

# **Municipal Development Fund of Georgia**



## **Arrangement of Tourism Infrastructure at Vardzia Complex in Aspindza Municipality**

### **Sub-project Environmental and Social Screening and Environmental Review**

**WORLD BANK FINANCED  
THIRD REGIONAL DEVELOPMENT PROJECT**

**January 2017**

## Sub-project Description

The Sub-Project (SP) on *Arrangement of Tourism Infrastructure at Vardzia Complex* envisages:

- Extending of the existing parking area;
- Arrangement of visitor center;
- Arrangement of vineyard terraces;
- Rehabilitation of the access road (total length- 3km) to Vardzia Complex.

The SP site is located in Aspindze Municipality, Southern Georgia, at 253 km distance from Tbilisi and 30 km distance from Aspindza. Vardzia is a cave monastery site, excavated from the slopes of the Erusheti Mountain on the left bank of the Mtkvari River. The extended area of Vardzia-Khertvisi has been submitted for future inscription on the UNESCO World Heritage List. The SP design has been already agreed with the National Agency for Cultural Heritage Preservation of Georgia.

The SP envisages implementation of the following works:

**Extending of the existing parking area:** The SP envisages extending of the existing parking area (total area will be 2041 m<sup>2</sup>, the existing parking area- 957 m<sup>2</sup>, additional area- 1084 m<sup>2</sup>), located on the left bank of Mtkvari River. Demolition of the existing low stone fence from the east part of the Parking area and installation of the new similar one will be required along the SP territory perimeter. Sunken kerb will be arranged from the eastern part of the parking area.

According to the project design, the parking area is intended to be for additional three buses and ten cars. The mentioned territory is permissible for transports stopping and maneuvering.

Within the SP, outdoor lighting will be arranged. The parking area will be paved with asphalt/concrete layer. Marking of the SP area is also envisaged under the SP. The land, allocated for the arrangement of the parking, is registered as the State property, but user rights for the land are with the National Agency for Cultural Heritage Preservation of Georgia (See attachment #1).

**Rehabilitation of the road:** The road (length- 3km) to be rehabilitated starts from the bridge over the Mtkvari River directed to village Mirashkhani and follows the Mtkvari River. The SP envisages demolition of the existing damaged asphalt layer, reusing of it and arrangement of asphalt/concrete pavement (18150m<sup>3</sup>) and metal culverts (24 m). Currently, the road is in a poor condition, damaged, unsafe and uncomfortable for both traffic and pedestrians. According to the cadastral information provided by the public registry, borders of three land plots (cadastral codes: 60.10.34.070, 60.10.34.384, 60.10.34.368) adjacent to the road slightly overlaps with the existing road. However, it was found out, that cadastral information is wrong, caused by technical problems in the past (by using the simple

measurement system, which sometimes leads to the not so accurate identification of the border coordinates); in fact, the road does not cross any private land plots. Written consents of the adjacent land plot owners on the road rehabilitation has already been received by MDF.

**Arrangement of vineyard terraces-** Within the SP, arrangement of vineyard terraces (construction area of the territory – 3020 m<sup>2</sup>; twelve terraces will be arranged) typical for the region is planned. The most structurally appropriate place for arrangement of terraces is relatively prominent hill on the right side of the accessing road to Vardzia Complex. The surface of terrace hill is less stony and is easy form manual handling. The SP envisages terracing of the hill relief with local stone material (distance between the terrace levels – 1m) and disposal of topsoil to cultivate vineyard. Vardzia Historical-Architectural Museum-Reserve (unified the Legal Public Entity of National Agency for Cultural Heritage Preservation of Georgia) will be responsible for cultivation of the vineyards.

**Arrangement of Visitor Center** – The SP envisages construction of two-store visitor center building (387 m<sup>2</sup>) next to the existing administration building. The center will be maximally fitted to the relief and its look will be relevant to the administration building. On the ground floor, there will be a hall, a visitor center, an exhibition hall and WC (including persons with disabilities). The second floor will host an administration room, a conference hall with auxiliary room and WC. Lining of the building façade with Georgian brick and basalt stone is planned.

According to the SP design, the buildings will be equipped with electric heating systems and connected to the exiting water supply system.

Aimed at wastewater treatment, the waste water system of the visitor center will be connected to the existing wastewater treatment unit located adjacent to the parking area (land where the unit located is registered as state property) and the existing public-toilet. Treated water from the treatment facility will be discharged into the Mtkvari River.

The land, intended for the visitor center, vineyard terraces and parking area, is registered as the State property. User rights for the land are with the National agency for Cultural Heritage Preservation of Georgia.

According to the “Investment Financing Agreement between Municipal Development Fund of Georgia and Self-governing Body of Aspindza Municipality”, Aspindza Municipality will be responsible for maintenance of the road to be rehabilitated. National Agency for Cultural Heritage Preservation of Georgia will be responsible for maintenance of visitor center and parking area based on the “Investment Financing Agreement between Municipal Development Fund of Georgia and National Agency for Cultural Heritage Preservation of Georgia”.

## Environmental Screening and Classification

### (A) IMPACT IDENTIFICATION

<p>Does the subproject have a tangible impact on the environment?</p>	<p>The SP will have a modest short-term negative environmental impact and it is expected to have tangible long-term positive impact on the natural and social environment.</p>
<p>What are the significant beneficial and adverse environmental effects of the subproject?</p>	<p>The SP is expected to have positive long-term social impact through provision of the tourist infrastructure at Vardzia complex.</p> <p>Arrangement of the light touristic infrastructure will improve touristic attraction. The increased tourist flows will have positive social impact through improvement of employment opportunities and supporting the development of tourism-based economy and cultural heritage circuits in the Samtskhe - Javakheti region.</p> <p>The SP implementation will create opportunity for new jobs for local population and increase their incomes.</p> <p>As the SP is to be implemented on a CH site, there is higher than average likelihood of encountering chance-finds during excavation works.</p> <p>In case of chance findings during the earthworks, the contractor should immediately stop any kind of physical work at the area and should inform MDF. MDF will in turn inform the Ministry of Culture and Monument Protection of Georgia that takes the responsibility for future actions. Work resuming may be provided only based on the written permission from the Ministry.</p> <p>The expected negative environmental and social impacts are likely to be short term and typical to medium scale rehabilitation works in modified landscape: noise, dust, vibration, and emissions from the operation of construction machinery; generation of construction waste.</p> <p>According to the letter from Aspindza Municipality, construction company can dispose construction waste and inert materials on one of two land plots in village Tmogvi, about 10 km distance from the SP site (see attachment 1); The contractor will be responsible for levelling disposed materials and wasteTransportation of construction materials also will cause</p>

	<p>nuisance for tourists and local population, live adjacent area to the road and path to be rehabilitated.</p> <p>In operation phase proper management of generated solid waste and waste water should be ensured to reduce impact on the environment. The SP envisages arrangement of wastewater treatment units for the public toilets and the café and litterbins as well.</p> <p>Increased tourist flows may have indirect negative environmental impacts, such as waste generation, vandalism, etc.</p> <p>Considering permanent increase of the visitors' number and traffic, the road improvement will significantly decrease traffic problem, noise and dust emission, land erosion and minimize local vendor vehicle's depreciation. At the same time, it will improve the visual side of the area.</p>
<p>May the subproject have any significant impact on the local communities and other affected people?</p>	<p>Thus, the SP does not consider any land acquisition and does not entail any other type of resettlement. According to the cadastral information provided by the public registry, borders of three land plots (cadastral codes: 60.10.34.070, 60.10.34.384, 60.10.34.368) adjacent to the road slightly overlaps with the existing road. However, it was found out, that cadastral information is wrong, caused by technical problems in the past (by using the simple measurement system, which sometimes leads to the not so accurate identification of the border coordinates); in fact, the road does not cross any private land plots. Written consents of the adjacent land plot owners on the road rehabilitation has already been received by MDF.</p> <p>Negative impacts are short term and limited to the construction site. They are related to the possible disturbance described above.</p> <p>Any other negative impacts on local population and economic livelihoods of local people are not expected to occur. Adjacent area to the administration building there are pavilions. Noise, dust, vibration, and emissions from the operation of construction machinery; generation of construction waste may have minimal negative impact on economic activities of the vendors.</p> <p>The long-term social impact will be positive, after construction and rehabilitation of the public facilities number of employees will be increased. Moreover, temporary jobs will be created during construction and hence, income of the part of local population will be increased. This will contribute the</p>

	<p>development of the private sector and will lead to the growth of tourism-related production. Better transport conditions will be created which in turn will contribute development of tourism.</p> <p>After the construction works of visitor center, parking area, vineyard terraces, number of employed persons will be increased and income of local population will be increased proportionally as well. It will increase presence of private sector, and result in growing number of tourism related enterprises.</p>
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**(B) MITIGATION MEASURES**

<p><b>Were there any alternatives to the sub-project design considered?</b></p>	<p>Providing of the conveyance opportunities for disabled was added to the initial design of tourist infrastructure.</p> <p>Discussions were carried out regarding to the visitor center design. According to the taken decision, the building will be maximally fitted to the relief and its look will be relevant to the administration building.</p>
<p><b>What types of mitigation measures are proposed?</b></p>	<p>The expected negative impacts of the construction phase can be mitigated by demarcation of the construction site, traffic management, good maintenance of the construction machinery, observance of the established working hours, and well organized disposal of waste to the formally agreed sites.</p> <p>According to the letter from Aspindza Municipality, construction company can dispose construction waste and inert materials on one of two land plots in village Tmogvi, about 10 km distance from the SP site (see attachment 1); The contractor will be responsible for levelling disposed materials and waste</p> <p>Instead of transporting excess inert material through several settlements to the landfill, it may be disposed in an alternative location approved by local (municipal) governing bodies in written.</p> <p>In case of chance finds, works will be taken on hold and notification be sent to the Ministry of Culture and Monument Protection of Georgia. Works will resume only upon written consent of the Ministry.</p>

	<p>The visitor center will be connected to the existing biological wastewater treatment unit to avoid water pollution by newly arranged sewage system.</p>
<p>What lessons from the previous similar subprojects have been incorporated into the project design?</p>	<p>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, landscaping of the SP area and connecting of the visitor center to the existing individual waste water treatment unit. Details securing the rights of using the building (information center, public toilet) and parking by disabled people is envisaged by the SP design.</p>
<p>Have concerned communities been involved and have their interests and knowledge been adequately taken into consideration in subproject preparation?</p>	<p>MDF and local municipality will organize consultation meeting to discuss draft about ER with local population before tendering of the construction works.</p>

**D) CATEGORIZATION AND CONCLUSION**

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

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)	✓ <sup>1</sup>	
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 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 <b>Resettlement Policy Framework</b>			
Cultural resources safeguard screening information		Yes	No
5	Will the project require excavation near any historical, archaeological or cultural heritage site?	✓	
If answer to question 5 is "Yes", then <b>OP/BP 4.11 Physical Cultural Resources</b> is applicable and possible chance finds must be handled in accordance with OP/BP and relevant procedures provided in the <b>Environmental Management Framework</b> .			

<sup>1</sup> The land, intended for the visitor center, vineyard terraces and parking area, is registered as the State property. User rights for the land are with the National agency for Cultural Heritage Preservation of Georgia. Cadastral information is attached.

# Environmental Review and Environmental Management Plan

## Introduction

### 1.1. Background Information

The Government of Georgia has requested the financing of \$60 million from the World Bank for implementation of the Third Regional Development Project (RDP 3). The total project cost is \$ 75 million and includes \$15 million funding from the Government of Georgia. The proposed project will be implemented by the Municipal Development Fund of Georgia (MDF).

The proposed development objective of RDP 3 is to improve infrastructure services and institutional capacity to support the development of a tourism-based economy of the Samtskhe-Javakheti and Mtskheta-Mtianeti regions. The envisaged activities are expected to bring direct benefits to the residents of these regions as well as to the tourists visiting them. More specifically, implementation of the project is expected to improve access, quality and reliability of public infrastructure; increase the volume of private sector investment in the region; and increase points of sales (tourism-related enterprises) in renovated culture heritage sites and cities. The Government will benefit from improved institutional capacity of selected agencies and local-self-governments. Overall, the population is expected to see higher incomes and better quality of life.

The SP for the Arrangement of Tourism Infrastructure at Vardzia complex is a part of the RDP 3 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 3.

### 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 III 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).

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### 1.3 Legislation and Regulations

According to the law of Georgia on Permit on Environmental Impact (2008) the SP does not require preparation of EIA and obtaining of Permit on Environmental Impact.

The SP triggers to the OP/BP 4.01 Environmental Assessment and OP/BP 4.11 Physical Cultural Resources safeguard policies.

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) and environmental Management Plan (EMP), in compliance with recommendations of Environmental Management Framework (EMF).

## **2. Subproject description**

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### **3. Baseline Environmental Conditions**

The SP site is located in Aspindze Municipality, Southern Georgia, at 260 km distance from Tbilisi and 30 km distance from town Aspindza. Vardzia is a spectacular cave monastery site in southern Georgia, dug out of the

Erusheti Mountain on the left bank of the Mtkvari River in Samtskhe-Javakheti region. Natural caves were enlarged to contain over 6,000 dwelling places for monks and for those fleeing invaders. A complex irrigation system watering terraced farmlands was also constructed and in some tunnels the old irrigation pipes still bring drinkable water. Today, more than 500 dwellings are preserved, including the Church of Cross Assassination, a famous example of medieval mural painting.

The monastery dates to the 12th-13th centuries (1156-1203). Since 2007, by nomination of the Ministry of Culture and Monument Protection of Georgia, the monument is on the provisional list for inclusion in UNESCO's World Heritage List. Respectively the interest of tourists and pilgrims towards the site is high and in addition, it is characterized with great potential from tourism development standpoint. Currently, in the vicinity of the fortress, there is no assisting infrastructure to support tourism development, e.g. Information Center, Food bars, and Toilets.

The geological-engineering study of the area showed that on SP site and territories in adjacent area to them are stable and are in satisfying geological engineering condition.

The average annual temperature in the region is 9.0°C, average temperature in January is -2°C, in August - 20.0°C, annual precipitation is 500-580 mm.

Landscape is modified because of the anthropogenic influence; The complex is surrounded with the Mtkvari River at the north.

Currently, the road to be rehabilitated is in a poor condition, damaged, unsafe and uncomfortable for both traffic and pedestrians. According to the cadastral information provided by the public registry, borders of three land plots (cadastral codes: 60.10.34.070, 60.10.34.384, 60.10.34.368) adjacent to the road slightly overlaps with the existing road. However, it was found out, that cadastral information is wrong, caused by technical problems in the past (by using the simple measurement system, which sometimes leads to the not so accurate identification of the border coordinates); in fact, the road does not cross any private land plots. Written consents of the adjacent land plot owners on the road rehabilitation has already been received by MDF. Adjacent area to the administration building there are some pavilions registered as private property.

The parking area, registered as state property, is surrounded by the Mtkvari River at the south. Currently, it does not meet modern standard requirements.

## 4 Potential Impacts

### 4.1 Construction Phase

#### 4.1.1. Social Impacts

3. **General set of social issues.** No significant social issues are associated with implementation and operation of this SP.
4. **Resettlement Issues.** The SP does not imply private land acquisition and no permanent impacts are envisaged on private or leased agricultural lands and private assets or businesses.
5. **Positive impact related to Job opportunities for construction workers.** Limited and temporary during construction and limited during operation.
6. **Health issues related to noise, emissions, and vibration.** Limited and temporary.
7. **Traffic Disruption.** Local traffic can be impacted limited and temporary by transport activities related to the SP.
8. **Safety and Access.** There will be reduced access to areas adjacent to rehabilitation and potential hazards to vehicles and pedestrians during rehabilitation downtime.

#### **4.1.2. Impacts on the physical Cultural Property**

The SP envisages implementation of works in the area of Vardzia Complex. These works include arrangement of the visitor center, car parking and vineyards terraces, rehabilitation of the existing road.

Therefore, the risk of negative impacts on the structural integrity and historical value of the complex is minimal. In course of rehabilitation and construction activities, especially during soil excavation works, chance finds may be encountered. In such cases, works will be immediately taken on hold and the Ministry of Culture and Monument Protection will be informed. Works may resume only upon formal permission from the National Agency for Cultural Heritage Preservation.

Operational phase risks are related to management of visitation, preventing vandalism on site, maintenance of water supply and sanitation systems, and household waste management.

#### **4.1.3. Environmental Impacts**

##### **Soil Pollution**

Potential pollutants from a SP 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 silt water from excavations;
- Silt suspended in runoff waters (“construction water”);
- Washing of vehicles or equipment;
- Exposure of contaminated land and groundwater;
- Impact on surface and/or underground water with chlorine-containing waste water that are expected to be formed in washing and disinfection process before launching operation of newly installed water pipes.

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 operation of vehicles and heavy machinery at the construction site and during transportation of materials.

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

## **Construction Related Wastes**

### *Construction Wastes*

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

- Natural materials (soil and rock);
- Contaminated soil with non-hazardous substance or objects;
- Inert materials generated due to the demolition works within the Monastery are (tiles, stones, white brick, wood);
- Packaging materials;
- Metals (including scrap metal and wire) – negligible amount of metal waste is expected;
- Debris and domestic waste located on the area for tourist infrastructure arrangement.

### *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.

### **4.2 Operation Phase**

Potential impact related to the operation of the provided light 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 sites, which will result in the increased level of local emissions and noise as well as traffic safety issues;
- Tours of sites of worshipping may conflict with local traditions and/or religious beliefs.

The potential risk of pollution is related to disruption of wastewater treatment process due to not proper operation and maintenance of the wastewater treatment units.

According to the “Investment Financing Agreement between Municipal Development Fund of Georgia and Self-governing Body of Aspindza Municipality”, Aspindza Municipality will be responsible for maintenance of the parking area and the public toilet (including wastewater treatment unit). National Agency for Cultural Heritage Preservation of Georgia will be responsible for maintenance of the facilities, including chlorination building, waste water treatment unit, located adjacent to the fortress, administration building, tourist information center and café, based on the “Investment Financing Agreement between Municipal Development Fund of Georgia and National Agency for Cultural Heritage Preservation of Georgia”.

Positive social impact will be related to the increasing of the touristic infrastructure that will have positive effect on the local population, in terms of employment.

## **5. Environmental Management Plan**

This Environmental Management Plan (EMP) has been prepared to ensure that negative environmental impacts associated with this SP are minimized.

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 land plots (in accordance with letter from Aspindza Municipality. The records of waste disposal will be maintained as proof for proper management as designed.



6. If over 200 tons of non-hazardous waste or over 1000 tons of inert materials or 120 kg of hazardous waste is generated annually (calculation apply to a calendar year) as a result of contractor's general activities, they shall prepare and cause the Ministry of Environment and Natural Resources Protection of Georgia to approve the Waste Inventory and Waste Management Plan for the Company, appoint an environmental manager, and submit an information on his/her identity to the Ministry of Environment and Natural Resources Protection of Georgia in accordance with requirements of the Waste Code of Georgia.
7. Wastewater treatment unit to be arranged within the SP shall ensure treatment of wastewater in compliance with the requirements of the ``Technical regulation for discharging effluent from industrial and non-industrial facilities into surface water bodies`` adopted by the Resolution #17 of the Government of Georgia of January, 2014.

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.

## ENVIRONMENTAL MANAGEMENT PLAN

Activity	Expected Negative Impact	Mitigation Measure	Responsible for implementation
<b>Pre-Construction Phase</b>			
General Conditions	Incompliance to Georgian Law and World Bank requirements	The following permits/licenses and agreements should be obtained by the works contractor and submitted to the MDF: <ul style="list-style-type: none"> <li>– Agreement for disposal (stockpiling) of excessive soil</li> <li>– licenses for inert material extraction</li> <li>– Permits for production of such construction materials that belongs to the activity subject to ecological examination</li> <li>– Technical report on inventory of atmospheric air pollution stationary source and agree with the Ministry of Environment and Natural Resources Protection (MoENRP)</li> <li>– Agreement on household and construction waste disposal on the Aspindza landfill.</li> </ul>	Construction contractor
Notification of the local community on upcoming activities	Incompliance to Georgian Law and World Bank requirements	Place informational banner on the construction site carrying contact information for MDF, works supervisor company and local municipality administration. Make the banner from weather resistant material. Provide information in Georgian and English languages.	Construction contractor
Arrangements for implementation of environmental measures	Incompliance to Georgian Law and World Bank requirements Significant environmental and social impacts	<ul style="list-style-type: none"> <li>– Appointing a person responsible for protection of social and natural environment and EMP implementation ,</li> <li>– Training of workers regarding to social and environmental protection measures to be implemented</li> <li>– Delivery of supplies required for implementation of planned mitigation measures</li> </ul>	Construction contractor
<b>Construction Phase</b>			
Construction works, including:	Deterioration of ambient air	<ul style="list-style-type: none"> <li>– All vehicles shall be maintained so that their emissions do not cause nuisance to workers or local people. All vehicles shall be checked</li> </ul>	Construction contractor

Activity	Expected Negative Impact	Mitigation Measure	Responsible for implementation
<ul style="list-style-type: none"> <li>- Preparation of construction sites</li> <li>- Earth works</li> <li>- Installation of facilities</li> <li>- Machinery operations</li> <li>- Transportation operations</li> </ul>		<p>and repaired in case of need to eliminate increased level of noise due to damaged parts;</p> <ul style="list-style-type: none"> <li>- Regular maintenance of diesel engines shall be undertaken to ensure that emissions are minimized, for example by cleaning fuel injectors. All plant used on site shall be regularly maintained so as to be in good working order at all times to minimize potentially polluting exhaust emissions;</li> <li>- Vehicle refueling shall 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);</li> <li>- Materials transported to site shall be covered/ wetted down to reduce dust. The construction site shall be watered as appropriate. Protective equipment shall be provided to workers as necessary;</li> <li>- During demolition works destruction dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site;</li> <li>- The surrounding environment (sidewalks, roads) shall be kept free of debris to minimize dust;</li> <li>- earth works shall be suspended during strong winds;</li> <li>- Construction materials and storage piles shall be covered;</li> <li>- Stripped soil/ excavated ground shall be stockpiled properly;</li> <li>- There shall be no open burning of construction / waste material at the site;</li> <li>- There shall be no excessive idling of construction vehicles at sites;</li> <li>- The SP territory shall be reinstatement immediately after finalizing of construction works.</li> </ul>	

Activity	Expected Negative Impact	Mitigation Measure	Responsible for implementation
	Propagation of noise and vibration	<ul style="list-style-type: none"> <li>– The maximum speed shall be restricted in residential areas to the safety level during the pass of the trucks;</li> <li>– Proper technical control and maintenance practices of the machinery shall be applied;</li> <li>– Activities shall be limited to daylight working hours;</li> <li>– No-load operations of the vehicles and heavy machinery are not allowed. Proper mufflers will be used on machinery;</li> <li>– Ensure that machinery is in good technical condition.</li> </ul>	Construction contractor
	Damage of soil	<ul style="list-style-type: none"> <li>– Demarcation of construction sites' boundaries and access roads before construction works are launched;</li> <li>– Adherence to demarcated work site boundaries during operations;</li> <li>– Stripping of topsoil from work sites (whenever possible) before starting of earthworks and stockpiling for subsequent reinstatement, in compliance with the Technical Regulations on Stripping, Stockpiling, Use and Reinstatement of Topsoil (2014);</li> <li>– Topsoil shall be stored in stockpiles, no more than 2m high with side slopes at a maximum angle of 45°. The following shall also be taken into consideration: <ul style="list-style-type: none"> <li>• Dedicated storage locations shall be used that prevents the stockpiles being compacted by vehicle movements or contaminated by other materials;</li> <li>• Topsoil shall be segregated from subsoil stockpiles;</li> <li>• No material shall be stored where there is a potential for flooding;</li> <li>• No storage at less than 25m from river/streams, subject to the site specific topography;</li> </ul> </li> <li>– Topsoil stripping during heavy rains will not be allowed;</li> </ul>	Construction contractor

Activity	Expected Negative Impact	Mitigation Measure	Responsible for implementation
		<ul style="list-style-type: none"> <li data-bbox="1048 320 1816 539">– Stored topsoil shall be used for reinstatement and landscaping of the SP area immediately after completion of construction works. As appropriate, this may include leveling of ground surface, reinstatement of topsoil and measures to facilitate natural recovery of vegetation; Topsoil from the sites, which will not be reinstated to the initial conditions shall be distributed carefully on the surrounding area;</li> <li data-bbox="1048 549 1816 735">– In the event that the stockpiles experience significant erosion the contractor will be required to implement corrective action, such as installing erosion matting over the stockpiles if further surface compaction and/or topsoil seeding fails. The Contractor shall protect the stockpiles from flooding and run-off by placing berms or equivalent around the outside where necessary;</li> <li data-bbox="1048 745 1816 900">– subsoil shall be stored in stockpiles, no more than 3m high with side slopes at a maximum angle of 60<sup>0</sup>; dedicated storage locations shall be used that prevents the stockpiles being compacted by vehicle movements or contaminated by other materials; subsoil shall be segregated from topsoil stockpiles.</li> </ul>	

Activity	Expected Negative Impact	Mitigation Measure	Responsible for implementation
	Water and soil pollution	<ul style="list-style-type: none"> <li>– Provision of staff with toilets and bathrooms, and centralized discharge of generated wastewater in the sewer systems if possible or install temporary structures;</li> <li>– Ensuring that machinery are well maintained;</li> <li>– Refueling of machinery using respectively equipped refueling trucks, and using of drip trays during refueling operations;</li> <li>– Refueling and maintenance of machinery only at a specially devoted site, where topsoil is tripped and gravel layer is arranged; lubricants, fuel and solvents shall be stored exclusively in the designated sites; No fuel, lubricants and solvents storage or re-fuelling of vehicles or equipment will be allowed near the cultural heritage site;</li> <li>– Ensuring that construction materials are appropriately stockpiled and stored in the specially designated and temporarily constructed storage facilities;</li> <li>– Temporarily storage on site of all hazardous or toxic substances shall be in safe containers labeled with details of composition, properties and handling information; Spill containment materials (sorbents, sand, sawing, chips etc.) should be available on construction site;</li> <li>– Ensure that all spills are cleaned up immediately, and contaminated soil is respectively disposed off;</li> <li>– Wet cement and/or concrete will not be allowed to enter any watercourse, pond or ditch.</li> <li>– Cleaning up of the entire SP territory from construction waste as soon as the construction works are finalized.</li> </ul>	Construction contractor
	Pollution of environment by solid and liquid wastes	<ul style="list-style-type: none"> <li>– Burning of waste is prohibited;</li> <li>– Paints with toxic ingredients or solvents or lead-based paints shall not be used.</li> </ul>	Construction contractor

Activity	Expected Negative Impact	Mitigation Measure	Responsible for implementation
		<ul style="list-style-type: none"> <li>– Different types of waste (construction, hazardous, household) shall be collected separately; special sites shall be designated for waste accumulation and pollution prevention measures shall be applied there;</li> <li>– Construction inert waste and excess soil should be disposed on territory allocated by the Aspindza Municipality;</li> <li>– Temporarily storage of all hazardous or toxic substances shall be in safe containers labelled with details of composition, properties and handling information; Uncontrolled storage of hazardous wastes on the construction area is prohibited; the containers of hazardous substances shall be placed in a leak-proof container to prevent spillage and leaching; shall be handed over to a permitted waste management company, on a contractual basis;</li> <li>– Any construction or municipal wastes produced during construction stage should remove from the site area frequently;</li> <li>– Agreements on the disposal of waste shall be obtained prior disposal is undertaken;</li> <li>– Upon completion of washing and disinfection of pipes and reservoirs the disinfection solution will be neutralized by the contractor prior to release to the environment – to avoid damage to terrestrial or aquatic organisms. In the case of disinfection via chlorination this is achieved by application of a reducing agent, such as sodium bisulfate to achieve de-chlorination. The reducing agent, in turn, must be applied by the contractor at the precise dosage to neutralize the disinfectant – but no more, since reducing agent residuals are also detrimental to aquatic ecosystems.</li> </ul>	

Activity	Expected Negative Impact	Mitigation Measure	Responsible for implementation
	Impact on traffic flow	<ul style="list-style-type: none"> <li>- Impose speed limitation to the SP machinery;</li> <li>- Ensure that SP machinery move using only pre-determined routes;</li> <li>- The frequency of machinery movement shall be restricted.</li> </ul>	Construction contractor
	Health and safety risks for local community	<ul style="list-style-type: none"> <li>- Construction site shall be properly secured and construction related traffic regulated. This includes but is not limited to:               <ul style="list-style-type: none"> <li>- Installation of the signposting, warning signs, barriers and traffic diversions: signs shall be clearly visible and the public warned of all potential hazards;</li> <li>- Construction site and all trenches shall be fenced and properly secured to prevent unauthorized access (especially of children);</li> <li>- Appropriate lighting should be provided;</li> <li>- Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement;</li> <li>- Imposing of speed limitation to SP machinery</li> <li>- Ensuring that SP machinery move using only pre-determined routes</li> </ul> </li> </ul>	Construction contractor
	Damage to private property	<ul style="list-style-type: none"> <li>- Ensuring that sub-project machinery move using only pre-determined routes;</li> <li>- Imposing of speed limitation to the sub-project machinery;</li> <li>- Incurred losses shall be fully compensated by the contractor.</li> </ul>	Construction contractor
	Conflicts with local population or other affects people	<ul style="list-style-type: none"> <li>- Meeting with local population (if required)</li> <li>- Reception and addressing of complaints/grievances :               <ul style="list-style-type: none"> <li>- Grievance Redress committee will be established at the municipal level with the following composition: authorized representative of Aspindza Municipality Sakrebulo and Gamgeoba, Head of the Social</li> </ul> </li> </ul>	Construction contractor



Activity	Expected Negative Impact	Mitigation Measure	Responsible for implementation
		<p>Service, person in charge of relations with the water supply company, representative of the local NGO.</p> <ul style="list-style-type: none"> <li>- If the grievance will not unsolved at the local level, it will be lodged to the MDF.</li> <li>- MDF registers all received compliances, comments and how the compliance was addressed</li> <li>- During public consultations, the local population will be informed about the grievance redress issues and received information about contact persons.</li> </ul>	
	Occupational health and safety risks	<ul style="list-style-type: none"> <li>– Informing of the SP labor about potential health and safety risks, and instructing them regarding safety measures to be adhered (before launching construction works and during civil works)</li> <li>– Ensuring that required personal protection equipment (e.g. helmets, gloves, etc.) is supplied and used by workers as appropriate</li> <li>– Ensure safety of machinery operations</li> <li>– Provision of safety signs for high risk zones</li> <li>– Implementation of measures recommended for air protection and noise abatement</li> </ul>	Construction contractor
	Impact on cultural heritage	<ul style="list-style-type: none"> <li>– Suspension of construction operations if archeological objects or artefacts are discovered during earth works, informing the MDF and Ministry of Culture and Monument Protection about the chance finding and resume works only after respective permission is issued;</li> <li>– Cleaning up and reinstatement of the SP area immediately after the construction works are completed.</li> </ul>	MDF, Construction contractor

Activity	Expected Negative Impact	Mitigation Measure	Responsible for implementation
<b>Operation Phase</b>			
Operation of the tourist Infrastructure	Pollution of environment with solid waste and waste water	<ul style="list-style-type: none"> <li>– Regularly deliver solid waste from the site to the land plots (according to the Aspindza Municipality letter);</li> <li>– Burning of waste should not be practiced.</li> <li>– Sewage collector systems and biological wastewater treatment facility should be maintained in good technical condition;</li> <li>– Operations &amp; Maintenance Training (upon facility start-up and 4x seasonally during guarantee period) will be executed by works contractor, including supply of Operations Manual and preparation of Training Program (Summary Report).</li> </ul>	<p>National Agency for Cultural Heritage Preservation of Georgia</p> <p>Construction contractor</p>

## **6. Monitoring**

MDF carries overall responsibility for monitoring of the implementation of the environmental mitigation measures. A consulting company hired for supervision of works will supplement MDF's in-house capacity for tracking environmental and social compliance of works undertaken under this SP. Field monitoring checklist will be filled out and photo material attached on monthly basis. Environmental monitoring of the SP shall be implemented according with plan given below.

Narrative reporting on the implementation of EMP will be provided on monthly and quarterly basis as part of the general progress reporting of MDF. MDF will also be expected to obtain from contractors and keep on file all permits, licenses, and agreement letters which contractors are required have according to the Georgian law for extracting material, operating asphalt/concrete plants, disposing various types of waste, etc.

## **7. 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.

The contractor is obliged to carry out any of its activities pursuant to the Georgian Environmental Legislation in force, and in case if any noncompliance is revealed, the contractor shall be liable to cover at its own expense all damage liquidation costs.

## **8. Costs of Implementation**

Costs of implementing the proposed 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 carry 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.

## **9. Grievance Redress Mechanism**

Grievance Redress committee will be established at the municipal level with the following composition: authorized representative of Aspindza Municipality Sakrebulo and Gamgeoba, Head of the Social Service, person in charge of relations with the water supply company, representative of the local NGO.

If the grievance will not be solved at the local level, it will be lodged to the MDF. As for grievance monitoring MDF registers all received compliances, comments and how the compliance was addressed. During public consultations, the local population will be informed about the grievance redress issues and received information about contact persons.

## MONITORING MANAGEMENT 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?)
<b>CONSTRUCTION PHASE</b>						
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
Earthworks	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;	Construction site	Inspection  Permanent oversight by archaeologists	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  NACHP
Sourcing of inert material	Purchase of material from the existing suppliers if feasible;  Obtaining of extraction license by the works contract and strict	Borrowing areas	Inspection of documents  Inspection of works	In the course of material extraction	Limiting erosion of slopes and degradation of ecosystems and landscapes;	MDF, Construction supervisor

<b>Activity</b>	<b>What</b> (Is the parameter to be monitored?)	<b>Where</b> (Is the parameter to be monitored?)	<b>How</b> (Is the parameter to be monitored?)	<b>When</b> (Define the frequency / or continuous?)	<b>Why</b> (Is the parameter being monitored?)	<b>Who</b> (Is responsible for monitoring?)
	<p>compliance with the license conditions;</p> <p>Terracing of the borrow area, backfilling to the exploited areas of the borrow site, and landscape harmonization;</p> <p>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.</p>				Limiting erosion of river banks, water pollution with suspended particles and disruption of aquatic life.	
Generation of construction waste	<p>Temporary storage of construction waste in especially allocated areas;</p> <p>Timely disposal of waste to the formally designated locations</p>	<p>Construction site;</p> <p>Waste disposal site</p>	Inspection	Periodically during construction and upon complaints	Prevent pollution of the construction site and nearby area with solid waste	MDF, Construction supervisor
Traffic disruption and limitation of pedestrian Access	<p>Installation of traffic limitation/diversion signage;</p> <p>Storage of construction materials and temporary placement of construction waste in a way</p>	At and around the construction site	Inspection	In the course of construction works	<p>Prevent traffic accidents;</p> <p>Limit nuisance to local residents</p>	MDF, Construction supervisor

<b>Activity</b>	<b>What</b> (Is the parameter to be monitored?)	<b>Where</b> (Is the parameter to be monitored?)	<b>How</b> (Is the parameter to be monitored?)	<b>When</b> (Define the frequency / or continuous?)	<b>Why</b> (Is the parameter being monitored?)	<b>Who</b> (Is responsible for monitoring?)
	preventing congestion of access roads					
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
<b>OPERATION PHASE</b>						
Management of the solid waste	Trash bins provided on site and arrangement in place for timely regular out-transporting of waste	Rehabilitated facilities	Inspection	During operation of facilities	Prevent littering of the site and area around it	Aspindza Municipality Authorities
Maintenance and protection of the Site after the rehabilitation	No unauthorized construction and no informal land use in the vicinity of Vardzia Complex	Rehabilitated facilities	Inspection	During operation of facilities	Prevent loss of the historical and aesthetic values of the site and surrounding area	Aspindza  NACHP
Servicing of water supply scheme and sewage treatment unit	Water supply scheme does not leak and water supply uninterrupted	Rehabilitated facilities	Inspection	During operation of facilities	Prevent water loss and water logging of the site	Aspidza  Municipality Authorities

<b>Activity</b>	<b>What</b> (Is the parameter to be monitored?)	<b>Where</b> (Is the parameter to be monitored?)	<b>How</b> (Is the parameter to be monitored?)	<b>When</b> (Define the frequency / or continuous?)	<b>Why</b> (Is the parameter being monitored?)	<b>Who</b> (Is responsible for monitoring?)
	Sewage treatment block operate smoothly				Prevent pollution of surface and ground water with untreated sewage	

**Attachment 1. Cadastral information, Orthophoto and pictures of the site**

Cadastral information of land plot intended for the visitor center, vineyards terraces and parking area
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საქართველოს სასაბაღო № 60.10.34.138

ამონბეჭდი სავაჭრო ბეჭეტი

საბეჭდო ბეჭეტი  
N 882011355667 - 25/07/2011 10:14:46

საბეჭდო თარიღი  
25/07/2011 13:01:34

საკუთრების განყოფილება

პირი	საკუთრების ფორმა	ფართობი	საბეჭდო	საკუთრების განყოფილება
60	10	34	138	საკუთრების განყოფილება საკუთრების ფორმა: სასაბაღო საკუთრების ფართობი: 0442208 კვ.მ. საკუთრების საბეჭდო: 08.10.2009 მფლობელობის სახელი: სასაბაღო N1 საბეჭდო: 25/07/2011 13:01:34

შესაკუთრების განყოფილება

საკუთრების ბეჭეტი: N 882011355667 - თარიღი: 25/07/2011 10:14:46  
 სასაბაღო: 10922010

საკუთრების განყოფილება:

- სასაბაღო ქუჩის 10922010 - სასაბაღო თარიღი: 25/07/2011 - სასაბაღო ფართობი: 10922010
- სასაბაღო N121 - სასაბაღო თარიღი: 25/07/2010 - სასაბაღო ფართობი: 0442208 კვ.მ.

შესაკუთრების  
საკუთრების

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ამონბეჭდი

საკუთრების განყოფილება  
საკუთრების ფორმა: სასაბაღო

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საბეჭდო

საკუთრების  
ბეჭეტი: N 882011355667  
 თარიღი: 25/07/2011 13:01:34

საკუთრების განყოფილება  
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საკუთრების ფართობი: 0442208 კვ.მ.  
საკუთრების საბეჭდო: 08.10.2009

მფლობელობის სახელი: სასაბაღო N1  
საბეჭდო: 25/07/2011 13:01:34

გზავნილები

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საკუთრების განყოფილება  
საკუთრების ფორმა: სასაბაღო  
საკუთრების ფართობი: 0442208 კვ.მ.  
საკუთრების საბეჭდო: 08.10.2009

Cadastral information of Waste water treatment unit location





საქართველოს საგარეო ურთიერთობების სამსახური N 60.10.34.298

**ამონაწიქის საგარეო რეგისტრაციის**

განმარტების რეგისტრაცია: N 882016049607 - 01.02.2016 16:25:42  
საწმინკების თარიღი: 02/02/2016 16:27:27

**საკუთრების განყოფილება**

პირის სახელი	საკუთრის სახელი	კვანძის ნომერი	საფუძველი ნომერი	საკუთრის საკუთრების ტიპი
60	10	34	298	საკუთრის საკუთრების ტიპი

საკუთრების განყოფილება: 219.00 კვ.მ.  
საკუთრის ტერიტორია: 60.10.34.177

ბინის მფლობელი: მანანა, ნინო

**მესაკუთრის განყოფილება**

განმარტების რეგისტრაცია: ნომერი 882012260654, თარიღი 30/07/2013 12:34:36  
რეგისტრაციის თარიღი: 05.08.2013

კვანძის დაზღვევის ინფორმაცია:  

- კვანძის საფუძველის საფუძველი: კვანძის ნომერი 88202013, სადა საგარეო რეგისტრაციის გრაფიკი არ არის.

მესაკუთრის სახელი: მანანა

მესაკუთრის სახელი: მანანა

**იძოვებელი**

საკუთრების მფლობელი: მანანა, ნინო

**სამწიფი**

განმარტების რეგისტრაცია: ნომერი 882016049607, თარიღი 01.02.2016 16:25:42

სამწიფის მფლობელი: მანანა, ნინო

სამწიფის მფლობელი: მანანა, ნინო

სამწიფის მფლობელი: მანანა, ნინო

საგარეო რეგისტრაციის რეგისტრაციის თარიღი: 01.02.2016

**დასაბუთება**

განმარტების რეგისტრაცია: მანანა, ნინო

განმარტების რეგისტრაცია: მანანა, ნინო

საკუთრების განყოფილება: მანანა, ნინო

საკუთრების განყოფილება: მანანა, ნინო

საკუთრების განყოფილება: მანანა, ნინო

Orthophoto





Location of Parking Area





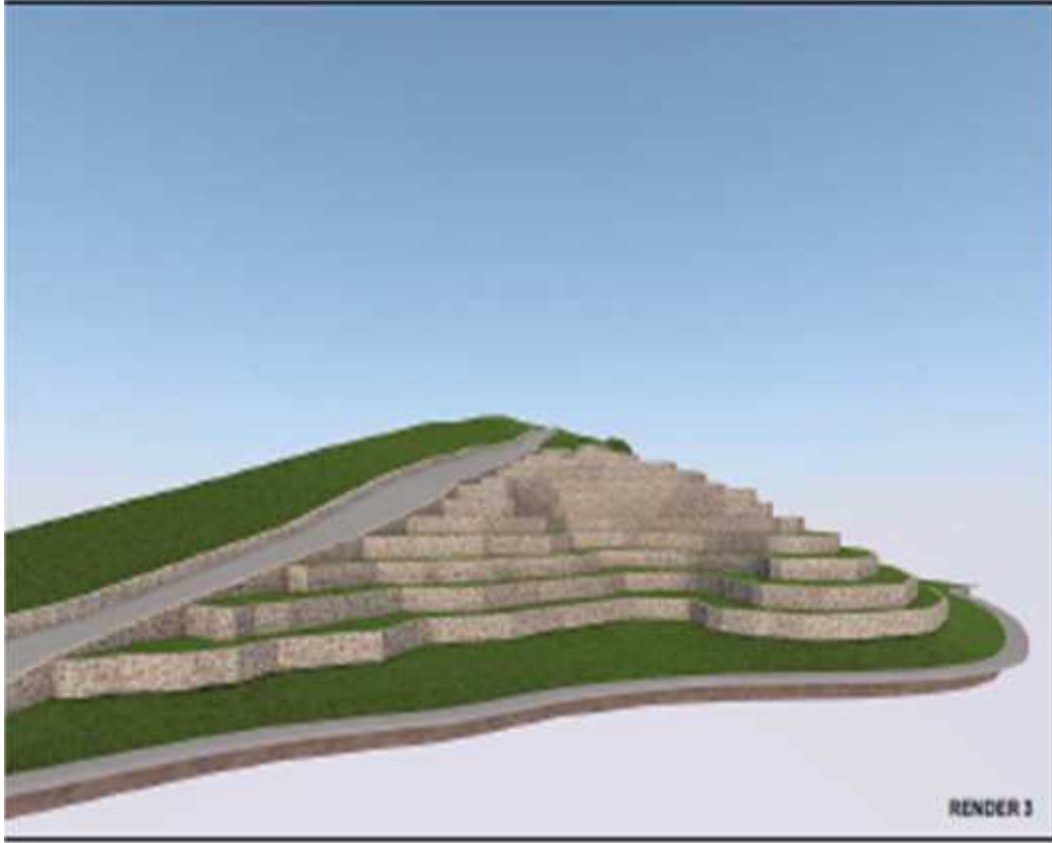
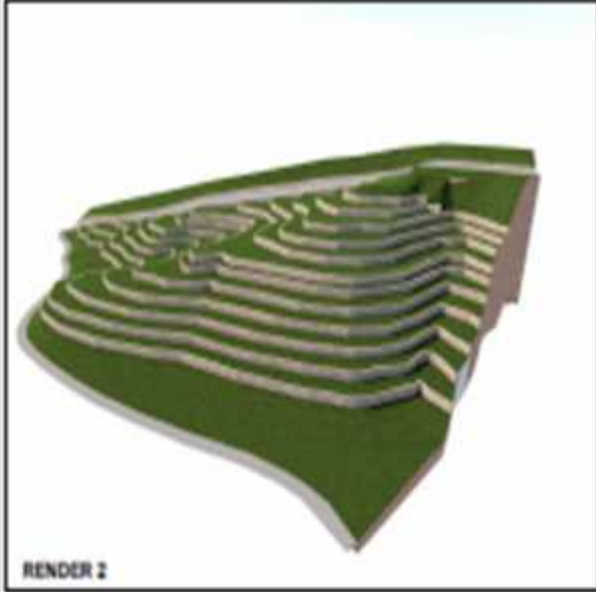
**Location of Vineyard Terraces and Visitor Center**



Renders of Visitor Center



**Renders of Vineyard Terraces**





Land plot in village Tmogvi, I alternative



Land plot in village Tmogvi, II alternative









