage located close proximity to the SP territory is Ikalto monastery. As it was mentioned above the main goal of the SP is to turn the Qvevri House into the structural part of Ikalto Monastery complex and its adjacent territory, implying to the Gold Road.

The construction site is approximately 2km far from the Ikalto Monastery. As the Ikalto Monastery territory is located after construction site location and is far from it the SP implementation will not affect on the CH monuments of the monastery. Qvevri House will not be visible from the Monastery's territory and will not effect on the aesthetic value on the monastery.

The St. Nino church is located close to construction site. The distance between St. Nino church and part of the construction site where active construction activities will be carried out is 75 m. Irrespective of, the distance is enough to avoid the negative impact on the St. Nino church

remains caused by construction activities, the project envisages isolation of the church from construction site through arrangement of special barriers, in order to avoid any negative impact on the ruins of the church.

The Ministry of Culture, the Church representatives and other stakeholders were involved in decision-making on the location and the architectural design of the facilities for Qvevri House. Metropolitan Bishop-David of Alaverdi Eparchy (to this Eparchy belongs village Ikalto and all churches on its territory) participated in the discussions.

5. Analysis of Potential Impacts

5.1. Construction Phase

5.1.1. Social Impacts

- **General set of social issues.** Significant social impact of construction activities, like change of local demographic structure, influx of new settlers, secondary development, job opportunities, and increase of AIDS risks is not envisaged.
- **Resettlement Issues.** Project does not imply private land acquisition and no impacts are envisaged on private or leased agricultural lands and private assets or businesses.
- **Positive impact related to Job opportunities for construction workers.** Limited and temporary during construction and operation.
- **Health issues related to noise, emissions, and vibration.** Limited and temporary.
- **Traffic Disruption**. Local traffic can be impacted limited and temporary by transport activities related to the project.
- **Safety and Access**. There will be reduced access to areas adjacent to construction and potential hazards to vehicles and pedestrians during construction downtime.

5.1.2. Impact on cultural heritage

As it was describes above, there are aboveground monuments and known archaeological sites presented in the vicinity of worksite. The risks of impacting the physical cultural property during construction works are marginal and related to noise, dust, vibration, and emissions from the operation of construction machinery. Also archaeological sites could not be excluded. The risk of impact on the aesthetic values and style of the monuments is high. Supervision during constriction works is required.

5.1.3. Environmental Impacts

Pollution Related Impacts

Improper handling, storage, use and disposal of construction materials and wastes could pose a risk of water/ soil contamination at the construction site and storage site. Improper maintenance

and fueling of equipment could also lead to the potential contamination of soil and to some extent – water (near the crossings of the unnamed seasonal stream). The later impact is less probable.

Soil Pollution

Potential pollutants from a project of this nature include the following (this list is not exhaustive):

- Diesel fuel, lubrication oils and hydraulic fluids, antifreeze, etc. from construction vehicles and machinery;
- Miscellaneous pollutants (e.g. cement and concrete);
- Construction wastes (packaging, stones and gravel, cement and concrete residue, wood, etc.)

Water Pollution

Water pollution may result from a variety of sources, including the following:

- Spillages of fuel, oil or other hazardous substance, especially during refuelling
- Releasing silty water from excavations
- Silt suspended in runoff waters ("construction water")
- Washing of vehicles or equipment
- Exposure of contaminated land and groundwater

Spillages may travel quickly downhill to a watercourse or water body. Once in a watercourse, it can be difficult to contain the pollution which can then impact over a wide area downstream. It is therefore vital that prompt action is taken in the event of any potential water pollution incident.

Once the working width has been stripped of topsoil, the subsoil becomes exposed. During earthworks in a wet weather this may result in uncontrolled release of suspended solids from the work area.

Air Pollution and Noise

Potential impact of air pollution is minimal and related to the demolition of old buildings and operation of vehicles and heavy machinery at the construction site and during transportation of materials.

- Noise and vibration arising from demolition activities and heavy machinery and vehicles;
- Air emissions (from vehicles, bulldozers, excavators etc.);
- Dust (from demolition activities, vehicles);
- Fumes may be a concern linked to supply and transportation of materials.

Construction Related Wastes

Inert Construction Wastes

The following types of inert waste are anticipated to be produced from these activities:

- Demolition waste - 2631m^3;
- Natural materials (soil and rock);
- Contaminated soil with nonhazardous substance or objects;

Non Hazardous Construction Wastes

In summary the main non-hazardous construction wastes will include the following:

Non Hazardous Construction Wastes

In summary the main non-hazardous construction wastes will include the following:

- Packaging materials;
- Timber (small amount of removed trees and bushes).
- Metals (including scrap metal and wire) – negligible amount of metal waste is expected.

Hazardous Construction Wastes

Small quantities of the hazardous wastes will arise mainly from the vehicle maintenance activities. A number of hazardous wastes, which could be generated, include:

- liquid fuels;
- lubricants, hydraulic oils;
- chemicals, such as anti-freeze;
- contaminated soil;
- spillage control materials used to absorb oil and chemical spillages;
- machine/engine filter cartridges;
- oily rags, spent filters, contaminated soil, etc.)

Transport related impacts

- Noise & Vibration Impacts;
- Traffic congestion (nuisance);
- Air pollution;
- Mud on roads;
- Refuelling, maintenance and vehicle cleaning and related risks of soil and water contamination.

Topsoil losses due to topsoil stripping

- Topsoil washout due to improper storage and reinstatement
- Silt runoff to watercourses and water bodies
- Exposure of contaminated land

Flora. Potential impact is not expected. The project does not envisage woodcutting.

Landscape. The project design does not envisage any substantial changes of landscape. The preexisting relief will be reinstated.

5.2. Operation Phase

The infrastructure of Qvevri School to be provided at the SP site will be transferred to the entity that owns the land under it, i.e. the Telavi Municipality Goverment. This entity will have overall responsibility for adequate operation and maintenance of the infrastructure.

The further impacts expected from operation and maintenance of the Qvevri School will be related to the generation of waste and waste water.

Potential impact related to the operation of the provided infrastructure would be the following:

- Increase of the number of tourists will result in the increased volume of waste and noise;
- The traffic will increase in adjacent area of CH and SP sites, which will result in the increased level of local emissions and noise as well as traffic safety issues;

6. Mitigation Measures

6.1. Construction Phase

The following works are planned for arrangement of the tourism infrastructure regarding monuments of cultural heritage, in particular arrangement of auto parking sites, Qvevri shop, toilets, access road, inner and outer water supply, gas supply and power supply systems, sewerage and drainage systems.

General requirements:

Demolition operations shall be performed with strict observance of safety regulations and rules on prevention dusting of the adjacent housing areas. The demolition/dismantling operations shall be performed under construction supervision.

Application of the heavy machinery and equipment is prohibited, especially before completion of strengthening works:

1. The machinery should move only along the preliminarily agreed route;
2. The maximum allowed speed will be restricted on the castle adjacent territory;
3. The frequency of movement of the machinery will be restricted;
4. The main works, in particular in the castle area, should be executed without application of the machinery (manually);

5. Vicinity of the monuments territory, the marginally allowable rates of vibration, noise and emissions will be by 20% decreased of maximum admissible levels of atmospheric air pollution, vibration and noise[1];
6. Storage of hazardous wastes on the cultural heritage rehabilitation area will be prohibited
7. Any construction or municipal wastes produced during rehabilitation stage should remove from the vicinity of cultural heritage area every day at the end of working hours.
8. Every worker at mobilization stage will undergo the respective training on working on the high sensitivity site. The institute provide such training and module of the training should agreed with National Agency for Cultural Heritage Preservation

Noise Related Impact

Noise is one of typical impacts related to the construction activities. The compliance with the environmental requirements is even more significant for the project area due to the considerations regarding the construction activities list to be implemented within the territory of historical monument area, because it will involve the transportation of heavy cargo with heavy vehicles and fairly intensive traffic in the direct proximity of the historical monuments of the greatest importance.

In case of absence of special measures and disregard to the restrictions the transport and devices could inflict serious damage.

Contractor construction organization should adopt special measures to receive the appropriate construction permit and achieve agreement with all stakeholder organizations both on cargo transportation.

Mitigation Measures

- The selected movement route of the heavy vehicles should be maximally distances from historical monuments. In exceptional cases the allowed intensity of the vehicle traffic and speed should be determined;
- The import of the inert material shall be conducted from the licensed quarries nearby project area. The rout of the transport movement during the transportation of inert material and any other construction material should be agreed upon with the appropriate regional services and overload with the trucks and violation of the allowed traffic intensity should not take place;
- The maximum speed should be restricted to the safety level during the pass of the trucks in the proximity of the historical monuments;

[1] 'Law on public health', the environmental qualitative norms are approved by decrees of the Minister of Labor, Health and Social Security of Georgia (Decrees Nos. 297/N of 16.08.2001, including the changes made to it by further decrees of the Ministry Nos. 38/N of 02.24.2003, 251/N of 09.15.1006, 351/N of 12.17.2007)

- The contractor organization should develop and submit to the customer the risk factors, their mitigation measures and emergency situation action plan prior to the beginning of the works;
- In case of emergency the measures agreed with the customer should be implemented under the surveillance of the interested organizations and with due regard to their comments;

In case of discovery of archeological objects during the land work the construction works should cease and Telavi municipality duly informed

Pollution Prevention Measures:

Water/Soil Pollution. Specific mitigation measures should be implemented at the construction site for prevention of water and soil pollution:

Prevent operation of vehicles in the watercourses (e.g. unnamed stream near crossing sites) and if there is no alternative, revision of vehicles will be required to ensure that there is no leakage of fuel and lubricating materials.

Contractors will ensure the proper handling of lubricants, fuel and solvents. Fuel and lubricant storage tanks will not be located within 50m of any watercourse, well or dry river bed (first of the entire dry gorge where the water main passes). All tanks will be placed in a bund of at least 110% of the tank's maximum capacity. If more than one tank is stored within the bund, the system must be capable of storing 110% of the biggest container's capacity or 25% of their total capacity, whichever is greater. The bund will be impermeable (e.g. concrete-lined), without drainage points or other breaches. Accumulated rainwater in bunds will be pumped out of the bund to either drains or the ground if uncontaminated. In case of fuel spillage the spilled fuel should be recollected and contaminated bund treated by the absorbents: sawdust, sand or straw.

All fuel / hydrocarbon dispensing nozzles are to be of a drip control design and securely locked when not in use.

No fuel storage or refuelling of vehicles or equipment will be allowed within 50m of any watercourse, water body, well, dry gorge or within any designated wetland area or aquifer. Vehicles will not be left without supervision during refueling process. All refuelling operations on the working sites will use absorbent pads and/or straw to minimise spills, which will be put in place prior to the commencement of refuelling operations. Ground water and surface water pollution risk will be reduced or eliminated in case of immediate removal of polluted ground. Soiled ground and absorbents will be removed, stored and treated as hazardous waste. In case

of significant spill aauthorized and responsible person will be informed, works will be stopped till the elimination of pollution risk Refuelling will always be carried out with the correct equipment (i.e. nozzles of the appropriate size), and only by suitably trained and experienced Refuelling Operators. Fuel supply equipment will be regularly revised to prevent leakage due to inappropriate condition of refueling equipment. Equipment and storages will be isolated and guarded to prevent pollution due to cases of stealing or vandalism. All mobile plant, including but not limited to cranes, compressors, generators, bulldozers, excavators etc. and storage tanks will be maintained and operated such that all leaks and spills of materials will be minimised. Daily plant checks (Vehicle Maintenance Procedure) will be undertaken to ensure no leaks or other problems are apparent. Vehicle maintenance, cleaning, degreasing etc will be undertaken in designated areas of hard-standing, not over made ground. Maintenance points will not be located within 50m of any watercourse, well or dry gorge. The storage of potentially polluting materials, refuelling and maintenance of mobile plant within 50m of all watercourses/water bodies, dry riverbeds and within designated wetlands and aquifers will be prohibited.

Erosion control measures will be applied during construction activities to prevent increased runoff into the watercourses.

Contractor will plan all excavations, topsoil and subsoil storage so as to reduce to a minimum any runoff. Contractors will be required to organize and cover material storage areas and to isolate wash down areas from watercourses by selecting areas that are not free draining into any watercourse.

Where any area of the spread is at risk from silt pollution washing off into a watercourse of water body, effective measures will be put in place to ensure that such pollution does not occur. Such measures may include:

- Use of silt fences
- Use of straw bales to deflect and filter water
- Use of a system of bunds and grips to prevent water from entering watercourses, etc.

- Use of holding/settling lagoons to store water running off the spread. To facilitate sedimentation the use of natural settling (rather than flocculants) is intended which allows clean water spills

Wet cement and/or concrete will not be allowed to enter any watercourse, pond or ditch.
Where the aquifer is directly affected by the works (i.e. the excavation will be through permeable / water-bearing strata), the methodology employed will ensure that no contamination can enter

the aquifer. This may involve the use of impermeable layers being placed in the trench and/or the use of clay tanks (plugs) along the trench.

The disposal of excess soil and rock

• Allow local communities to utilise any excess rock, which may be left following reuse. Suitable access to the materials will be agreed with the local authorities in consultation with the community.
• Distribute the excess rocks (less than $7m^3$) using it for improving the local unpaved road;
• Transport any further material, if required, to the location recommended in written by the local authorities which meet the requirements for Inert Landfills by the MoE.

Waste Handling

All waste from the construction site will be disposed of in accordance with environmental regulations at the landfills as authorized in written by local authorities.

Burning of waste on any construction site is forbidden with the exception of stub and small branches from felled trees and bushes, which is better to be burned in order to avoid pest dissemination.

Dust and Emissions

All vehicles shall be maintained so that their emissions do not cause nuisance to workers or local people. Activities will be limited to daylight working hours to reduce impacts. All vehicles will be checked and repaired in case of need to eliminate increased level of noise due to damaged parts.

Regular maintenance of diesel engines will be undertaken to ensure that emissions are minimised, for example by cleaning fuel injectors. Routine maintenance will be to a high standard to ensure that vehicles are safe and that emissions and noise are minimised. All plant used on site will be regularly maintained so as to be in good working order at all times to minimise potentially polluting exhaust emissions.

Vehicle refuelling will be undertaken so as to avoid fugitive emissions of volatile organic compounds through the use of fuel nozzles and pumps and enclosed tanks (no open containers will be used to stored fuel).

If deemed necessary in dry conditions or where significant quantities of dust are being or are likely to be produced mitigation measures will be arranged with the Construction Manager. Mitigation measures will include:

- Damping down using water bowers with spray bars or other technical means;;
- Sheeting of construction materials and storage piles; and
- Use of defined haulage routes and reductions in vehicle speed where required. Materials will be transported to site in off peak hours.
- Materials transported to site will be covered/ wetted down to reduce dust. The construction site will be watered as appropriate. Protective equipment will be provided to workers as necessary. All vehicles will be checked and repaired in case of need to eliminate increased emission due to damaged parts.

Such measures will be used, in particular, where human or animal receptors lie within 300m of the ROW.

Subsoil Storage

The storage of subsoil in stockpiles, no more than 3 m high with side slopes at a maximum angle of 600, will take into consideration the following:

- Dedicated storage locations where the stockpiles will not be compacted by vehicle movements or contaminated by other materials; and
- Segregation from topsoil stockpiles.

In the event that the subsoil stockpiles experience significant erosion Contractor will institute corrective action such as installing erosion matting over the stockpiles.

Reinstatement of Subsoil

- Erosion and run-off control
- Relief and landscape; where relief will not be reinstated to its initial conditions (new channels) – clean it from construction wastes and harmonizes it with the natural landscape.
- Surface water drainage; and

No further reinstatement will be undertaken until the joint inspection has been undertaken and any corrective action necessary completed.

Topsoil Protection

The topsoil will not be handled by Contractor when the following conditions are observed:

- The topsoil is frozen;

- The site is experiencing persistent rainfall;
- The topsoil is saturated; or
- Handling will damage the structure of the topsoil.

Topsoil Storage

The storage of topsoil in stockpiles, no more than 2m high with side slopes at a maximum angle of 45^0, will take into consideration the following:

- Dedicated storage locations that prevent the stockpiles being compacted by vehicle movements or contaminated by other materials;
- Segregation from subsoil stockpiles;
- No storage where there is a potential for flooding;
- No storage at less than 25m from river/streams, subject to site specific topography.
- In the event that the topsoil stockpiles experience significant erosion Contractor will implement corrective action such as installing erosion matting over the stockpiles if further surface compaction and/or seeding fails. Contractor will protect the stockpiles from flooding and run-off by placing berms or equivalent around the outside where necessary.
- Topsoil stockpiles will be monitored and should any adverse conditions be identified corrective actions will include:
  Anaerobic conditions - turning the stockpile or creating ventilation holes through the stockpile;
- Erosion - temporary protective silt fencing will be erected.

Reinstatement of Topsoil

Excavated topsoil will be used for re-cultivation of area s in case of pollution it will be disposeed to the municipal landfill, approved in writing.

Temporary Erosion Control Measures

The measures, by which Contractor will address the protection of “slopes” of the dam against erosion before permanent reinstatement, are outlined in this section. Temporary erosion control measures will be introduced as necessary, paying special attention to:

- Construction activities that increase the potential for erosion from the check dam sides and/or sediment mobilization in watercourses;

Temporary erosion control measures will be left in place. The purpose of temporary erosion control measures is to:

- Interrupt surface water run-off;
- Slow the velocity of water runoff to the extent practical;
- Divert water off exposed check dam areas;
- Prevent and minimize sediment transportation off the construction sites; and

- Straw bale barriers in locations requiring small volumes of sediment interception;

Land clearance will include:
Uprooting stubs of the felled and removed trees and bushes;
Cleaning the area of bushes; sweeping by using rake, moving to 50 m distance, burning and re-burning of heaps.
Licensed material supply sites will be used.
Safety and Access. Alternate access will be provided for vehicles and pedestrians. Appropriate lighting and signage will be used.

Protection of CH Monuments

The construction site is so far from the Ikalto Monastery that SP implementation will not affect on the CH monuments of the monastery.

Although the St. Nino church is located away from the construction site, the project envisages isolation of the church from construction site through arrangement of special barriers, in order to avoid any negative impact on the ruins of the church.

6.2. Operational Phase

There is no municipal sewerage system in the village Ikalto. The risk related to the increased sewage generation from the Qvevri School and wastewater discharge will be mitigated by the installation and appropriate maintenance of the individual waste water treatment facility (septic tank).

1. Increase of the number of tourists will result in the increased volume of waste.

Mitigation measures:

- The number and volume of containers to be placed in the tourists gathering centers depends on the following factors: the expected number of tourists; the area of the territory, existence of access roads. Based on the calculations, for the expected 300 tourists one 1.1 m^3 capacity metal container should be placed. It should be taken into consideration that the distance between containers should not exceed 50m and at the same time the 1.1 m^3 containers should be easily accessible by the respective vehicles and there should be space for maneuvering. If the abovementioned requirements cannot be met, a smaller size easily portable 0.24 m^3 plastic containers should be used.

Therefore, for each case the number, size and location points should be determined on individual basis.

- **Imposing of penalty sanctions[2] against littering of the site**

  Placement of the containers will have no tangible result, if the penalty sanctions are not imposed and exercised. The effectively implementation of the penalty mechanisms will lead to accelerated achievement of the target.

The traffic will increase in adjacent area of CH and SP sites, which will result in the increased level of local emissions and noise as well as traffic safety issues. The Mitigation measures for this will be:

- The car parking area and lots are located so that cars and buses will be able to stop and maneuver uninterruptedly;
- The proper management services will reduce negative impacts, imposed by traffic jams causing increased volumes of emissions and noise, on the local population and CH sites.

7. Public Consultation

ER including EMP will be discussed with beneficiary community prior to the commencement of works. The information regarding SP activities should be open and available all stakeholders during SP implementation and operation of Qvevri School and its infrastructure.

8. Grievance redress mechanism

Appropriate grievance redress mechanisms will be established to solve APs grievance if occurs. A responsible person will be assigned to receive, review and react on the APs grievance if occurs.

9. Environmental Monitoring

Based on risk assessment a relevant monitoring program has been developed. Monitoring of sensitive receptors should be implemented before, during, and after construction and during operation of the camp site. Types and Frequency of monitoring may vary from simple visual inspection to complex analyses, depending on the risks. The recognized best-practice of monitoring and analytical methods will be used during environmental monitoring of camp site related activities. The results of environmental monitoring and occurred noncompliance / incident and ways for their resolution will be summarized in the monthly reports of construction contractor.

Table for environmental monitoring is attaches below. It should be mentioned that the plan can be detailed and updated in a certain direction during activities.

[2] **"The General Administrative Code od Georgia" Articles 52, 82 and 142**

10. Environmental Management and Monitoring Plan

Environmental Management and Monitoring Plan prepared based on the expected SP related environmental and social impacts and there mitigation measures discussed above and is an integral part of this ER. EMP is part of the construction contract and its implementation is obligatory for construction contractor. Environmental Management and Monitoring Plan is attached to this ER (page 45)

10.1. Institutional Framework for EMP Implementation

Construction contractor is obligated to follow EMP and good construction practice. In order to meet this obligation, a contractor shall have at least one environmental specialist on the team, who is able to fully understand recommendations of EMP and professionally apply prescribed mitigation measures to the contractor's daily operations.

10.2. Construction Contractor requirements

The contractor is required:

1. To obtain construction materials only from licensed providers;
2. If contractor wishes to open quarries or extract material from river bed (rather than purchasing these materials from other providers), then the contractor must obtain licenses for inert material extraction;
3. If contractor wishes to operate own asphalt (rather than purchasing these materials from other providers), then the contractor must obtain an environmental permit with an established ceiling of pollutant concentrations in emissions;
4. If contractor wishes to operate own concrete plant (rather than purchasing these materials from other providers), then the contractor must prepare technical report on inventory of atmospheric air pollution stationary source and agree with the Ministry of Environment and Natural Resources Protection (MoENRP);
5. Construction waste must be disposed on the Telavi municipal landfill in accordance with written agreement with the Solid Waste Management Company of Georgia Ltd. under the Ministry of Regional Development and Infrastructure. The records of waste disposal will be maintained as proof for proper management as designed.

Copies of extraction licenses (if applicable), agreed technical report on inventory of atmospheric air pollution for operating concrete plants (if applicable), and waste disposal agreement must be submitted to the MDF prior to the commencement of works.

GOST and SNIP norms must be adhered

Technical supervisor[3] of works commissioned by MDF is responsible to establish strong field presence in the SP area and keep a close eye on the course of works. Along with ensuring consistency with the design and ensuring quality of works, the supervisor is mandated to track implementation of EMP by the construction contractor, reveal any deviations from the prescribed actions, as well as identify any unexpected environmental issues should they emerge at any stage of works.

MDF provides a general oversight on the environmental compliance of works through ensuring quality performance of the technical supervisor and of the construction contractor. MDF also liaises with the

World Bank, ensures availability of all environmental information, and facilitates environmental supervision of the Project by the WB.

10.3. Reporting on EMP Implementation

Contractor shall prepare monthly status reports on the EMP implementation which must carry information on the main types of activities carried out within the reporting period, status of any clearances/permits/licenses which are required for carrying out such activities, mitigation measures applied, and any environmental issues emerged in relations with suppliers, local authorities, affected communities, etc. Contractor's monthly status reports shall be submitted to the technical supervisor and MDF.

Technical supervisor prepares monthly reports on the status of EMP implementation and environmental performance of the contractor. These reports shall be based on the contractor's reports and carry analysis of their contents. Technical supervisor shall assess how accurate is the factual information provided in the contractor's reports, fill any gaps identified in them, and evaluate adequacy of mitigation measures applied by contractor. Technical supervisor must highlight any cases of incompliance with EMPs, inform on any acute issues brought up by contractor or revealed by supervisor himself, and propose corrective actions.

MDF must ensure that monthly reports from the contractor and from the technical supervisor are made available for the environmental specialists of the MDF promptly upon their arrival in MDF administration. The MDF, through its environmental specialists, shall report each quarter (1 report per 3 months) to the WB on the status of environmental compliance of construction works. Such reporting shall contain information on all violations identified and the actions taken

[3] Technical supervisor is part of the consulting service for construction management to be hired by MDF (CMC)

for fixing of such cases. MDF shall inform the WB on any major environmental issues at any time, independently from the schedule of regular reporting.

10.4. Remedies for EMP Violation

MDF, as a client of construction works, will be responsible for enforcing compliance of contractor with the terms of the contract, including adherence to the EMP. For minor infringements, an incident which causes temporary but reversible damage, the contractor will be given 48 hours to remedy the problem and to restore the environment. If restoration is done satisfactorily during this period, no further actions will be taken. If it is not done during this period, MDF will arrange for another contractor to do the restoration, and deduct the cost from the offending contractor's next payment. For major infringements, causing a long-term or irreversible damage, there will be a financial penalty up to 1% of the contract value in addition to the cost for restoration activities.

10.5. Costs of Implementation

Costs of implementing the proposed individual mitigation measures are small and difficult to single out from the costs of construction operations. Nonetheless, it is recommended that Bill of Quantities presented in the tender documentation carries a line item for the disposal of waste and excess materials. Other costs of adherence to good environmental practice and compliance with this EMP are expected to be integrated into the pricing of various construction activities.

ANNEX 1: Environmental management and Monitoring Plan

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
CONSTRUCTION PHASE						
Demolition of old buildings and constructions	Respect of the established hours for demolition activities; Performance of dismantling operations with strict observance of safety regulations and rules on prevention dusting of the adjacent housing areas.	Construction site	Inspection	Unannounced inspections during working hours and beyond	To ensure safety of workers and local population and prevent pollution of the construction site and its surroundings with dust, noise, and vibration.	MDF, Construction supervisor
Supply with construction materials	Purchase of construction materials from the officially registered suppliers	In the supplier's office or warehouse	Verification of documents	During conclusion of the supply contracts	To ensure technical reliability and safety of infrastructure	MDF, Construction supervisor
Transportation of construction materials and waste Movement of construction machinery	Technical condition of vehicles and machinery Confinement and protection of truck loads with lining Respect of the established hours and routes of transportation	Construction site	Inspection	Unannounced inspections during work hours and beyond	Limit pollution of soil and air from emissions; Limit nuisance to local communities from noise and vibration; Minimize traffic disruption.	MDF, Construction supervisor, Traffic Police

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
Earth works	Temporary storage of excavated material in the pre-defined and agreed upon locations; Backfilling of the excavated material and/or its disposal to the formally designated locations; In case of chance finds immediate suspension of works, notification of the Ministry of Culture and Monument Protection, and resumption of works exclusively upon formal consent of the Ministry.	Construction site	Inspection	In the course of earth works	Prevent pollution of the construction site and its surroundings with construction waste; Prevent damage and loss of physical cultural resources	MDF, Construction supervisor

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
Sourcing of inert material	Purchase of material from the existing suppliers if feasible; Obtaining of extraction license by the works contract and strict compliance with the license conditions; Terracing of the borrow area, backfilling to the exploited areas of the borrow site, and landscape harmonization; Excavation of river gravel and sand from outside of the water stream, arrangement of protective barriers of gravel between excavation area and the water stream, and no entry of machinery into the water stream.	Borrowing areas	Inspection of documents Inspection of works	In the course of material extraction	Limiting erosion of slopes and degradation of ecosystems and landscapes; Limiting erosion of river banks, water pollution with suspended particles and disruption of aquatic life.	MDF, Construction supervisor
Generation of construction waste	Temporary storage of construction waste in especially allocated areas; Timely disposal of waste to the formally designated locations	Construction site; Waste disposal site	Inspection	Periodically during construction and upon complaints	Prevent pollution of the construction site and nearby area with solid waste	MDF, Construction supervisor

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
Traffic disruption and limitation of pedestrian access	Installation of traffic limitation/diversion signage; Storage of construction materials and temporary placement of construction waste in a way preventing congestion of access roads	At and around the construction site	Inspection	In the course of construction works	Prevent traffic accidents; Limit nuisance to local residents	MDF, Construction supervisor
Workers' health and safety	Provision of uniforms and safety gear to workers; Informing of workers and personnel on the personal safety rules and instructions for operating machinery/equipment, and strict compliance with these rules/instructions	Construction site	Inspection	Unannounced inspections in the course of work	Limit occurrence of on-the-job accidents and emergencies	MDF, Construction supervisor
OPERATION PHASE						
Maintenance of water supply and sewage systems (including septic tank)	Good technical condition of water supply and sewage systems	Sites of arranged utilities	Inspection	Throughout operation of the site	Prevent impeding of water supply and sewage systems working.	Telavi municipality or a private operator of Qvevri House

Attachment 1 – Cadastral information

N 53.12.35.108

ამონაწერი საჯარო რეესტრიდან

განცხადების რეგისტრაცია	მომზადების თარიღი
N 882014334678 - 26/06/2014 16:12:41	**01/07/2014 10:39:52**

საკუთრების განყოფილება

ზონა	სექტორი	კვარტალი	ნაკვეთი
თელავი	იყალთო		
53	**12**	**35**	**108**

მისამართი: თელავი , სოფელი იყალთო

ნაკვეთის საკუთრების ტიპი:საკუთრება

ნაკვეთის დანიშნულება: სასოფლო-სამეურნეო (საკარმიდამო)

დაზუსტებული ფართობი: 1527.00 კვ.მ.

ნაკვეთის წინა ნომერი:**53.12.15.068;**

შენობა-ნაგებობის ჩამონათვალი:N1

სხვა ფართი:ეზოების ფართი: 79 კვ.მ.

მესაკუთრის განყოფილება

განცხადების რეგისტრაცია : ნომერი **882014334678** , თარიღი **26/06/2014 16:12:41**
უფლების რეგისტრაცია: თარიღი **01/07/2014**

უფლების დამადასტურებელი დოკუმენტი:

- ჩუქების ხელშეკრულება , დამოწმების თარიღი:26/06/2014 , საქართველოს იუსტიციის სამინისტროს საჯარო რეესტრის ეროვნული სააგენტო

მესაკუთრეები:
თელავის მუნიციპალიტეტი

მესაკუთრე: აღწერა:
თელავის მუნიციპალიტეტი

იპოთეკა

საგადასახადო გარანტია:

რეგისტრირებული არ არის

ვალდებულება

ყადაღა/აკრძალვა:

რეგისტრირებული არ არის

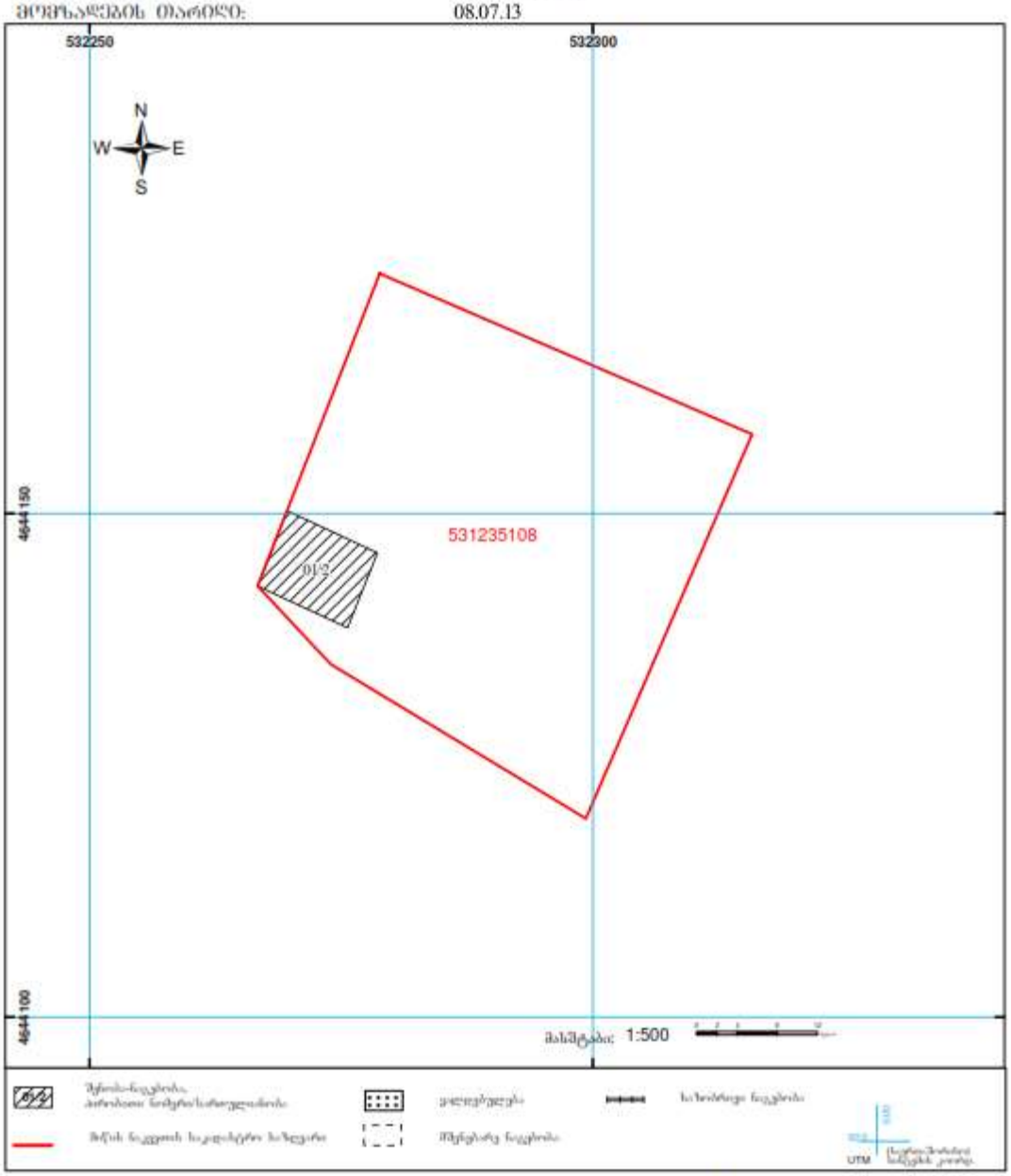
მოვალეთა რეესტრი:

რეგისტრირებული არ არის

საქართველოს ეროვნული საგადასახადო
საჯარო რეესტრის ეროვნული სააგენტო

საკადასტრო გეგმა

მიწის ნაკვეთის საკადასტრო კოდი:	*53 12 35 108*
განცხადების რეგისტრაციის ნომერი:	882013312635
მიწის ნაკვეთის ფართობი:	1527 კვ.მ.
დანიშნულება:	სასოფლო-სამეურნეო
კატეგორია:	საკარმიდამო
მოწყობის თარიღი:	08.07.13



ნაწილ უძრავი ქონების საკადასტრო კოდი **N 53.12.35.065**

ამონაწერი საჯარო რეესტრიდან

განცხადების რეგისტრაცია	მომზადების თარიღი
N 882013407136 - 23/08/2013 16:14:58	**30/08/2013 16:13:43**

საკუთრების განყოფილება

მონა	სექტორი	კვარტალი	ნაკვეთი
თელავი	იყალთო		
53	**12**	**35**	**065**

მისამართი: თელავი , სოფელი იყალთო

ნაკვეთის საკუთრების ტიპი:საკუთრება
ნაკვეთის ფუნქცია: არასასოფლო სამეურნეო
დაზუსტებული ფართობი:**642.00** კვ.მ.
ნაკვეთის წინა ნომერი:

მესაკუთრის განყოფილება

განცხადების რეგისტრაცია : ნომერი **882013407136** , თარიღი **23/08/2013 16:14:58**
უფლების რეგისტრაცია: თარიღი **30/08/2013**

უფლების დამადასტურებელი დოკუმენტი:

- ბრძანება N1/1-665 , დამოწმების თარიღი:08/08/2013 , სახელმწიფო ქონების ეროვნული სააგენტო

მესაკუთრეები:
თელავის მუნიციპალიტეტი

მესაკუთრე: აღწერა:
თელავის მუნიციპალიტეტი

იპოთეკა

საგადასახადო გარანტია:

რეგისტრირებული არ არის

ვალდებულება

ყადაღა/აკრძალვა:

რეგისტრირებული არ არის

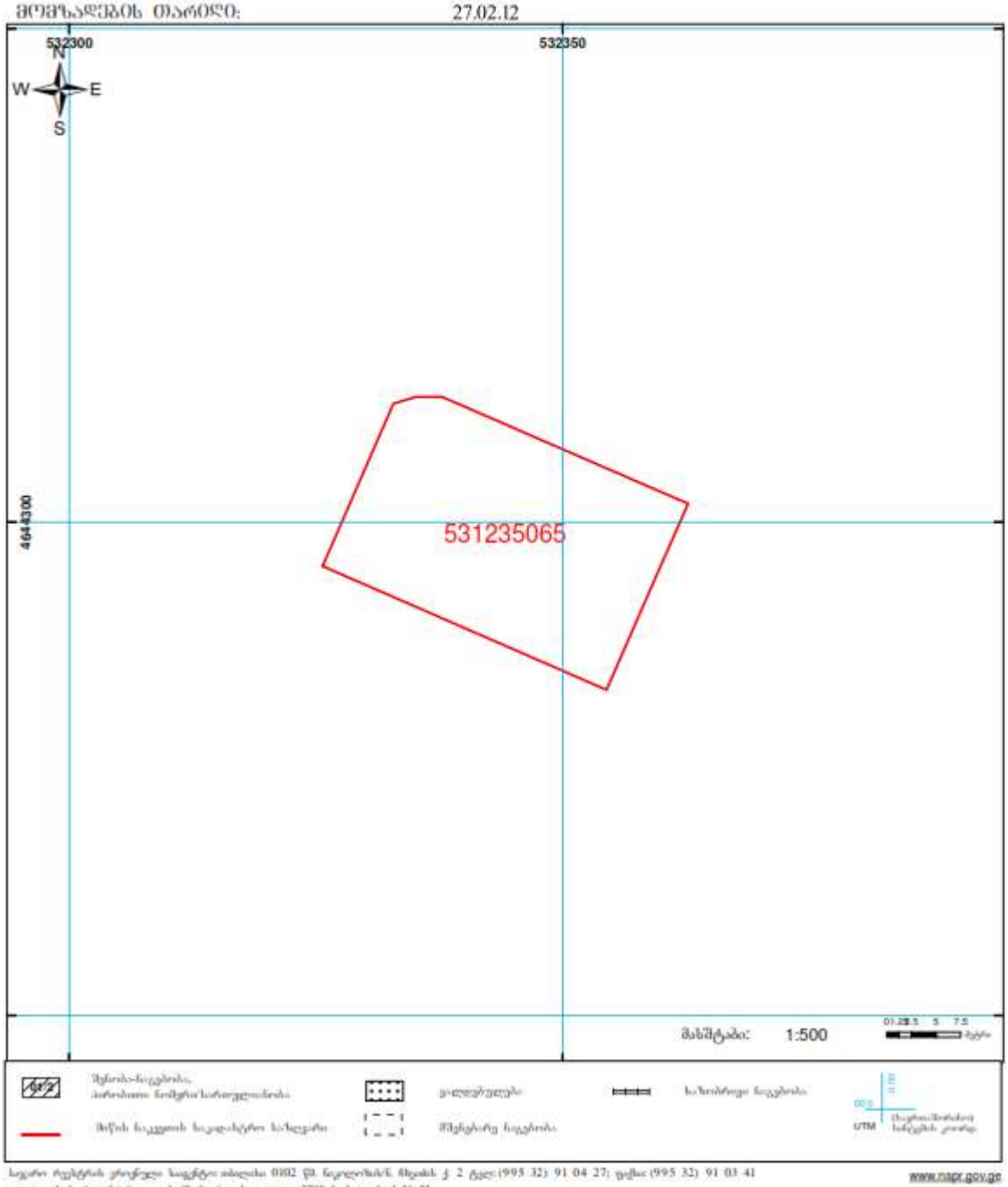
მოთხოვნის რეესტრი:

რეგისტრირებული არ არის

საქართველოს ეროვნული საჯარო რეესტრის ეროვნული სააგენტო

საკადასტრო გეგმა

მიწის ნაკვეთის საკადასტრო კოდი:	53 12 35 065
განცხადების რეგისტრაციის ნომერი:	882012078021
მიწის ნაკვეთის ფართობი:	*642* კვ.მ.
დანიშნულება:	არასასოფლო-სამეურნეო
მომზადების თარიღი:	27.02.12



ამონაწერი საჯარო რეესტრიდან

განცხადების რეგისტრაცია	მომზადების თარიღი
N 882013407123 - 23/08/2013 16:12:48	30/08/2013 14:52:41

საკუთრების განყოფილება

მონა	სექტორი	კვარტალი	ნაკვეთი
თელავი	იყალთო		
53	12	35	064

მისამართი: თელავი , სოფელი იყალთო

ნაკვეთის საკუთრების ტიპი:საკუთრება
ნაკვეთის ფუნქცია: არასასოფლო სამეურნეო
დაზუსტებული ფართობი:3239.00 კვ.მ.
ნაკვეთის წინა ნომერი:
შენობა-ნაგებობის ჩამონათვალი:N1,N2,N3
სხვა ფართი:გამშენების ფართით N1-194.1 კვ.მ,N2-109.5 კვ.მ,N3-284.9 კვ.მ

მესაკუთრის განყოფილება

განცხადების რეგისტრაცია : ნომერი 882013407123 , თარიღი 23/08/2013 16:12:48
უფლების რეგისტრაცია: თარიღი 30/08/2013

უფლების დამადასტურებელი დოკუმენტი:

- ბრძანება N1/1-699 , დამოწმების თარიღი:15/08/2013 , სახელმწიფო ქონების ეროვნული სააგენტო

მესაკუთრეები:
თელავის მუნიციპალიტეტი

მესაკუთრე: აღწერა:
თელავის მუნიციპალიტეტი

იპოთეკა

საგამაფრთხილებო გარემოება:

რეგისტრირებული არ არის

ვალდებულება

ყადაღა/აკრძალვა:

რეგისტრირებული არ არის

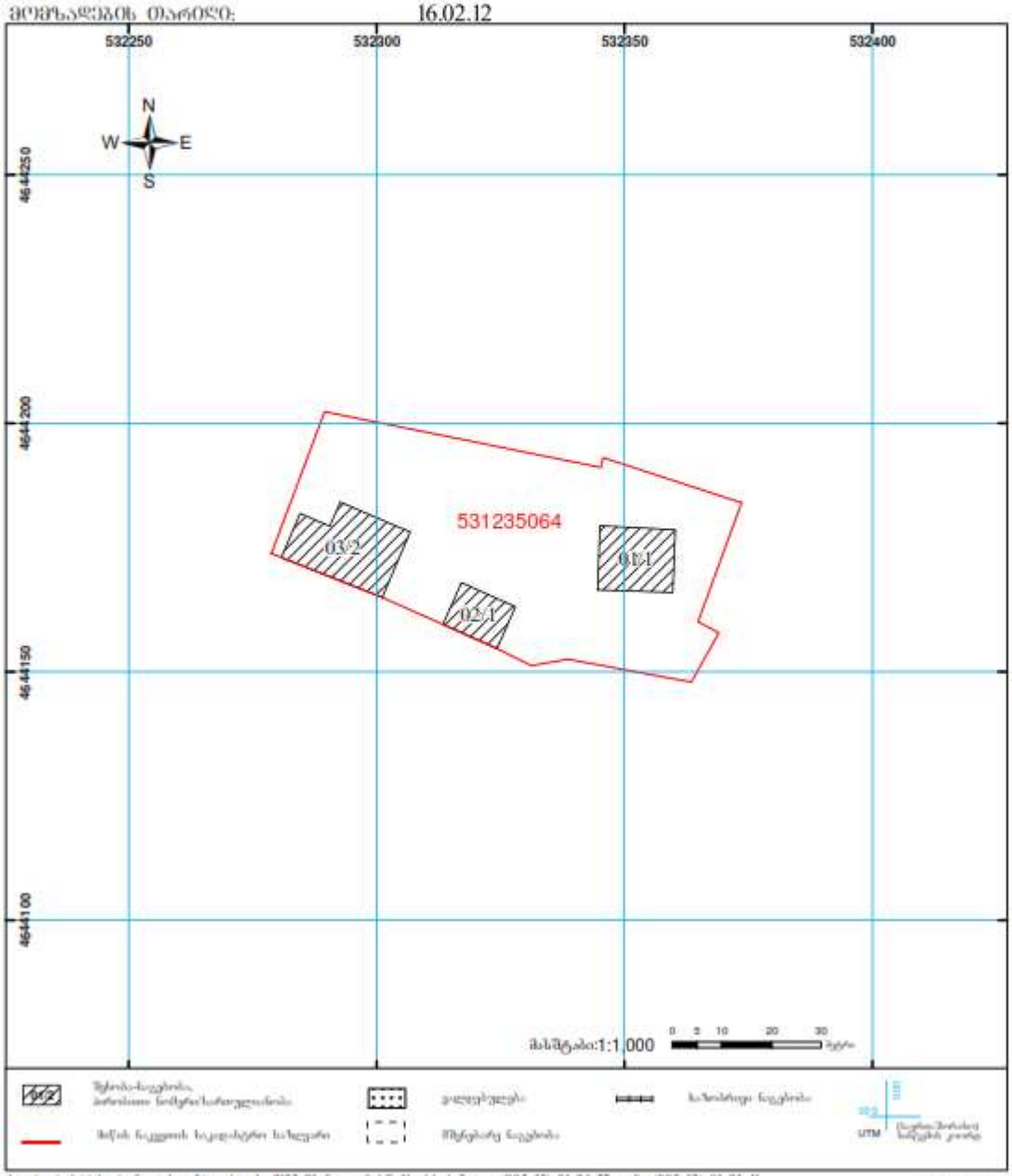
მოვალეთა რეესტრი:

რეგისტრირებული არ არის

საქართველოს ეკონომიკის სამინისტრო
საჯარო რეესტრის ეროვნული სააგენტო
საკადასტრო გეგმა

მიწის ნაკვეთის საკადასტრო კოდი: 53 12 35 064
განცხადების რეგისტრაციის ნომერი: 882012062680
მიწის ნაკვეთის ფართობი: 3239 კვ.მ.
დანიშნულება: არასასოფლო-სამეურნეო

მოწყობის თარიღი: 16.02.12



Attachment 2 – Ortho photo of construction site

Attachment 2– Photo materials