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**Summarized Environmental Management Plan and
Environmental Specifications for Re-construction of
Drinking Water pumping station in Dobrac**

**Prepared by
Center for Environmental Impact Assessment**

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Introduction

Floods effects in Shkodra city and its surroundings are getting to be more and more serious from 2008 to 2011. One of the negative effects in 2011 was putting out of function both drinking water pumping stations of Bahcallek and Dobrac. Dobrac Drinking Water Pumping Station is one of the main water distributors for the city of Shkodra. Interruption of electric generations of drinking water pumping station was combined by interruption of the drinking water supply for a good part of Shkodra quarters. That's why an emergency intervention is planned in order to avoid flooding and prevent its effects as much as possible in the city. During the flood of 2011 this pumping station was covered by waters which have put out of the operation the electric generators. By this the pumps stop to operate and the drinking water was not supplied till the area was dewatered and rehabilitated. For this reason a technical intervention is planned to be implemented to avoid such additional negative effects conditioned by floods.

Summarized Environmental and Social Management Plan elaborates the guidelines that should be respected by project implementer in terms of environment. Summarized Environmental and Social Management Plan consists of a short description of environment, the table of summarized environmental and safety management plan and environmental management program for construction and operation phase. A simple monitoring program is the last part of management plan which is meant to ensure the efficiency of the proposed mitigation measures.

1.0 Environmental description of the territory of Dobrac drinking water pumping station

The Dobrac Pumping Station is situated in the North of Shkodra city (3 km far from downtown), to the East of Shkodra Lake(less than 500 m. far from the lake coast) Please refer to the map in annex 1. The floods are happening due to the overflow of the Shkodra Lake waters in atmospheric events, repeated more frequently because of the climate change effects and bad management of the water basin. The territory of Dobrac Drinking Water Pumping Station is about 70cm b.s.l. The pumping station is taking waters from 11 water wells. The Dobrac Drinking Water Pumping Station is built in the peripheral part of Shkodra city and is surrounded by agricultural land (mostly fruit trees). The pumping station is encompassed by a wall, somewhere fenced and the soil within is covered by grass. In the winter of 2011 the flooding water reached 150 cm above ground surface. The surrounding areas provide enough space for storing the construction material, temporary collection of debris or building materials, equipments etc, as well as for maneuver of transport vehicles.

The pumping station employees 25 staff and is equipped with the bathroom facilities for these workers that drains into a septic tank. The drinking water is furnished by wells of pumping station.

Waste

The main type of solid wastes are the domestic wastes, ex. papers, cans, plastic and glass bottles etc. generated by operational staff. Such wastes are disposed of at collection bin which is emptied by the local municipal waste management utility. Even though the municipality has no waste selection system in place, the wastes are disposed of fully at the local disposal site. The local disposal site in Shkodra city also does not provide an opportunity for the wastes to be separated and sold for reuse or recycling, although unorganized, waste picking exists both at the bins or at the disposal site.

1.1 Description of Environments and Events

Floods

During floods the waters are flushing/washing the roads and other farm land and gardens. Different pollutants after the flood are returned to the Shkodra Lake. This is perceived as the biggest environmental impact of the floods and hence the description of the environment is mostly focused on the lake.

Lake Shkoder is the largest lake on the Balkan Peninsula in terms of water surface. The watershed area of the lake is about 5,500 km² (4,470 km² in Montenegro and 1,030 km² in Albania). The lake area surface varies between 353 km² in dry periods and 500 km² in wet periods (at maximum level, 335 km² is in Montenegro and 165 km² in Albania).

Atmospheric events between 1848 and 1858 and in 1896 diverted the Drin River, (whose watershed is around 14,000 km²), towards the west into the Buna River, a few hundred meters from the lake outlet. The large amounts of sediments raised the river bed and resulted in an increase in the lake level of several meters, which remains until present day. Sometimes the outflow from the lake in Buna is impeded due to the increase in the flow in the Drini river. This occurs mostly in the period from December to February, but may also occur during the other months, depending on the water released from the (three) hydro-power dams that were constructed in late 1960s and early 1970s upstream in the Drin river. The management of the dams depends upon the rainfall and electricity demand. The impediment of out flowing water in the Buna river increases the water level in the lake significantly. With high Drini levels and low Buna levels, Drini water even enters Lake Shkoder. An increased flow in the Drini River also causes sediment deposition in the river channels at the meeting point of the two rivers, thereby further obstructing the flow in the Buna river and the outflow from the lake. Another important source that increases the Shkodra lake level are the rivers coming from the East and North-East like Kiri and Gjader. Such rivers have an important role on sedimentation in the lake bottom and rising of the Shkodra Lake water levels. Kiri, Gjader, Buna and rarely Drini Rivers have a big influence on sedimentation of the lake bottom. Heightening of river bottom levels due to sediments, decreasing the height of the Shkodra Lake for the same reason, climate changes and increasing of precipitation frequency, together with weak management of Drini River Dams are considered as the main reasons of floods during the last years. Improved management of the river dams is foreseen under the World Bank financed Dam Safety project.

1.2 Accessibility and Infrastructure

The pumping station is accessed by a short and wide, paved secondary road. The road, in its East is linked with the ring road of Shkodra city. The surroundings of the pumping

station are agricultural lands, mostly not cultivated, and occasionally with fruit trees. In the border of the road from Dobrac to the pumping station there are homes and some warehouses where families live or deal with their business. The wideness of the road is appropriate for trucks that will transport large equipment or building materials and the road has an easy access with the Shkodra city.

The community is supplied with drinking water in wet seasons except in case of accidents such as floods or reconstruction and maintenance of the network. The energy, mainly electricity, is interrupted only in periods of winter or in case of accidents. As secondary sources of energy, natural gas is used. The telecommunication net is the same like in other parts of Shkodra, but the mobile telephony is more and more substituting fixed telephony.

1.3 Climate

Lower region of Shkodër, where the Dobrac pumping station is located, has a Mediterranean climate (Csa) that is almost wet enough in July to be a humid subtropical climate (Cfa); the average yearly temperature in the city varies from 14.5 °C (58.1 °F) to 16.8 °C (62.2 °F). The temperature in January ranges from 1.7 °C (35.1 °F) to 9 °C (48.2 °F); in July, from 20 °C (68.0 °F) to 32 °C (89.6 °F). The average yearly rainfall is about 1,675 millimeters (65.9 in), which makes the area one of the wettest in Europe.

1.4 Specific Environments

The most important specific site of the territory remains the building and surroundings of the subject Drinking Water Pumping Station. Its surroundings should be strongly protected to conserve groundwater resources, and to prevent risks to the drinking water supply of Shkodra city. On the premises of the pumping station are several depressions that are filled with water depending on the season. Such habitats create appropriate conditions for the feeding, breeding and growing of amphibians, especially frogs.

Another important issue are the orchards and gardens on the nearby plots that should be observed and preserved during the works. , Additional environmental impacts that can be expected during the reconstruction works is the noise and dust generation caused by transportation of materials or by use of heavy trucks, that may interfere with the surrounding houses alongside the road.

Surrounding specific environments

The most important resource in the proximity of the pumping station is the ground waters. Avoiding any risk for pollution or/and contamination during the constructions is an obligatory health/environmental condition that should be strongly respected by the project implementer.

A very important site in vicinity of the pumping station is the road leading from the Pumping Station to Shkoder. This road is mostly without sidewalks and has a low transport intensity of motor vehicles. Increasing the intensity of the road transport to the pumping station, may increase the risk of accidents for pedestrians.

Shkodra Lake – Nature Managed Reserve

The waters flooding the pumping station territory, returns to the body of the lake once the water levels begin to decrease. This fact calls for proper management and keeping the surrounding areas of the pumping station clean and clear from any debris or pollutant that may be picked up by the flood waters and then deposited into the lake itself.

Shkodra Lake, is the biggest lake of Balkans shared between Albania and Montenegro. The Shkodra Lake, (Albania part) is declared as Natural Managed Reserve in 2007, and Montenegro part, from years, is a National Park and RAMSAR site.

Lake Shkoder's biodiversity is developed in a unique physical environment where geology, geomorphology, hydrology and climate provide a wide variety of habitats. Total biodiversity is high (species-area relationship = 0.875) and the region is considered to be a biogenetic reserve of European importance. From a zoogeographic perspective, the Shkoder Lake region is located in a zone where two major zoogeographic areas meet: the Palaearctic region (Europe, Asia, the Mediterranean and North Africa) and the Palaetropic region (Africa). Their linkage and influences can be seen among bird fauna, with incidences of African species (e.g. African cuckoo, African black heron, flamingo) and winter migratory species of West Siberia ducks, geese). Due to a favorable geographic location in the Mediterranean region and suitable hydrologic and climatic conditions, Shkoder Lake is very rich in amphibians and reptiles. These include endemic and endangered species. Taxons belong to various bio-geographical entities. For some species, Shkoder Lake is the border area of their distribution area, or a zone where different subspecies overlap. The lake, with its wide zone of water vegetation, floodplains, humid forests as well as many streams, is an ideal habitat for the majority of the amphibians: the Ranidae (frogs), in particular the Shkoder green frog (*Rana shqipERICA*). The population of green frogs is an important link in the lake's food chain; on the one hand insects are their main food, on the other hand they are the main food for some reptiles (e.g. water snakes) and birds (heron and some ducks). Some amphibians and reptiles are also of direct benefit for humans. The frog *Rana ridibunda* is used for consumption and is an export product. The poison of the vipers (Viperidae) is extracted for serums. The herpetofauna keeps in balance the populations of insects and rodents. The amphibian and reptile fauna of Shkoder Lake comprises a large number of protected species, including many endemics:

- Palaearctic, widely spread species such as the common viper (*Vipera berus*);
- Central European varieties, including: slow-worm (*Anguis fragilis*), ordinary Aesculapius snake (*Soluber longissimus*), *Coronella austriaca*, grass snake (*Natrix natrix*), dice water snake (*Natrix tessellata*), grey lizard (*Lacerta agilis*), wall lizard (*Podarcis muralis*), and green lizard (*Lacerta viridis*);
- Mediterranean endemic species: marsh turtle (*Emys orbicularis*), land turtle (*Testudo hermani*), *Hemidactylus turcicus*, karst lizard (*Lacerta melisellensis*), coastal lizard (*Lacerta sicula*), dark lizard (*Algyroides nigropunctatus*), lizard fish (*Ophisaurus apodus*), *Zamenis dahlii*, coastal Aesculapius' snake (*Zamenis gemmonensis*), coloured Aesculapius' snake (*Elaphe situla*), striped Aesculapius' snake (*Coluber quatuorlineatus*), dark Aesculapius' snake (*Coelopeltis monspessulanus*), *Tarbophis fallax*, viper (*Vipera ammodytes*);
- Montenegro endemic species: sharp-headed lizard (*Lacerta oxycephala*).

Shkoder Lake attracts birds, flying long migratory routes, but also provides good nesting and colonization conditions. The avifauna shows a large number of species: some 271 belonging to 18 taxonomic orders. 90% of the bird species are regionally and intercontinental mobile, linking the region to neighboring countries, Asia and Africa. 73 species of migratory nesting birds inhabit the lake in spring and summer, leaving in autumn. About 18 species fly over the area of the lake during autumn and spring, and 45 species are regular winter guests. 12 species spend summers on the lake, while their populations nest in the north. In addition, there are some 90 species that visit the lake irregularly, including those that fly over or visit the lake during the winter or summer season. Among the nesting birds of Shkoder Lake, there are species that have been forced out of almost all their original nesting sites in Europe, but are not endangered or rare in the lake area. An example is the small cormorant (*Phalacrocorax pygmaeus*), internationally threatened, which is regularly observed on the lake. The total number of Mammal species found is 50 (belonging to 6 orders). Only a few mammals are strongly linked to the water habitat, like the otter (*Lutra lutra*). Bats are especially abundant around the lake if compared to the other mammals. The other mammals live mainly in the forested areas, predominantly located on the Velipoja Protected Area.

The proximity of such protected areas only calls for additional care in implementing all of the environmental mitigation measures and for the contractor to be very much aware of the impacts associated with works and to conduct all works in an environmentally friendly manner.

Shkodra City

Shkodër is a city located on Lake of Shkoder in northwestern Albania in the District of Shkodër. It is one of the oldest and most historic cities in Albania, as well as an important cultural and economic centre. Shkodër's estimated population as of 2004 is 90,000; if the surrounding region is included the population is 110,000 and presently 114,000 inhabitants. As of 2008 the population of Shkodra Region was 228,000 including the surrounding region, villages and mountains. The town was known as Scodra during antiquity, and was the capital of the first kingdom of the Illyrian tribe of the Ardiaei, since the middle of the 3rd century BC. The town, was first mentioned during classical times as the site of the Illyrian Labeates, as well as the capital of the kingdom of King Gentius in which he minted coins - and that of Queen Teuta. In the year 168 BC, the city was captured by the Romans and it became an important trade and military route. The Romans colonized the town. Scodra remained in the province of Illyricum, and later Dalmatia. By 395 AD, it was part of the Diocese of Dacia, within Praevalitana. Nowadays Shkodër city remains the most important educational and industrial center of the North Albania. The city produces various mechanical and electrical components, along with textile and food products. Luigj Gurakuqi University of Shkodër is one of the more prestigious learning centers of Albania. The public library of the city contains more than 250,000 books. Several other cultural institutions exist, such as the Cultural Center, the Marubi Photo Archives, the Artists and Writers Association, the "Migjeni" Theater (named after Millosh Gjergj Nikolla), the Gallery of Arts, and the Museum of History.

Shkodër is the center of Albanian Catholicism and the most prominent city of Roman Catholics in Albania. Historic cultural architecture includes the Castle of Shkodër, the Turkish Bath, and the Lead Mosque. Many festivals take place on an annual basis such as Carnival, Children Festival, Lake Day, and Shkodra Jazz Fest. All of such richness make the city very interesting for tourism development.

Shkodra Municipality, the biggest in the region, with reported population of around 114,000 inhabitants, has for several years faced problems when dealing with the dumping of urban solid waste. The current location where urban waste is disposed does not respect established minimum standards and causes significant pollution to surrounding environment. The dump site is located in the vicinity of Kir River, part of the biggest watershed in country's North-West. Pollution from dump site is causing for several years ecological problems and risks to the population of that part of the city. During heavy rain, the increase of river's water flow, poses high risk of pollution of Shkodra Lake and Buna River. Another dump site is built in the Bushati area. The density of urban population in Shkodra city is 94 inhabitants / km². Urban waste produced by the regular inhabitants is calculated at an average of 1 kg/days X 114 000 inhabitants = 114 ton/days x 365 days = 41610 ton/year, collected and transported annually.

2.0 Local permit requirements

In the Law No 8756, dated on 26.03.2001, “On Civil emergencies”, in Article 4, “Types of Structures” is expressed that for planning and management of civil emergencies shall be established temporary and permanent structures at the central and local level. In this law is not mentioned the need for environmental permit. Nevertheless the WB policies and their framework respecting environmentally sound developments is conditioning preparation of a Summarized Environmental Management Plan as a key instrument for implementation of Environmental Friendly actions. So this study is related also to the basic environmental legal framework regarding permitting requirements in developments in the area is the Law Nr. 10 440, dated 7.7. 2011 on “Environmental Impact Assessment”.

In the chapter of “Environmental Impact Assessment Law”, at Article 8 and 9, are the projects that undergoes to the pre-assessment and profound EIA, respectively in point “b” and “a” is mentioned that **Projects that undergo Impact Assessment on Environment are given at annexes 1 and 2 of this law. Referring such annexes, can be clearly defined that, the project in term doesn't require a profound or summarized EIA. By this analyze and referring Albanian legal framework can be concluded that the intervention for providing the draining efficiency in the quarter, upon national framework and international guides doesn't require environmental permit.**

The vicinity of Dobrac with Shkodra lake Protected Area conditions a more detailed consideration regarding the environmental requirements. Because of this the study is related also to the basic environmental legal framework regarding permitting requirements in developments in the protected area, like the Law “For Protected Area” no. 8906, dated on 06.06.2002, and the Law “On Protected Areas”, No 9868, dated on 04.02.2008, for some additions and changes in the Law No 8906, dated on 06.06.2002,

“For Protected Areas”. Considering that the Dobrac Pumping Station is located outside borders of protected area, also outside the buffer zones (refers to the zoning map, annex 1) the intervention is not considered object of the above mentioned law. Nevertheless, according WB policies, that require special attention to interventions in sites in vicinity of protected areas, and also the specifics of pumping station it self, the study is well focused on conservation of the site and surrounding areas during reconstruction and operation:

- a) *The action will not impact the water sources;*
- b) *the project doesnt dispose any chemicals;*
- c) *The project will not use not authorized areas for car passing or parks;*
- ç) *The project doesnt impact specific flora and vegetation, and will restore territories related to frog habitats;*
- d) *The project will not change the land use of garden or surroundings.*

At last it can be mentioned that the project has following characteristics that should be mentioned relating to the Protected Area and environmental permits:

1. The reconstruction of pumping station of Bahcallek is focused only in works for rehabilitation, without changing the shape of existing constructions and roads, pavements, damaging of any close environments or territories etc.
2. This action tries to control negative effects of overflows in the area, reducing the environmental and health risks, specific site pollution, maintaining the drinking water supply in Shkodra city etc.
3. The works will be performed and enclosed considering providing the urban and close natural environments in such conditions that are fully “environmental sound”.

In these terms Water PIU ensures an official statement from Shkodra REA in form of “Giving of Opinion”, were is stated that the projects in terms doesn’t requires the environmental Permits.

3.0 Summary of Technical Works.

The Drinking Water Pumping Station is made up of the old pumping station and the new one. Rehabilitation works will include both pumping stations. In the focus is the depression where the station is built (70 cm below sea level while the highest levels of flood water reach 150 cm above ground level). Following are the summarized technical works (for more details refer to the technical report and technical specifications).

Old Pumping Station

The old pumping station is built in the 1960s. Its walls and floors are outdated and cannot be used presently. The priority for rehabilitation of this pumping station is the settling plant for the collected rain water, one for collection and the other for inspection and control, that are joined onto the system and to the submergible water pumps with ensure a draining of 50l/s/ for each pump.

A hydro isolated r/c wall, 150cm high from the ground and 30 cm thick will be built and will serve as a barrier for waters coming inside pumping station territory in the flood period.

Elevation of machineries room floor and old electrical cabinets and hydro-isolation with bitumen will be joined by dismantling and mounting of machineries.

New pumping station

A hydro isolated r/c wall, 150cm high from the ground and 30 cm thick will be built, joined by construction of entrance and exit including monolith stairs in the machinery room. Opening of the doors at an appropriate height will serve to facilitate operation of the station. Hydro isolation with bitumen, will serve to control water penetration inside the machineries room. Construction of a concrete channel in the external part of the building for draining of the standing waters during wet periods is considered very important to combat effects of floods.

Emergency electrical works

In order to ensure a permanent power supply, the electrical cabinet and the transformer will need to be displaced into a new structure 1,5 meters above the ground level. In this manner the transformers and cabinets will be protected from the flood waters. This activity will include dismantling of the old housing and mounting of the new one, including cleaning the existing hydro isolation layer, and isolation with bitumen and bituminous membrane.. Other works are planned like filling with inert, walls and windows repair, internal plastering and painting of the building.



Fig 1. Dobrac drinking pumping station site plan

4.0 Environmental and Social Management Specifications

The Environmental Mitigation Plan is an integral part of the project implementation and design documents. The EMP will be a part of the bidding and contractual documents for which the contractor hired will be responsible to implement and to ensure that all works are completely conducted in a manner which will not generate negative impacts to the environment. The works Supervisor will ensure compliance with the EMP listed measures and provide reports on compliance.

Notification, Worker and Citizens Safety, are considered as very important issues to be considered to realize the public awareness, community support and traffic facilitation. General mitigation measures for construction and rehabilitation activities are considered also as very important. Water and land quality, waste management and traffic/road safety are taken into account for some general orientation of mitigation measures. All mitigation measures should be in respect with Albanian construction and environmental legislation in general and specifically with the Law No. 10431, dated on 9.6.2011, ‘On Environmental Protection’.

The chapter is considering the environmental and social effects during the construction and operation phases. The operation phase doesn't seem to have negative impacts as far as it will be not changes on the existing size, surfaces or forms of the construction, except case of accidents.

The investment is an initiative to avoid effects of floods in existing pumping station and consider avoiding of cumulative environmental negative impacts and health risks during the construction phase. In both construction and operational phase the operators should respect all hygienic conditions and rules as well as safety ones considering in detail all existing legislation and regulations related to those.

The first step is environmental and social screening, where are identified the main topics where environmental management plan should be focused. The second step is identification of main negative impacts expected, possible risks during construction phase, possible negative impacts during operation phase; the third step is orientation on identification of overall health and safety mitigation measures that all together are integrated in the summarized management plan table. The last step is orientation on building up the monitoring plan.

Activity	Possible expected impacts
Construction/rehabilitation works	<ol style="list-style-type: none"> 1. Indoor air pollution by dust, noises etc. 2. Contamination by un appropriate paints, bitumen etc. 3. Outdoor noises by possible electric generators, preparation of construction materials etc. 4. Outdoor air pollution by dusts during preparation of working materials and other working procedures.

Transport	<ol style="list-style-type: none"> 1. Noise, dust and muddy. 2. Destruction of existing road.
Infrastructure	<ol style="list-style-type: none"> 1. Temporary interruption of operation of pumping station 2. Increasing of traffic

Table 1 Identification of Main Environmental and Social Negative Impacts

Activity	Possible Risks
Construction/rehabilitation works	<ul style="list-style-type: none"> • Risk for contamination of the territory elements that can be dispersed at groundwater sources. • Risk on workers life if not respecting technical safety conditions. Risk by accidents caused by electrical power and humidity. • Risk on workers health in case of air pollution or other contamination by waste waters and materials to be used on contraction/rehabilitation
Transport	Risk of life of inhabitants, pedestrians and workers in the road from Pumping station to Shkoder.
Infrastructure	Road consumption and destruction of road pavement by passing of big transport vehicles.

Table 2 Identification of main risks

Activity	Possible impacts/risks
Solid waste and waste waters generation	Possible contamination of drinking water pumping station
Using of un-appropriate raw materials for maintenance	Possible contamination of the territory
Paving of the green territory of pumping station garden	Damaging/destruction of frogs habitat

Table 3. Identification of possible impacts and risks during operation phase

Issues upon phases and Mitigation measures

			Associated Costs	Institutional Responsibility		Comments (e.g. secondary impacts)
<i>Phase</i>	<i>Issue</i>	<i>Mitigating Measure</i>	<i>For installation and/or operation</i>	<i>Install</i>	<i>Operate</i>	
Construction	Contamination of territory or ground waters by using or treatment of un appropriate building materials	<ul style="list-style-type: none"> Ensuring bitumen is prepared in the source object. Prepare mixed cement etc. in isolated space. Pave with cement a surface of 20m² in appropriate distance and into the territory of pumping station, avoiding penetration in ground layers of several building material components. Avoid repair, refueling or any interventions on equipment on unpaved areas with inadequate leak control trays. Avoid any use of additional building material without the permits of health services of Shkodra Municipality Information of workers and operators in the importance of respecting the preventions to avoid possible contamination 	Pavement 500 EURO	Contractor	Supervised by Supervision company or engineer	Not important project delay
Construction	The overall worker safety, and risks of unauthorized and un desired access to construction site	<ul style="list-style-type: none"> The inhabitants leaving close to pumping station will be notified of the works, objectives and temporary expected negative impacts through appropriate communication; public meetings, etc. All legally required permits will be acquired for construction and/or rehabilitation. Contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. Including organization of transport to minimize impacts on neighborhood, and washing of vehicle tires to minimize spreading of debris on the roads. Workers will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses etc). Workers also will be contracted respecting Albanian legislation, and the developer should respect all hygienic and safety rules conditioned by Albanian legislation. Life insurance of workers etc will be provided by the employer. Technical security measures will be provided by the employer. Emergency safety kit should be placed close to the working place for intervention in case of accidents. Emergency contacts and numbers should be clearly posted on site. In case of contact with polluted waters of channels or sediments the workers should have safety clothes. Appropriate warning signposting of the working sites, visual barriers etc., will be used to prevent accidents. 	Provision of safety equipment, safety kits and signs is included in contractor operating costs	Contractor	Supervised by Supervision company or engineer	
Construction	Use of raw materials may pose an additional stress on the natural environment	<ul style="list-style-type: none"> Use raw materials (sand, gravel, stone) only from suppliers that have valid licenses issued by the Regional Environmental Agency of Shkodra or Environmental Ministry. 	No additional costs incurred	Contractor	Supervised by Supervision company or engineer	Exploitation of Natural resources

Issues upon phases and Mitigation measures

Issues upon phases and Mitigation measures			Associated Costs	Institutional Responsibility		Comments (e.g. secondary impacts)
Phase	Issue	Mitigating Measure	For installation and/or operation	Install	Operate	
Construction	Noise generated during works may pose a threat and risk to the workers on site, animals and neighboring properties	<ul style="list-style-type: none"> Construction noise will be limited to restricted times agreed to in the permit in respect with Albanian Environmental Legislation During operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed at station territory. 	Covers for electric generators 200 EURO/unit	Contractor	Supervised by Supervision company or engineer	
Construction	Works done on site may damage or permanently remove vegetation	<ul style="list-style-type: none"> Ensure no damage to vegetation occurs on site. In case of unavoidable damage, re-plant same species on site. Ensure visually the same appearance as before works started. 	Depends on plant species. Proper planning can ensure plants are replaced rather than new ones bought	Contractor	Supervised by Supervision company or engineer	Temporary decrease of green cover efficiency
Construction	Use of heavy-duty transport vehicles for materials on site can cause local traffic disturbances	<ul style="list-style-type: none"> Ensure local community is aware of any major transport requirements and disruptions to the regular traffic pattern. Adequately manage traffic and use postings to warn others of possible congestion. 	No additional costs incurred	Contractor	Supervised by Supervision company or engineer	Temporary noise and dust generation
Construction	Dust emissions from the site may impact air quality and pose a health threat to workers and neighbors	<ul style="list-style-type: none"> In case of disposal of dredged or excavated materials the debris shall be kept in controlled area and sprayed with water mist to reduce debris dust During pneumatic drilling/compaction dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site The septic tank (in case of reconstruction of existing ones) installed at toilet should be enclosed in quite hermetic manner to avoid unpleasant smells. The surrounding environment (side walks, roads) shall be kept free of debris to minimize dust There will be no open burning of construction / waste material at the site There will be no excessive idling of construction vehicles at sites All materials will be supplied/transported in a manner which minimizes dust – including covered truck loads or closed off truck loads, with dust suppressing measures through water spraying 	Cost of 1 m3 of clean water on site: 40 Euro DCM on Tax of Drinking water, No. 203, dated on 08.05.1997	Contractor	Supervised by Supervision company or engineer	All such measures will be in respect with DCM No. 435, dated 12.09.2002, "Concerning the Approval of the Norms for discharges in the air and the implementation of these Norms

Issues upon phases and Mitigation measures

			Associated Costs	Institutional Responsibility		Comments (e.g. secondary impacts)
Phase	Issue	Mitigating Measure	For installation and/or operation	Install	Operate	
Construction	Improper waste management may cause pollution of soil and groundwater or cause scattering by wind/animals and pose a health risk	<ul style="list-style-type: none"> Designated waste disposal areas will be allocated on site, including waste collection bins for smaller waste, and designated areas for bulkier waste All waste, including construction debris and excavated materials will be regularly and timely transported off site and managed through an authorized agency or disposed of at a site that was officially designated by the local authorities – Shkodra Municipality Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. The records of waste disposal will be maintained as proof for proper management as designed. Whenever feasible the contractor will reuse and recycle appropriate and viable materials Removed vegetation may best be composted on site, at a designated and managed area. All oily wastes will be separately collected, in bins which are leak-proof, and will be handled over to the authorized management and Disposal Company, receipts for which shall be kept. 	<p>Cost of waste management – per 1 truck to the designated site in compilation with other site disposals 70 Euro/Year Local Tax</p> <p>One container (bin) for solid municipal waste 130 EURO</p> <p>One container for hospital wastes 20 euro</p>	Contractor	Supervised by Supervision company or engineer	
Construction	Construction works on site may impact the quality of surface waters (small natural ponds) and subsequently ground water	<ul style="list-style-type: none"> The site will establish appropriate water and sediment control measures such as e.g. silt fences to prevent water sediment from moving off site and causing pollution. Collectors will be provided to avoid surface water dispersion in case of watering of sand or gravel to control the dusts The approach to handling sanitary wastes and wastewater from pumping station (installation or reconstruction) must be approved by the local authorities Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies, and will be adequately collected and managed Before starting the painting activity, the bottom will be covered by plastic paper to ensure collection of colors drops in the soils. After finalization of work this plastic will be removed and disposed at places defined by local authorities. 	<p>Costs for collecting sanitary waters on site 1000 EURO</p> <p>Cost of plastic covers 50 EUR)</p> <p>Cost of barriers in channel 50 EURO</p>	Contractor	Supervised by Supervision company or engineer	

Issues upon phases and Mitigation measures

Issues upon phases and Mitigation measures			Associated Costs	Institutional Responsibility		Comments (e.g. secondary impacts)
<i>Phase</i>	<i>Issue</i>	<i>Mitigating Measure</i>	<i>For installation and/or operation</i>	<i>Install</i>	<i>Operate</i>	
Construction	Improper material storage and use may cause pollution of air, soil or water	<ul style="list-style-type: none"> • Store all materials in original containers in adequate locations, which allow for leak-proof storage • Do not dispose of paint and other waste containers except through adequate handling procedures • Ensure workers are familiar with safety regulations and storage requirements for each product. 	No additional costs incurred	Contractor	Supervised by Supervision company or engineer	
Construction	Excavation works may uncover archaeological or other significant findings	<ul style="list-style-type: none"> • Stop all works on site in case of chance finding and notify proper authorities. 	No additional costs incurred, potential delay in works	Contractor	Supervised by Supervision company or engineer	Project implementation delay
Construction	Accidents during construction works may cause unintentional damage to the local infrastructure or power supply net	<ul style="list-style-type: none"> • Ensure all adequate permits from local utilities have been obtained • Ensure familiarity with networks in the proximity of the site • In case of accidental disruption, immediately stop all works, notify proper authorities in Shkodra and emergency remediation of damaged network in line with the requirements of Law on civil emergencies No.8756, dated 26.3.2001 	No additional costs incurred, potential delay in works	Contractor	Supervised by Supervision company or engineer	Temporary delay the Project implementation
Construction	Changes in the pumping station output from that of the designed may impact the water reserves of the site	<ul style="list-style-type: none"> • Not change on the design capacity of the pumping station • The Regional Environmental Agency of Shkodra and Regional health Service will be consulted on the proper operation and output of the pumping station 		Contractor	Supervised by Supervision company or engineer	Control of drinking water supply capacity

The following mitigation measures are related to the operational phase of the pumping station and serve as a guideline for the operators of the pumping station to improve their performance with the respect to environmental protection.

Issues upon phases and Mitigation measures			Associated Costs	Institutional Responsibility		Comments (e.g. secondary impacts)
Phase	Issue	Mitigating Measure	For installation and/or operation	Install	Operate	
Operation	Improper waste water management may cause contamination of ground waters	<ul style="list-style-type: none"> • Ensure as soon as possible including the pumping station into Shkodra waste water pipeline • Avoid any activities that may leak hazardous constituents into the ground 	Communal costs	Operator of pumping station and Shkodra Municipality		
Operation	Improper solid waste collection and management may pose a threat to soil and water quality	<ul style="list-style-type: none"> • Set up proper waste management procedures, including separation of waste into oily and hazardous waste, regular municipal and green waste which can be composted • Ensure sufficient waste collection bins are available on site and that regular collection of wastes is ensured • Isolate the space of collection been and ensure frequent sanitation from authorized entities. 	Costs of authorized waste collection and sanitation per year 70 EURO	Operator of pumping station with local waste collection utility		
Operation	Rebuilt un secure (well isolated) septic tank until the site will be part of the Shkodra waste water pipeline.	<ul style="list-style-type: none"> • Ensure construction of an efficient septic tank according calculations for 25 staff/peoples. • Ensure proper cleaning, maintenance and frequent sanitation of the septic tank • Use existing septic tank place to avoid changes on garden land use 	Costs of construction and maintenance of septic tank 2500 EURO/YEAR	Operator of pumping station in accordance with local REA		Temporary and not adequate solution
Operation	Leaks and spills in station can pollute the surface water	<ul style="list-style-type: none"> • Have in place leak control action plan • Provide leak proof bins for collection of oily wastes or equipment which can drip oil • Ensure waste is adequately managed 	No additional costs	Operator of pumping station and authorized company for management of such wastes		

Table 4. Summarized mitigation measures

5.0 *Monitoring program*

The environmental monitoring program will be focused on following elements.

- Respecting of Management Plan orientation
- Respecting of technical specifications
- Respecting of Albanian legislation for worker safety and health, insurance etc,
- Safeguard of workers and inhabitants, and
- Discharged norms in environment.

Monitoring process will be focused on the working space and surrounding territories as well as in the road that will be used for transport of materials from the sources to working space or from working space to disposal sites. Technical actions, environmental and safety specifications as well as other procedures defined running the implementation can be checked or justified by following table. In all cases, as far as the pumping station will operate the drinking water quality will have a permanent monitoring on physic-chemical and hygienic parameters as it is defined by Albanian legislation for drinking water sources.

Additional monitoring action will be done in case that the implementer, environmental or health authorities, or in case of community complaints. The additional monitoring program should be approved by Regional Environmental Agency.

<i>Phase</i>	<i>What (Is the parameter to be monitored?)</i>	<i>Where (Is the parameter to be monitored?)</i>	<i>How (Is the parameter to be monitored?)</i>	<i>When (Define the frequency / or continuous?)</i>	<i>Why (Is the parameter being monitored?)</i>	<i>Cost (if not included in project budget)</i>	<i>Who (Is responsible for monitoring?)</i>
During construction	Notification, information of workers for the importance of environmental and hygienic protection, Worker and farmers safety and health	On construction site	Maintain a log of workers and neighbor notification, all information efforts, permits obtained, supervisor will provide regular reports on EMP compliance, worker safety, and on possible complaints Appropriate signs will be inspected visually	Continuously during construction works	To ensure works are conducted as per the utmost safety and environmental protection standards	Should be included in costs for supervisor, no additional measurement costs envisaged	Contractor to implement, Supervisor to review and report on
During construction	Air and Soil quality	On construction site and surrounding areas	Visually inspect dust generation and control. Inspect presence and if any smell is emitted from the septic tank on site. Visually inspect presence of clandestine waste on site and in surroundings. Visually inspect for leaks of oily materials. Keep proof of waste being collected by authorized company. Visually inspect signs of open burning of wastes.	Continuously during construction works	To ensure works are conducted as per the utmost safety and environmental protection standards	Should be included in costs for supervisor, no additional measurement costs envisaged	Contractor to implement, Supervisor to review and report on
During construction	Noise levels	On construction site and surrounding areas	Ensure compliance with permit as per Albanian law. Measurements on complaints from neighbors.	Continuously during construction works	To ensure noise levels do not exceed permissible	Should be included in costs for supervisor, no additional measurement costs envisaged – in case of complaints, set of noise measurement is approximately 500 Euro.	Contractor to implement, Supervisor to review and report on
During construction	Water Quality	On construction site and surrounding areas	Visually and upon complaints of increased turbidity, waste materials in small ponds, spills or leaks.	Continuously during construction works	To ensure there is no pollution caused to the waters	Should be included in costs for supervisor, no additional measurement costs envisaged	Contractor to implement, Supervisor to review and report on

<i>Phase</i>	<i>What (Is the parameter to be monitored?)</i>	<i>Where (Is the parameter to be monitored?)</i>	<i>How (Is the parameter to be monitored?)</i>	<i>When (Define the frequency / or continuous?)</i>	<i>Why (Is the parameter being monitored?)</i>	<i>Cost (if not included in project budget)</i>	<i>Who (Is responsible for monitoring?)</i>
							on
Before/during construction	Isolation of septic tank	On construction site	Visually or by penetration	In the reconstruction	To ensure there is not risk of contamination by waste waters	Should be included in costs for supervisor, no additional measurement costs envisaged	Contractor to implement, Supervisor to review and report on
During construction	Waste management	On construction site and surrounding areas	Visually for separation of wastes, review receipts from the collection company, or notification from the commune on the proper site of the disposal	Continuously during construction works	To ensure there is no risk of environmental pollution caused by construction works	Should be include din costs for supervisor, no additional measurement costs envisaged	Contractor to implement, Supervisor to review and report on
During construction	Damage to vegetation or other specific habitats	On construction site	Site log and visual inspection	Continuously during construction works	To ensure no damage to vegetation and specific habitats	Should be include din costs for supervisor, no additional measurement costs envisaged	Contractor to implement, Supervisor to review and report on
During construction	Storage of paint, oil or other hazardous materials	On site	Visually ensure proper storage, and no leaks or spills	Continuously during construction works	To minimize risks of pollution of hazardous materials	Should be include din costs for supervisor, no additional measurement costs envisaged	Contractor to implement, Supervisor to review and report on
During construction	Chance findings	On site	Through site log	Regularly through construction works	To ensure adequate management of chance findings	Should be include din costs for supervisor, no additional measurement costs envisaged	Contractor to implement, Supervisor to review and report on
During operation/maintenance	Waste collection and management	On site- within pumping station	Visually for separation of wastes, review receipts from the collection company, or notification from the municipality on the proper site of the	Continuously during construction works	To ensure there is no risk of environmental pollution from	Should be included in responsibilities of hired staff	Pumping station operator

<i>Phase</i>	<i>What (Is the parameter to be monitored?)</i>	<i>Where (Is the parameter to be monitored?)</i>	<i>How (Is the parameter to be monitored?)</i>	<i>When (Define the frequency / or continuous?)</i>	<i>Why (Is the parameter being monitored?)</i>	<i>Cost (if not included in project budget)</i>	<i>Who (Is responsible for monitoring?)</i>
			disposal		improper waste management		
During operation/maintenance	Septic tank maintenance – clearing and adequate disposal of wastes	On site- within pumping station	Visually, or through measuring flow.	Continuously	To ensure that no contamination occurs from waste waters	Should be included in responsibilities of hired staff and station operators	Pumping station operator
During operation/maintenance	Respecting of worker safety measures	On site- within pumping station	Visually, and ensure compliance with plan	Continuously	No life risk for workers and operators	Should be included in responsibilities of hired staff and station operators	Pumping station operators
During operation/maintenance	Leaks and spills in station	On site- within pumping station	Visually, and ensure compliance with plan	Continuously	To ensure no leaks of oils or other materials pollute the environment	Should be included in responsibilities of hired staff	Pumping station operator

Tab. 5. Monitoring program

6.0 ADDITIONAL SUGGESTIONS

Outflow of sewage from septic tank is a significant risk for contamination not only for workers during contraction, maintenance and operation phase, but also of the drinking water sources, specifically groundwater. The only way to mitigate this impact and reduce risk of spilling is to timely manage the waste in the tank and to continue close monitoring of the levels in the septic tank. Also an immediate plan for waste water treatment plan should be prepared to avoid waste water discharges into the surrounding environment. The capacity of water sources should calculate around of 90l/d per person/staff in pumping station. This calculation is made in similar way like in solid wastes. The drinking water/person is calculated at around 180l/d (24 hours day with 16 active hours). On 8 hours, a person/staff member can use the half of this amount that goes to 90l/day. Having into account of 25 person/staff/day are working in the pumping station, it can be noted that the total of waste water generated by pumping station staff will be around 2200 l/day. As far as the quarter waste water pipeline is not yet constructed, the construction of a temporary septic tank in the pumping station should be an appropriate environmental protection measure. The cleaning of this septic tank should have a daily frequency (the septic tank should be well isolated to avoid also the appropriate smells). Nevertheless, the planned frequency of the cleaning of septic tank, the tank should be at last with triple capacity to control any accidents by overflows and floods in atmospheric events.

Solid waste management should be an important obligation of the local administrators in the near future. This management should be focused on the policies on reduction of solid municipal wastes, separation of the solid wastes at the collection bins (using separate pockets), controlled and appropriate waste transport, selection of management ways like reusing, disposing, incineration for energy profit etc. as the studies and managers will decide.

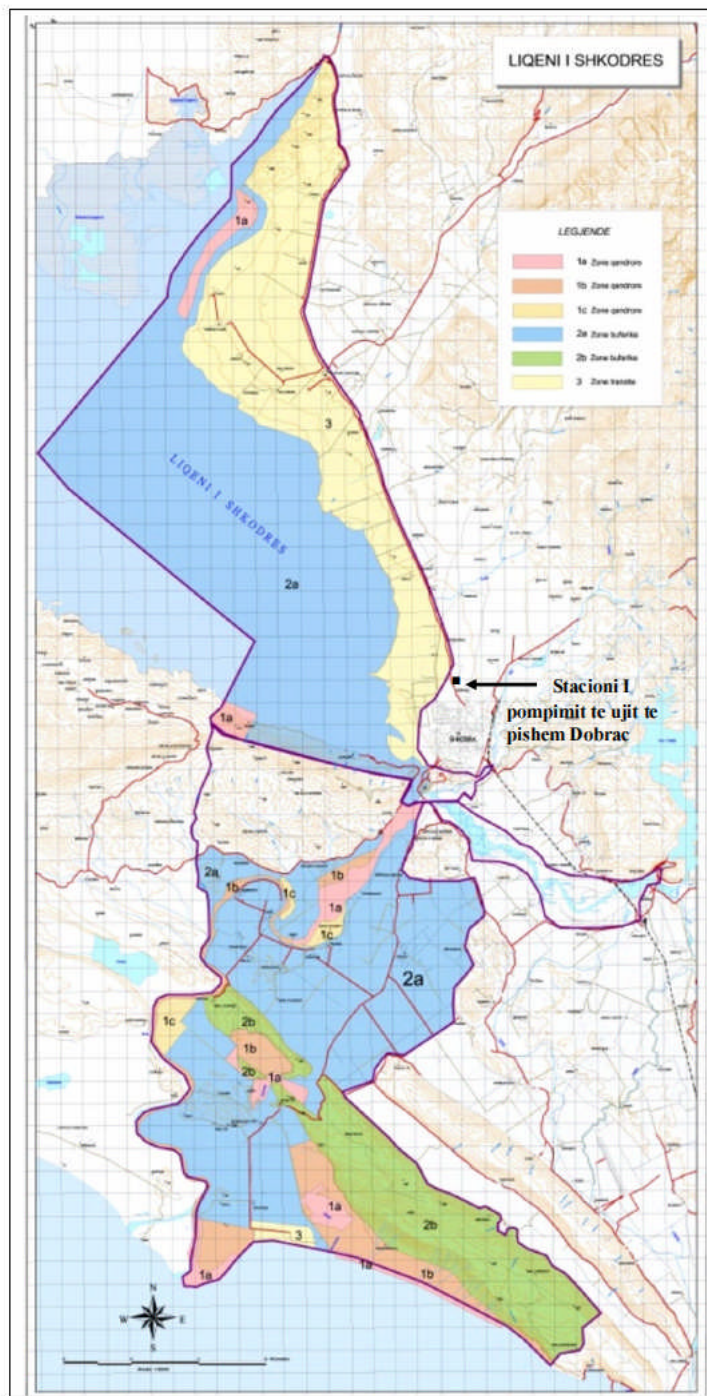
Both plans (waste water and solid waste management) should have into consideration at last a 20 year program.

7. PUBLIC CONSULTATIONS INFORMATION

The Summarized Environmental Management Plans of reconstruction of “Stormwaters-Parruca”, Dobrac and Bahcallek drinking water pumping stations has been made available to the public through being placed in the Shkodra Municipality and on the Web site of General Directorate of Water Supply and Sanitation: www.dpuk.gov.al as well as at Shkodra Municipality Web site: www.shkodra.gov.al. Contact person is Ms. Aida Shllaku in Shkodra Municipality (email; aidaqirjo@yahoo.it, mobile 068 20 49 415). Several meetings and round tables have been held between environmental consultant and community representatives, environmental experts of Shkodra, engineers, owners of cafeterias, representatives of medias etc. in Annex 2 are shown the main fruitful minutes of meetings. The community representatives meet, were not well focused on environmental problems than in expectations of avoiding flood effects. So, the consultant and most interested representatives decided to hold an official public consultation meeting in the 24 of the November 2011, at Shkodra Municipality. Minutes of meeting and list of attendees is included in Annex 2. Comments on possible effects on increasing of the pipes diameter, are considered very useful and are included in the mitigation measures plan and monitoring one.

The date of public consultation was announced by local radio (Radio Shkodra) and “Panorama” newspaper, where was given also information for the place of the meeting and the address where the interested subjects can get the summarized management plans.

ANNEX 1 – Map



Map. 1 Pozicioni hapësiror i stacionit të Ujit të Pishem të Dobrac-it në lidhje me zonat e menaxhimit të Zonës së Mbrojtur të Liqenit të Shkodres, Lumit Buna dhe Pyllit të Velipojes
(Spatial Position of Dobrac Drinking Water Pumping Station related to Management Zones of Lake Shkodra, Buna River and Velipoja Forest Protected Areas)

ANNEX 2 – Minutes of Meeting of Public Consultation and List of Key Attendees

Name and profession	Summarized questions or suggestions	Answer by environmental consultant and hydraulic supervisor engineer (Water PIU)	Level of acceptance
Ridvan Gjecaj Hydraulic engineer	If are considered reactions in case of problems that can happen accidentally with existing sewage system? Suggestions Increasing of pipeline diameter can cause problems on sewage transport during dry period	Shortly explaining of mitigation measures proposed and why the future actions should be in relevance with measures for the control of flood effects	Very good
Lek Plani Journalist – Radio Shkodra	Are integrated the measures with other actions in the sites?	Explaining of integration of environmental mitigation measures in base of WB procedures and Albanian legislation helps for each action to be under careful environmental evaluation and appropriate respond	Satisfied
Zef Sulkuqi Designer – civil society	Is the engineering design plan enough to control flood effects in case of atmospheric events?	Explaining the technical designs and plans are prepared by well experienced staff. Still the efficiency will be evaluated in this December/January. A better answer can be ensured in public hearing by the technical representative	Well
Viktor Jubani Specialist on EIA/Environmental auditing Civil society and owner of “Jubani Bar”	Are considered noises, dusts and trembles during construction works? Will the citizens have problems with transport during construction period? Is a long period that Dobrac should be out of work for reconstruction purposes?	Explaining that every works will be in compliance with environmental legislation regarding air pollution. Yes, during construction period, some traffic control will happen because of works in the roads. If such a period will be conditioned by construction works, this period will be as short as possible	Very good
Fatbardh Gusha	Are considered	Any damage of private assets	Very good

<i>Resident in Xhabie – Flooded area</i>	<i>possible damages in the private assets in Bahcallek Pumping Station?</i>	<i>will be restored and recompensed upon Albanian Legislation and WB guidelines</i>	
<i>Ikbale Amali Water Inspector Bahcallek</i>	<i>Do the project deal with drinking water losses in Bahcallek</i>	<i>The SEMP are focused only in works for protection of water supply stations by flooding, but another project is dealing with reducing of drinking water losses.</i>	<i>Very good</i>
<i>Shpresa Kodra Enginner in Driking and Draining water enterprise</i>	<i>Do the reconstruction activities deal with pumping station buffers</i>	<i>Yes the reconstruction projects considers existing buffers. Because of the un appropriate activities on last years 2 of wells in Dobrac are closed and the buffer includes all other wells, meantime 2 new wells are going to be opened and exploited</i>	<i>Very good</i>
<i>Meri Zefaj Enginner in Driking and Draining water enterprise</i>	<i>Is it expected any implementation delay and how is planned the response</i>	<i>Un expected events can delay the implementation of the project, but still the investment is expected to be finalized in the right time</i>	<i>Good</i>

Emri	Msiemri	Pima - Profisioni	Adresa - celn pari	Firma
1)	Spartak Sinajmeri	eksp. mjedisi	WaterPill Rr. Tazm Pashit 067 3644617	
2)	Viktor Jusani	eksp. mjedisi	Rr. 28 Nentor Shkodra	
3)	Kidman Gjerasi	biologji punues	068 2248056	
4)	Jeta Klumi	gjatësia Redakto Shkollës	Rr. Wilsey 065233439 L. M. Durbeti Rr. H. D. Kuzaj 20023071 996	
5)	Elkhona Amula	Yn spektore	d. Guna Rr. Rreza Kadreva 0693151022	
6)	Edlenda Tyri	Administratore R. neri	d. D. Stafa Rr. Kofte I	
7)	Edlinda Babameta	Inspektore re Regjoni 1	069 4003343	
8)	Alfred Mavrena	Administratore Regjoni 3	L. M. A. Jusim Rr. Dje I	
9)	Fatmir Zefaj	ing. hup	067 4003341 P. Neri Ueni - Shkodra 59	
10)	Alfreda Feyzaj	eksp. r. hup	067 4003353 067 40036424	
11)	Alprisa Kadra	ing. Sh. A. Gjergjaj - Kandi Zene	067 40032188	
12)	Alen Zefaj	ing. Sh. A. Gjergjaj - Kandi Zene	067 4003373	

List of Key Attendees

ANNEX 3 – Photos from the Site



View from Dobrac drinking water pumping station



View from Public hearing