EXECUTIVE SUMMARY

Kirazlı Gold and Silver Mine, Capacity Increase and Mineral Processing Project's definition, purpose, project site and existing surrounding environmental features, probable environmental and social impact of the project and prevention of these impacts or measures to be taken to minimize these impacts are presented in the previous chapters of this EIA report. In this chapter, principal specifications of the project are summarized as well as important results of impact assessment studies are presented. Table 1 identifies the relevant chapter of the EIA report that presents brief information related to detailed assessments presented in this chapter.

Table 1. Chapters Including Described Impacts and Mitigation Measures Discussed in the EIA report

Impact Sources/Probable Impacts	Related EIA Report Chapter/Section
Construction Phase	
Physical Impacts on Site	
Loss of forest-forest like areas	4.1.2, 4.1.3
Loss of agricultural areas	4.1.1, 4.1.3
Removing topsoil	4.2.4
Water Usage and water/wastewater Management	
Water Supply	5.2
Domestic wastewater generation and management	5.2
Operations resulted in Air Emissions	
Cut-fill operations	5.1
Mobile equipments traffic	5.1
Noise and vibration caused operations	5.4
Solid waste generation	
Earthwork waste material	5.3
Domestic, hazardous and non-hazardous solid wastes	5.3
Supply ,store and usage of dangerous materials	
Routine construction operations	2.1.4.6, 2.2.3, 3.1.4, Appendix 7
Seepage or spillage of dangerous liquids	4.2.4, Appendix 7 Appendix 8
Supply of material and services	4.2.4
Employment and training	3.1.5
Construction of Altınzeybek Reservoir	2.1.4, 4.5
Operational Phase	
Mining operations	
Extracting ore, storage, mineral processing operations	4,2, 4.3, 4.4, 4.5, 5.1
Providing stability at sites (open pit, waste rock dump, heap leach)	4.2.4
Drilling-blasting operations	3.1.4, 5.4
Water usage and water/wastewater /solution management	
Process, utility and potable water supply (Altınzeybek Reservoir)	
Dewatering operation	
Surface runoff water management (in-contact , non-contact)	5.2
Acid Rock Drainage (ARD)	4.5, Appendix 15
Solution management from heap leach facility	5.2
Domestic wastewater generations and management	5.2
Operations resulted in Air Emissions	
Extracting ore,crushing,material-storage, operations (dust operations)	5.1
Process caused gas emissions	5.1
Gas released from mobile equipments and other unites	5.1
Noise and vibration caused operations	5.4
Solid waste generation (domestic, hazardous, non-hazardous)	5.3
Supply ,store and usage of dangerous materials	
Routine construction operations	2.1.4.6, 3.1.4, 2.2.3, Appendix 7
Seepage or spillage of dangerous liquids	4.2.4, Appendix 7, Appendix 8
Supply of material and services	3.1.5, 3.1.6, 4.2.4
Employment and training	3.1.5
Actualizing social projects	3.1.6
Operating of Altınzeybek Reservoir	3.1.6, 4.5, 5.2
Closure Phase	
Liquid wastewater generation and management (surface run-off, rinsing, ARD, etc.)	4.5, 5.2
Air emissions	5.1
Noise generation	5.4
Solid waste generation	5.3
Rehabilitation/reclamation operations	Chapter 5.6, Appendix 9
Employment	3.1.5

1. Purpose and Description of the Project

Kirazlı Gold and Silver Mine Capacity Increase and Mineral Processing Project is a surface mining and mineral processing operation. The project will held place by Doğu Biga Mining Trade Inc. (Doğu Biga Mining Company or project owner), within Çanakkale province borders near Cazgirler and Kirazlı villages which connects to Bayramiç and central districts respectively. The closest settlement to mine site is Kirazlı village that located approximately 1.5 km north of open pit site and 800 meters to the EIA boundary. Project site that is located 30 kilometers away from Çanakkale city center and in the I.R 82225 (Operation License No: 82225) numbered concession area consisting of 1997.16 hectares of land. Access to project area is provided over the Çanakkale-Çan-Balıkesir highway.

There is not an Environmental Plan approved up to date for Çanakkale province. Balıkesir-Çanakkale Region 1/100.000 Scaled Environmental Plan is still ongoing that will include the information about Çanakkale province as well. In addition to this, project site is located out of Çanakkale Municipality adjacent area.

Project is in the accordance of the scope of the Environmental Impact Assessment (EIA) Regulation Appendix-1 list. According to EIA Regulation, preparing the EIA report is obligatory for projects taking part of this list. This given requirement is the legal base of this EIA Report.

“EIA Positive“ decision has been taken for Kirazlı Gold and Silver Open Pit project in July 2012 from the Ministry of Environment and Urban Planning and the subject of this EIA report covers the capacity increase, enrichment and mineral processing of the above-mentioned project.

During project life time of the mine that is 5 years, approximately 25.6 million tons of ore is planned to be extracted from the open pit mine. Ore from Kirazli mine is expected to be mined at 15,000 t/day (on average), 350 d/yr (due to weather conditions), totaling 5,250,000 t/yr. Therefore, it is planned to be produced a total of 495,000 oz. of gold and 3,006,000 oz. of silver within the project life. It is determined that, average ore grades are 0.75 gr/t for gold (Au) and 11.75 gr/t for silver (Ag). It is also calculated that cut-off grade will be 0.2 g/t for gold (Au).

It is considered that the project provides contribution to rise of gold production in the country and decreases the external gold-dependence. By this way, the project is thought as an important investment that contributes country economy in a positive manner. Benefits that will be provided by the project to the country and the region directly or indirectly in economical and social ways are these; gold extracted from the mine is diverted into high value-added products, the tax paid by the project owner during the project economic life time, employment opportunities and goods and services supplementaries and related to that local development will be improved.

Pre-feasibility studies within the scope of the projects have been carried on since 2010 by the specialist charged by the project owner. It is aimed that construction operations will be commenced in the third quarter of 2013 and gold production will be started in the last quarter of 2014. It is planned that ore production will reach the maximum capacity by 2015. Ore production taken place in the mine site will reach the maximum capacity by between 2015 and 2018 years.

It is envisaged that the project life time of the project is 5 years and it is planned that rehabilitation and reclamation operations will be conducted parallel to closure phase and completed in the year of 2024. Additionally, it is planned that approximately 600 people will be employed directly in the peak period of the project construction phase. It is required directly during project operation phase, total of around 300 people are employed for the ore extracting, processing operations, laboratory analysis and administrative affairs. It is envisaged that during project closure phase around 200 people are employed (peak era). In addition to directly employed personnel's, it is predicted that the project create indirectly employment opportunities.

2. Planned Unites and Operations with the Chemicals to be Used within the Scope of the Project

Planned Unites within the Scope of the Project

Planned basic project units, within the scope of the project, to practice open pit mining operation and ore processing are open pit mine site, waste rock dump area, heap leach facilities and processing plants. The respective basic units and the other associated plants' general properties are summarized in the following paragraphs.

Open Pit Site

Open pit site, within the scope of the project, will include one main open pit and two satellite pits. Open pit site will surround total of 58 hectares area. Approximately 25.6 million tons of ore will be produced during 5 year economic mine life of the project. The final open pit design is made by using "floating cone" geometry. Proper width service (transportation) roads and ramps will be constructed in accordance with the mining equipments sizes within the open pit to provide access to the mine site.

Four different geotechnical material classification is done in the Kirazlı open pit site, these are; clay, rubble, broken, and whole cores. The mentioned geotechnical material types were taken into consideration to analyze the stability issues belonging to the mine site. Accordingly, safety factor of slopes located in the open pit site are determined as at least 1.3 for static and 1.05 for pseudo-static conditions. The bench height of the open pit will be 5 meters. It is designed that final bench heights will be 10 meters and final overall pit slope angle will be 38°. Bench numbers and widths will vary year by year depending on the pit development during mining operations.

Waste Rock Dump Area

Uneconomic part of the ore excavated from the open pit mine and partial backfill material of the pit and unfavorable portion of the material that is not suitable to be used in areas of road and building construction and heap leach facility basement preparation etc., will be stored approximately 56.5 hectares area on the waste rock dump area.

Design capacity of waste rock dump area was planned to have design 60 million ton of waste rock and it is envisaged that effective storage will be 47 million tons on this area. At this situation, waste rock dump height will be 120 meters maximum. The projection of waste rock dump area is based on 2.5:1.0 and 3.0:1.0 (horizontal: vertical) variable slope angles (app. 18°). Waste rock dump area was designed as stabile under static and seismic condition throughout the project life. Waste rock dump area will be developed by benches and preparation of the site will be conducted progressively so long as waste rock dump area storage and rehabilitation operations storage proceeds.

Inside the waste rock dump area, PAG materials that have high sulfide content and extracted from the open pit mine depend on the geochemical properties and they will be placed in specially-designated areas (encapsulation) referred to as PAG Cells, that limit the contained PAG waste rock to exposure to air and water, so that isolates the PAG rock from the surrounding waste rock and contact with water.

Vegetable Soil Storage Area

The stripped vegetative soil during site preparation operations will be stored inside the project area, divided into two different (north and south) topsoil (vegetable) storage areas such circumstances that it will not loss its productivity (leaches doesn't excess 2 meters height).

Crushing and Screening Plant

Crushing and screening plant will provide the ore extracted from the open pit mine to become suitable size for heap leach operation. Crushing stage will be performed in two phases and crushing plant will consist of primary and secondary crushers.

Coarsely Crushed Ore Storage Area

Product obtained after the first phase of the crushing operation will be classified as coarse ore and will be stored temporarily on the coarsely crushed ore storage before the secondary crushing operation

Heap Leach Facility

The design capacity of the heap leach facility will be 26 million tons and project life will be 5 years. The construction of the heap leach facility will be completed at two phases. Ore will be stacked in nominal 10-meter lifts and planned total height of the heap leach facility will be 100 meters. Benches will be provided between lifts to provide an overall stability which will provide operational and post-closure stability of the heap and minimizing grading during reclamation. Leach operation to be performed in the leach facility will be carried to by using diluted alkaline cyanide solution. The prepared solution will be fed onto active lifts stacked in the leach facility, throughout 90 days by using dropping and spraying systems with the ratio of 10/lt/hr/m^2. Solution will be collected above the leach pad HDPE geomembrane and delivered to the pregnant pond using a drainage pipe system placed above the HDPE geomembrane within the 0.7 m drainage layer.

The basement of the heap leach facility will be in appropriate conditions to apply the liner system resulted from the necessary discharge operations. Firstly, on the prepared foundation, compacted clay layer (lifts less than 15 cm height) will be created that does not have more than permeability value of $1x10^{-8}$ m/sec. and thickness of 2 mm and double-sided high density polyethylene geomembrane (HDPE) will be placed above the compacted clay layer. At the uppermost layer of the liner system, there will be located a drainage layer having thickness of 0.7 meter by using the crushed ore, waste rock and gravel. Drainage layer will be filled by the material having permeability of approximately $1x10^{-3}$ m/sec. that enables pregnant solution percolating from the leach pad to be collected on to HDPE geomembrane liner system. By means of described liner system, the heap leaching process to be applied in the site will be operated on the principle of zero discharge and in any way there will be no discharge of process based solutions into the receiving surrounding environment.

Material found in the heap leach pad is decyanided by the process unit during operational phase and rinsing operations during closure phase. Besides, at closure phase, it is a natural material from which any potential pollutant metal content is removed from the heap throughout operational phase. In this regard, heap leach pad area is not within the framework evaluated based on the “Regulation on the Landfill of Wastes”, published in the Official Gazette No. 27533, dated October 26, 2010. In addition to this, in impermeability calculations, described design criteria mentioned in the regulation is taken into consideration since the regulation is the only legislation having statement about landfill operations. When proposing an alternate to a regulatory prescribed liner, calculations done within the scope of the feasibility studies are prepared to show that the expected performance of the proposed liner system recommended in the EIA report is equivalent or superior to the regulation liner system.

Ponds and Tanks

There will be an allocated zone where pregnant solution pond, barren solution tank, pit contact water pond and event pond will be constructed to control the process based liquids and content of surface water within the scope of the project. The ponds will be located at the downstream of the heap leach pad.

Pregnant Solution Pond

Pregnant pond is situated so that solution will flow via gravity from the leach pad to the pregnant pond. There will be a pregnant solution pond at the project site. Pregnant pond will be double-lined with two layers of HDPE geomembrane and will be fitted with a continuous leak detection/collection layer installed between the two geomembrane liners. The pregnant pond will be constructed with a double-lined system that meets or exceeds international standards consisting of (from the base up) 0.5 m of compacted low permeability soil, a 1.5-mm thick HDPE secondary geomembrane, an HPDE geonet leak m detection layer, and a 2.0-mm thick HDPE primary geomembrane. The solution collected in the pregnant solution pond will be pumped to the ADR plant that will be located near the pond for mineral processing.

Barren Solution Tank

Solution that is poor in terms of metal content coming from the process area will be taken into barren solution tank before adding cyanide and being pumped to the heap leach pad area again. Liquids collected in the barren solution tank, by pumps, will be pumped on to the ore laid on the heap leach pad and agglomeration unit if necessary.

Event Pond

An event pond will be constructed at the project site. Because, during extreme conditions, the solution volume may exceed the available storage volume of the pregnant pond that causes solution to flow via gravity sequentially to the event pond. The effective volumes (except the freeboard) of the pregnant and event ponds will be sized to contain the sum of the normal operating volume, heap drain down during a 24-hour pump or power outage, precipitation falling on all lined areas during a 200-year, 24-hour storm event. This design will be beyond the requirements of international standards

During normal conditions, the event pond will be empty. Similar to runoff from average precipitation, and pregnant solution pond basement condition, event pond will be double-lined with two layers of HDPE geomembrane and will be fitted with a continuous leak detection/collection layer installed between the two geomembrane liners.

Contact Water Ponds

Contaminated surface runoff water inside the mine site will be collected in the contact water ponds constructed in different locations within the project site. The storage capacities of these ponds are designed in accordance with the calculations taking into account the rainfall conditions at the mine site.

Diversion Ditches

Diversion ditches will be installed around the open pit area, heap leach area and waste rock dump site to collect surface runoff before entering into facility and being in contact with contamined surfaces. Besides, diversion ditches will be constructed along the service roads. Water collected by the diversion ditches will be diverted to sedimentation structures to ensure particulate matter settling and energy dissipation and then discharged to nearest receiving environment.

Surface runoff water that cannot be prevented to enter into the mine site and become contact water (open pit site, waste rock dump area, heap leach pad, service/access roads, etc.) will be evaluated in accordance with the internal plant water management plan by collected via the drainage channels constructed inside the mine site. The diversions channels will be sized to contain the peak discharge from the 200 years, 24-hour storm event and will be lined with riprap or grouted riprap, if needed to control erosion.

Ravine Drainage System

Currently, there are water bodies area available in the planned waste rock dump and heap leach sites. In order to provide these resources to continue their flow throughout the project and minimize the impacts on them of the project, ravine drainage channels will be constructed at the basements of the waste rock dump area and heap leach pad. These channels will provide the existing water sources to reach to the natural water sources that will be located at the downstream of the ponds by gravity along the facilities without interrupting for any reason and contacting project caused liquid or solid materials (without contacting ore stockpile or solution).

Ravine drainage channels, before the facilities will be improved related to the waste rock dump and heap leach pad, will be located at the necessary regions and supported by the strength and coarse materials. Along the heap leach pad, at the locations where the ravine drainage channels will be constructed, the liner system belonging to heap leach pad will be augmented with a secondary geomembrane-soil composite liner and thus it will provide an additional protection for the water sources.

Adsorption-Desorption-Recovery (ADR) Plant

Mineral processing operation at Kirazlı includes heap leaching of crushed ore with dilute cyanide solutions with precious metals production in carbon adsorption-desorption-recovery (ADR) plants to produce gold/silver dore bars. Within this framework, leach solution that becomes pregnant state resulted from leaching process and exposed to serial active carbon columns in the ADR plant, will provide precious metals contained within the solution to be adsorbed onto activated carbon.

Administrative Building

Mine office and services building will be constructed at the Kirazlı Mine site. This will provide office space for onsite project administrators, exploration, environmental compliance and engineering staff. Two bed medical clinic facilities are located in the mine office and services building.

A centralized administrative; laboratory, warehouse and laydown facility will be constructed near Etili which is approximately 15 km east of Kirazlı. This centralized facility will service both Kirazlı and the project owners' other projects.

Transportation

Following the extracted ore and waste rock transportation to out of the mine site, until the gold production phase, materials need to be transported among the project unites. To reach the aim of transportation of the ore and waste rock to the other units, there will be constructed ramps and service road within the open pit and project site.

Other Plants and Buildings

Besides the mentioned basic project units, other associated plant and units located at project site are conveyor system, open pit dewatering unit, temporary waste storage area, contaminated soil storage area, package domestic waste water treatment plant, process water treatment plant, warehouse, small-scaled laboratory, laydown areas, change room, guard house and firewater system.

Off-Site Plants (Altınzeybek Reservoir)

Altınzeybek Reservoir which will supply potable water to nearby affected communities and sustainable process water to Kirazlı mining operations is a plant that will be executed within the scope of the project. This pond, after the negotiations and under the protocol signed with the State Hydraulic Works (DSI), XXV. Regional Directorate, located approximately 30 kilometers southeast of the project area in the province of Çan, Zeybekçayırı village (neighborhood Çayıroba) 1.5 kilometers upstream (northeast) and will be built on Bıçkı Creek. According to the protocol, the planning and construction of the pond will be done by the project owner under the supervision of DSI and the ownership and operation of the dam and maintenance will belong to DSI.

According to the protocol, by Altınzeybek Reservoir will primarily serve water to 24 villages of Etili Group Water of Can town and Sogutalan, Kizilelma, Cazgirler and Yukarisapci villages and Terizalan town. Then, it is planned to provide the project with process water from the reservoir.

Design of the reservoir has been done by a competent engineering firm (assigned by the project owner) in accordance with DSI standards. Upon completion, resrrovir design will be be subject to the approval of DSI XXV. Regional Directorate.

Pond design studies carried out under the physical and/or chemical water analysis results, if needed, to ensure appropriate water quality for human consumption within the scope of the construction of a treatment plant in the pond would be considered. In this case, all the planning stages for the water treatment plant will be carried out by the project owner.

Planned Operations within the scope of the Project

Mining activities within the scope of the project will start by extracting the ore from the open pit. Following to this operation, as a result of the crushing, agglomeration, heap leaching and processing operations, production of gold and silver activities will be carried out. In this context, planned activities are described in the following sections.

All of the activities planned within the scope of project will be carried out in accordance with provisions of the 3213 numbered Mining Law, dated June 15, 1985, published in the Official Gazette No. 18785 and the Mining Activities Implementing Regulation dated November 6, 2010 ,published in the Official Gazette and numbered 27 751. Project design, construction, operation and closure activities related to the post-operations will comply with the best practices available in the mining sector.

Extracting the Ore (Ore Production)

As long as geological, physical, geotechnical structure at the project site, ore grade and costs are taken into account, for the extracting the existing orebody at the Kirazlı mine site and it is determined that the only appropriate method for production is open-pit mining in terms of the technical and economic point of view. Mining activities within this scope will consist of one main pit and two satellite pits carried on the open pit area. Activities as a result of the acquisition of the economic value of metals from ores will be provided and non-economic parts of ore will be separated to be stored as waste rock in the mine site.

During the production of ore, drilling and blasting operations will be needed in order to obtain satisfactory fragmented rock units. Within the scope of the project, planned drilling pattern will be determined to be square hole pattern.

Throughout the project life of the project, a total of ore amount extracted from Kirazlı mine is expected to be around 25.6 million tones. Meanwhile, the total production of 46.5 million tons of waste rock will occur. Around 1.4 million tons of waste rock will be used in pit backfill following the completion of mining activities. Within the scope of the project planned, machinery and equipment to be used in the mining area in order to reach planned ore processing capacity of 15,000 tons per day will include such heavy-duty machines like rock trucks, loaders, dozers and excavators.

Crushing Process

Ore extracted from the Kirazlı mine site will be subject to a two-stage crushing process. The process will start by transportation the run of mine to the primary crusher by trucks, located in the crushing plant. Here, broken coarse ore crushed by primary crusher is transferred to the secondary primary crusher to obtain suitable grain size (30mm) for leaching process. Dust suppression methods will be applied at the appropriate points at primary and secondary crushers site and the possible dust will be kept under control.

Agglomeration

Agglomeration operation will provide the fine particles, contained inside the ore, stack the hard surface by means of contacting water and cement and thus being stabilized and will serve to increase the efficiency of the subsequent leaching process. In this context, ore will be prepared in terms of pH (in a range of 10-12) and moisture content by adding appropriate amount of cement and water to the ore that comes from the crusher unit and transported via conveyor line to the agglomeration unit.

Heap Leach Process

Ore coming from the agglomeration unit will be transported to the heap leach pad via conveyor system and laid in layers on to the pad. New layers will come on top of previous layers and each final layer will have a height of 10 meters. In order to gain the valuable mineral from the ore laid down the leach pad, during 90 days leach processing operation will be subjected to the heap where ore laid process is completed, by using diluted cyanide solution. The solution onto the floor will be applied by means of a system of drippers and wobblers at a rate of 10 liters/hour/$m^{2.}$

Dilute cyanide solution while filtering down through the stack, there will be pregnant solution resulted from the passing through inside the solution of gold and silver metals. This pregnant solution will be accumulated by catching on via the geomembrane liner system located under the heap leach pad and collected via drainage pipes and then transported to the pregnant solution pond. Cyanide wil be added to the solution collected in the barren solution tank (after the ADR process) and then this solution will be pumped again on to the ore laid on the leach pad.

ADR Processing Unit

Recovering the metal and gold metals from the pregnant solution, during the mineral processing phase, will be carried out in the ADR plant consisting of adsorption, recovering (desorption and electrowinning) and regeneration units.

The adsorption phase of processing operation process will be carried out by using activated carbon columns. In this context, the collected pregnant solution will be pumped to the carbon columns. In order to separate the precious metals from the ore bearing carbon columns and recycle the carbon, stripping (desorption) and electrowinning operations will be applied. Carbon stripping unit will provide precious metals to separate from the carbon that are adsorbed on to the charged carbon and transfer into a solution. Solution coming from the stripping columns will be passed through the electrowinning cells to provide gold and silver, contained in the solution, to accumulate on to stainless steel cathode plates

The cathodes located in the electrowinning cells will be removed several times in a week and taken to the cathode winning unit. At this unit cathodes will be washed with high pressure water, so that the accumulated metal residue will be collected and passed through the filtered press. The filter cake is primarily formed from gold and silver, in addition, may contain an amount of copper and mercury. Mercury will be recovered as the retort by-product to protect the working environment. From here, the filter cake will be delivered to the refining unit where melting and casting operations will be performed.

Dores produced during refining phase will be poured to ready molds as dore shapes. Each dore will have capacity to receive 20 kg of gold and 36 kg of silver. Spilled golden dores will be sampled, weighed and purified in order to make them ready for sending to off-site facilities for further process.

Chemical Used within the scope of the Project

There will be the use of hazardous and non-hazardous substances in activities carried out at the Kirazlı mine site. These materials and chemicals will contain cement, sodium cyanide, sodium hydroxide, activated carbon, hydrochloric acid, lime deposition preventive chemicals (antiscalant) and the slag forming materials and plasticizes.

Cement from these chemicals and materials will be used in agglomeration and heap leach processes, sodium cyanide will be used especially in heap leach processes and carbon stripping operations, sodium hydroxide will be used in preparation stripping solution at process operation, hydrochloric acid will be used at carbon washing operations and anti-scalant chemicals will be used at the heap leach and stripping operations. Except from these, diesel fuel usage will be carried out for generators and other equipments that take place into operation in case of a possible power cut.

The management of sodium cyanide that is part of the chemicals to be used, has an importance for environmental sensitivity. Supply from the manufacturer, transportation, storage, preparation, etc. of cyanide solution used in the process operation will be carried out in accordance with the Cyanide Management Plan (see Appendix 7) that will be prepared special for project. Sodium cyanide, as well as the cement, at the process phase, as the quantity (37.5 tons/day) will be the mostly used chemical so that these chemicals are important in terms of amount of usage. Explosive to be used will be stored

in accordance with requirement of the relevant legislation in a warehouse of explosives that will have appropriate capacity and consistent cover.

Chemical substances needed in the process are planned to be supplied from the country and outside of the country and transported from the surrounding appropriate ports (e.g.: Izmir Port, Aliaga Port, Bandırma Port, etc.) to project site via highway roads.

3. Economic and Social Aspects of the Project

The existing economic, social and cultural characteristics of the project area and its surroundings will be evaluated based on the findings of the socio-economic field research conducted by expert teams in July 2010 near the settlements of the project area and with the resources published by the agencies and organizations of Turkey Statistical Institute (TSI), which today serves as the Ministry of Development of State Planning Organization (SPO), Çanakkale Governor's Office and Southern Marmara Development Agency,etc.

Within the scope of the socio-economic field research; Kirazlı, Cazgirler, Yukarışapçı and Karacalar villages that are located in the area of social influence have been visited and detailed information were collected about the socio-economic conditions of the settlements that are likely to be affected by the project by applying key informant survey studies. In addition to this, surveys were carried on the specified number of households with the household heads by using sampling methods at the visited villages such as Kirazlı and Karacalar villages.

In this context, the aim of the studies to be taken into consideration will be both assessing the social and economic impacts described in the existing conditions and provision of the important information to the owner of the project about the needs of local people and social project to be developed.

Existing and Planned Socio-Economic Characteristics of the Project and Impact Area

The project area is located in the Cazgirler village connected to Bayramiç town and Kirazlı village connected to central district in Çanakkale. Settlements in the social impact of the project area were these; village of Kirazli, Kirazlıalan district, Dedeler village, the village of Karacalar, Yukarışapçı village, Cazgirler village, Alanköy and Karaibrahimler villages.

Economic Conditions

The economy of Çanakkale province is based on agriculture, industry, fisheries, animal husbandry and forestry. In addition, due to interest to such places like Çanakkale Martyrs Memorial, Bozcaada and Gökçeada, tourism emerges as an important sector contributing to the economy of the city. According to import-export figures in the province in 2009, the manufacturing sector is in the first place of both areas. In addition, fishing takes the second highest share of exports. According to Classification of Statistical Region Unit in the province of Çanakkale, Çanakkale region unemployment rate is low compared to all over Turkey.

According to the Socio-Economic Development Ranking Survey, Çanakkale province, based on the last study was carried out in terms of development since 2003; high progress is recorded that makes Çanakkele province to be 14th ordinary ranks from 24th rank. According to the survey carried out at the level of counties, central district where the project will be carried out were in the second developed group and Bayramiç town were in the third developed group.

Kirazlı, Cazgirler, Yukarışapçı and Karacalar villages that are located within the boundary of the social impact area of the project, economic characteristics of the villages were examined under the social field research. According to the findings of the project area of social influence, the economies of household in these settlements are based on agriculture and animal husbandry.

Population

The population of the province of Çanakkale, according to the results of Address Based Population Registration System described by TURKSTAT, was 486,445 in 2011. The population of the districts of the Central and Bayramiç are 135,192 and 30,471 respectively. Central district is the district with the highest population of the province. Province population tended to decrease even though a small proportion in the previous years. Population of the towns of central and Bayramiç including the project area decreased between 2010 and 2011 years. Evaluated data shows that the population of Çanakkale tends to urbanize at a rapid rate.

According to the TURKSTAT data, the population of Kirazlı village that is the closest settlement to the Project area is 120. According to the findings of field research in social research, the average household size of settlements is close to each other except for the village of Kirazlı. Average household size of the settlements where the social studies were conducted is 3.5 and this values is similar to value of Marmara Region average household size which was determined as 3.1.

Health

During the operation of the social field, current health problems of the local people at village level were investigated. Within the scope of the study, temporary health problems, mental and/or physical disabilities, chronic health problems and people who do not have any health problems in the population of the total settlement rate was investigated. During the investigation, any endemic disease were not come across in the region but some individuals who has chronic health problems (e.g.: heart disease, diabetes etc.) have been found in the region.

Activities that May Pose Risk/Danger to Human Health and Environment

Within the scope of the project, open pit mining, transportation, heap leaching, mineral processing, waste rock and topsoil dump, water/wastewater and solution management activities etc. will be carried on.

As a result of these activities, occurrence of risky activities in terms of people (staff and public) and environment may be possible unless necessary measures are taken. For this reason, in order to take place the mining activities in such an environment that does not pose human health and safety and environmental hazard, the realization of the necessary technical and administrative measures and ensuring that project employees are in the full compliance with health and safety policies of the project owner's environmental policy will be the primary objective. In this context, the project owner will develop policies that are in accordance with the international environmental, health and safety standards and best practices accepted by the mining industries.

Health and safety risky activities and situations that may hazard to project employees (staff) performed at the mine site includes general workplace practices (e.g.: walking on the wet floor, heavy lifting, etc.) and business activities (e.g.: leaching process, refinery activities to be performed, solution preparation, laboratory work ,etc.), the use of hazardous substances (e.g. leakage, spillage, exposure and adverse impacts during the blasting operations of chemicals and explosives ,etc.), working at high (e.g. risk of falling, risks and hazardous that may occur as a result of the use of ladders and scaffolding), electrical work and hot work (e.g.: the risk and hazardous situations that may occur during exposure to electric current, burning, welding and/or cutting operations) and working in enclosed areas (e.g. airless exposure, choking, jamming, etc.), vehicle traffic (e.g. moving machinery/equipment caused accidents), geotechnical risks, landslides, rock falls and fire.

The primary objective of the project owner in the workplace will be provision of suitable health and safety conditions for employees. In this respect, measures to be taken in order to minimize the risks that pose dangers to human health and safety and the environment caused by natural events or human error induces conditions (e.g.: natural disaster, accident equipment failure ,spills ,etc.), will be taken by the project owner and reflect the requirements of OHSAS 18001 Occupational Health and Safety Management System within the framework of technical (e.g.: design, equipment procurement, installation and production, etc.) and managerial (e.g. education, employment, policy formulation, application of sanctions, etc.) practices.

In this context, at all stages of the project, in order to prevent primarily the above-mentioned physical danger and risky activities and generate a safe-working environment in the mining area, general and operational measures that will be developed during the implementation phase and described in the EIA report will be taken.

Further, the general measures to be taken will include risk analysis in case of the planned activities, distribution of personnel protective equipment to personnel against the risk that cannot be blocked by using technical and administrative measures and application of penalty system for using of these equipment properly for the personnel, training, surrounding the project area by the security fence, generation health buffer zone, security of personnel, etc., ensuring the use of safety-equipped machinery, applying the rules of well-site and mining procedures and being careful for personnel commissioned. In addition to this, at every stages of the project, an updated emergency plan will be available to be applied in the mine-site.

In addition to general measures, activity-specific measures to be taken will include the use of dangerous substances caused, height work caused, electrical or welding work caused, work in confined areas or vehicle traffic caused risky and dangerous situations and with technical and administrative measures (e.g. special design, equipment selection and adequacy of the provision, maintenance, repair, and repair procedures, the case of job training, introduction of safety signs, workplace organization, the use of special personal protective equipment, work permit application procedure, etc) to be taken against

the situations of the problems of geotechnical stability, landslide, rockfalling and fire etc.

Field senior management, especially the senior management team of the project, department managers, the relevant Health and Safety Manager and all the employees will be responsible for the implementation of the referred measures.

The Expected Income Increase and New Employment Opportunities

Although, the project is in the planning stage currently, within the scope of the activities being carried out, there exists a significant need for labor force since 2010. In this context, both directly by the project owner, Doğu Biga Mining Co., and the contractor firms commissioned by the project owner, local labor force at significant levels from local people will be provided. The labor force that was required at this phase consisted of skilled and unskilled labor. Within the scope of qualified labor force, geologists, technicians, drilling specialists, drilling assistant, cooker and administrative staff were employed and within the scope of non-qualified labor, warehouse worker, the night watchman, workers employed at the construction site and cleaning staff were employed. In this context, the net economic benefit to the region by employment is estimated to be around 3,500,000 ¨ (as of November 2012).

In addition to the employment opportunities generated at the current situation, more labor force will be required by commence of construction of the project. At the operation and the closing stages of the project, there will be different levels of employment as the labor force. In this context, 600 people at the peak period of the construction phase and at the operational phase around 300 people of labor force will be employed directly as the basis on the project needs. It is envisaged that 200 people (peak period) will be employed directly at the closing phase of the project. The labor force to be employed at construction, operation and closure phase of the project will consist of qualified and non-qualified personnel similar to planning stage.

The labor force required within the scope of the project is thought to be provided from the local people as similar to planning stage of the project. In addition to the personnel to be employed directly, the project is expected to create indirectly employment opportunities. Employment opportunities, generated by the project, due to the employment need, will be provided from the locality people, the current income levels of households in the region will increase over the life of the project. Thus, this situation will provide important contributions to the local economy.

As a result of supply of labor force from the local region within the scope of the project, an important population increase is expected to happen in the villages. In addition to this, job opportunities that will arise within the scope of the project may reduce the migration to out of the villages because of the lack of job opportunities or unwilling to work in agricultural sector and thus contribute for especially young people to be stayed at the villages.

In addition to generated employment opportunities, the need for goods and services at the construction, operation and closure phases of the project will be among the factors that increase the revenue in the region or indirectly in the localities. In this context, the fuel needs for passenger vehicles and mobile equipment used within the scope of the project, electricity requirement, maintenance and repairment equipment, office equipment, vehicles, travelling, logistics, food, accommodation, communications, security, etc. will be supplied from the local goods and services and thus the project produces a revival to the local economy.

In addition to the expected income increase because of the project, there will be opportunities of gaining new skills for labors (e.g. technical, mechanical etc.) to provide them different in-service and skill courses. In this scope, a comprehensive training program will be implemented in cooperation with the vocational schools in the region as well as the university to maximize utilization of local/regional labor force. Accordingly, in the region, it will be possible for the people to be employed for the project will benefit in a more efficient way from the job opportunities in the long term.

Local Social Infrastructure Services

Educational and health infrastructure is not enough in the local villages Cazgirler, Karacalar, Kirazlı and Yukarışapçı villages that are located in the close vicinity of the project area these villages do not have any primary school. But there is mobile education available only at Yukarışapçı and Cazgirler villages. Similarly, only at Kirazlı village, there is only one health house and no health center is available in the surrounding settlements. Water supply is available at these locations but no sewerage system is available in the region. Around the project area electricity access infrastructure is developed and all the villages are connected to the electricity grid.

Additionally, with the execution of the project, the needs of the project as a necessity, it will be available that the development of existing infrastructure of the region benefits from the project. In this context, social projects, studies and supports are available that has been carried out so far in the region by the project owner (e.g. cooperative support of local agricultural development, road improvements or renovations support, fountain repairment, renovation and improvement works to mansion in the village, financial support for the implementation of waste management in the region, etc.). Similar activities will continue in the later stages of the project by taking into account of the views and findings of the interested parties.

In this context, the experts responsible for social projects continuously evaluate opportunities for new projects and social projects and update the plans that will be developed continuously throughout the life of the project. In this context, the current situation in the region is determined to be inadequate educational and health infrastructure and within the scope of the social projects these issues will be given priority.

Canadian Alamos Gold Company, Doğu Biga Mining Co. is a subsidiary of it, has been awarded as “the socially responsible company” certificate (Empresa Socialmente Responsable-ESR) for its Mulatos Mining Project located in Mexico. For the activities in Turkey of Doğu Biga Mining Co., this company will adopt this framework of responsibility of Alamos Gold and will contribute to social development in the region and act accordance with policy that supports the activities through the life of the project.

Social projects as well as the infrastructures that are essential for execution of the project (e.g. roads, electricity, water, etc.) will be developed by the project owner within the scope of the project. In addition to social projects, Altınzeybek Reservoir that can be mentioned in this context is a large-scale infrastructure investment. Besides, the village road that connects the village of Kirazlı and Yukarışapçı that is located inside the project area will be relocated within the scope of the project and a new link road between these villages will be constructed. Similarly, some of the roads that are not in good condition currently, for use by the project, will be improved together with the project operations.

The project owner will take necessary measures in order not to damage existing infrastructure (e.g. occurrence of damage due to the movement of heavy duty vehicles on the roads) and will repair the damages in case of unavoidable condition of damage prevention.

Housing and Other Technical/Social Infrastructure Requirements of Workers and the Population Related to the Workers

The workers required for the project primarily will be obtained from the local community. Therefore, a significant migration movement related to the project will be accepted to the villages located in the close vicinity of the project. It is assumed that the workers are employed from local community will be accommodated in their houses. The workers will be employed from other places (different cities and locations) will be accommodated in the prefabricate structures which will be constructed in the project site during the construction phase of the project. It is predicted that throughout the operation phase, the employees will be staying in houses located in Çanakkale Province or Çan District Centre. No public housing or housing will be constructed in the project site for operation period.

Within the scope of the project the areas and services such as toilets, showers, rest, launch and changing rooms etc. will be allocated to the mine workers within the site in order to satisfy their related needs. Appropriate office, service and training areas will be also allocated for management team and related personnel (e.g. engineers, drilling team etc.) who will be working in the mine site. Additionally, there will be an infirmary and an ambulance will be ready in the project site. In addition to the site facilities, administration buildings, rooms for conference and training, sanitation system, dining hall, toilets, guest rooms (prefabricated structures) etc. will be situated in Etilli Project Facility where headquarter of the project will be located.

Cost - Benefit Analyses of the Project

The cost of the project is mainly related to the investment and operating costs of the project. The key elements of the project's total investment cost are the direct costs (excavation material, procurement, installation, piping, electrical works, instrumentation, power sources etc.) related to the development of the project units (e.g. mining facilities, crushing units, hip leach plant, ADR Plant, equipments, buildings etc.), indirect costs; engineering, construction, procurement and the cost related to the commissioning; Altınzeybek Reservoir and process and infrastructure costs containing construction of transmission line and cost related to the mining activities (e.g. purchasing back-up equipments, extraction mine prior to the production). In this context the predicted total investment cost of the project prior to the production period is roughly 158 million USD dollars. The financial source that is needed for the project realization will be obtained from own capital of the investor company.

The operating cost of the project consists of the cost related to the extraction, processing of ore and producing as gold. The main elements of operating cost will be activities of extraction of mine, crushing, agglomeration, hip leach, ADR processing etc. and expenses related to the usage of chemicals, energy and fuels within the scope of those activities. It is estimated that the annual total operating cost of the project is roughly 24 million USD dollars.

A significant part of the predicted operating cost will be realized within the country therefore remarkable indirect financial benefits will occur from this situation. To be more

precise significant part of 24.2 million dollars annual operating cost of the project will be spent within the country especially in the region. Important part of the maintenance and repair materials, office materials, data processing equipments, safety device, fuel etc with services such as power supply, transport, logistic, security, and insurance will be obtained within the country therefore the general and operating expenditures of project owner will contribute the local and regional economy. Addition to this the salaries that will be paid to the workers (employed from local and nation-wide), who will be employed within the scope of the project, are also contribute to the local and national economy.

Addition to the operation cost, in compliance with the applicable Turkish Legislation the tax, fees will be paid to the state by the project owner. Within this scope, payments, which will be paid to the state by the project owner, regarding with holding tax, license fees, and corporation income tax for gold production will be beneficiary for the country.

4. Existing Environmental Properties and Natural Sources Utilization

Studies to determine the present environmental characteristics of the project area and its surroundings were started long before the EIA process. In this context, the existing physical, biological and socio-economic characteristics belonging to the area, subject of this EIA Report in a site including the EIA area, have been studied within the scope of the environmental data base program since 2006. In this context, biological environmental research, monitoring of surface water and groundwater resources (quality and flow oriented), air quality measurements, background noise measurements, soil quality analysis, socio-economic research and monitoring meteorological conditions were conducted and large number of field studies was carried out.

Environmental data collected within the scope of the database program aimed to reflect the conditions of the project area and its surroundings before the project approval. Basis on data collected within this context and the results based on these data of the impact assessment are summarized in the following paragraphs.

Land Use

Project units, area of 613 hectares within the EIA area, will be built on an area of about 225 hectares. Approximately 5 hectares portion of this area will be covered by the units to be constructed within the scope of Kirazlı Gold and Silver Open Pit Mining Project whose EIA positive decision was taken in July 2012.

According to the records of cadastral surveys, approximately %97 portion of all EIA area (613 hectares) is covered by forest (state) lands. Private lands consisting of fields and gardens covers only of %2.2 of EIA (about 13 hectares) and the lands that were classified as road covers less than %1 portion (5.6 hectares) of EIA area. There are no houses present on the fields and gardens.

According to forest maps prepared for the project area, % 98 portion of EIA area is covered by areas classified as forests and the rest of %1.3 portion is covered by agricultural area that is privately-owned. Areas classified as forests consist of pine, larch, oak trees, degraded forest areas and treeless forest soil. Forest closure of an important %60 portion field of EIA area is sparse. Similarly

%66 portion of the areas where will be affected by the project directly and woodcutting operation will be taken place located in the sparsely covered areas.

Potential Impacts and Measures to be Taken

At the land preparation phase of the project, as a result of removing the existing vegetation from the areas where project units will be built, the projection areas of forest lands will be affected. According to forestry management plan, estimated number of trees to be cut during the project will be around 59.000.

Ownership of the effected forest land will be belonging to General Directorate of Forestry through the life of the project. For the areas that will be allocated to the project owner temporarily, within the scope of the project, according to relevant regulation, related payments will be done and the required permission will be taken. Moreover, at the beginning of the permission, expenditures will also be paid in order to reforestrate of these areas to the relevant administration. At the end of the activity, the related areas that will be rehabilitated by the project owner will be transferred to the General Directorate of Forestry for evaluation.

While project units are positioned in the project area, priority is given to the regions where currently the degradation take places and the areas where the tree-cutting took place before the project or sections where the vegetation is sparse. During the implementation phase of the project, sensitivity is shown for usage of the areas where glades and degraded forest lands exists.

Limited amount of private owned agricultural lands within the EIA area will be purchased from the owners before the preparation stage of the project. Allowance process for the use of non-agricultural purposes of the lands in question has been initiated within the scope of reference by asking the opinion of the institution based EIA report of Çanakkale Province of Food, Agriculture and Animal Husbandry Department in August 2012 and still continues.

The area where the activity planned is considered as first-degree precision in terms of forest fires. Therefore, protective measures against the forest fires will be taken within the scope of the project. In this context, Emergency Policy and Action Plan that will be prepared parallel to this EIA report will be updated to include detailed procedures related to fire prevention and response status before the commissioning of the project. Within the scope of the Emergency Policy and Action Plan, the necessary technical infrastructure and organizing on-site training awareness will be created against the danger of fire and personnel responsibilities will be assigned. Within the fire intervention plan of the unprevented fire despite the measurements, a unit fire water tank will be constructed in the crushing and ADR plants.

According to Balıkesir General Directorate of Forestry, at the places that will be shown by the institution, pools that will be used for the aim of forest fire fighting will be constructed by the project owner. Within the scope of site-specific Emergency Action Plan, project fire management plan will be created and number/places of fire-fighting equipments that placed on the site location will be determined. The existence and functioning of the firefighting equipment to be used at extinguishing the fire will be checked at regular intervals.

Since there is no cultural existence in the project area or in the close vicinity of the project area, there will be no appeared impact on the cultural and natural assets to be caused by the project. In addition to this, during the activities, in case of a coincidentally

findings are discovered at the existing situations, activities will be stopped immediately and the situation shall be notified to the competent authority.

Soil Properties

Properties of soils in the area of the EIA are based on the findings of field research, geotechnical surveys, land use and soil properties database belong to abolished general directorate of rural services in 1999 and Environmental Status Report of Çanakkale Province for the year of 2007. According to the assessments, 613 hectares area for that EIA allowance will be taken, is completely covered by non-calcareous brown forest soils and current land use way of these lands were defined as the forest and chestnuts forest. The utilization capabilities of the all lands located in the EIA area falls into to the seventh (VII) class.

Sub-surface ground conditions within the area of EIA (e.g. top soil depth, soil texture, etc.), were determined from the field observations that were conducted within the scope of geotechnical research and laboratory tests carried out on samples taken from the test pits. According to that, at the areas on that the project units will be built within the EIA area and topsoil stripping operations will take place heavily, average depth of topsoil vary between 15-20 centimeters. In addition to geotechnical surveys, at field studies carried out in August 2012, within the scope of the EIA studies, soil samples were collected from five different locations where the main project units will be constructed and by examining laboratory analysis, chemical properties of soil within the project area were determined.

There is no site that has a risk of landslides in the close vicinity of the project area. Additionally, the state of land of erosion is classified as severe in the EIA are. Landslides and erosion as well as the slope conditions in the project area within the scope of the EIA studies, was evaluated in the light of topographic data. Accordingly, almost half of the lands' slope exceeds %30 degree the within the EIA area. High sloped lands contain the risks of stability, erosion and lack of soil.

Potential Impacts and Measures to be Taken

During the site preparation phase of the project, trees and bushes area stripped primarily, deep roots will be removed from the area, and then around 480.000m^3 of topsoil (vegetable) existed in the area located where the project units to be built will be stripped before the construction activities phase. In order to prevent the project caused impacts on the soil environment, topsoil will be managed properly.

There is clay soil from place to place in the open pit area, heap leach area, ponds and waste rock dump area located under the topsoil. Further, the clay soil will be excavated after the site clearance and topsoil stripping activities and this will provide to increase ground stability. The clay soil excavated from the open pit area will be stored temporarily in the site to be used as cover materials at the stage of closure and encapsulation or directly liner (see Chapter 2.1.4.2) system. Total of 300,000 m^3 volume of clay soil for the liner system to be constructed at heap leach pad and under the ponds and 500.000 m^3 of clay soil for the cells to be used within the encapsulation management applied at PAG storage areas will be required.

During the construction of planned units and facilties within the scope of the project, cut and fill activities will be carried out. For the construction of heap leach pad, ponds and the drainage channels, significant amount of fill material will be required. Required fill material will be primarily supplied from excavated materials and then from selected waste rock.

As a result of obtaining the required clay material and backfill material from the soils within the site, a natural source usage outside of the project impact area is reduced and the environmental impact will be minimized that is caused by supply of the material from the external specific mine site.

During site preparation and construction phase, in order to prevent or reduce the impacts that may occur in the soil environment, due to the measurements taken by the project owner, no significant impact will be expected to occur on the soil. In this context, stripped topsoil will be stripped in such conditions that it will not lose its productivity and will be stored under the conditions that it will protect its productivity until later stages of the project.

During the ordinary activities at the operational phase of the project, the impacts that may occur on the soil environment will be limited as compared to site preparation and constructional phase. Additionally, measurement will be taken in order to prevent or minimize the impacts that may occur on the soil environment. In this context, under the heap leach plants (heap leach pad, pregnant solution pond, event pond) appropriate liner composite system will be generated and thus any possible leakage from these plants will be minimized. Moreover, due to encapsulation system that will be applied at the PAG cells generated in the waste rock dumps, acid rock drainage (ARD) risk, created as a result of contacting PAG material to air and water and soil sources that may cause the formation of contamination will be minimized. In addition to this, against the possibility of generation of ARD that may occur because of being oxidized of sulphur material that may happen on the rock of high reactivity, surface runoff water that will be generated at the waste rock dump, is considered as contaminated and collected via drainage system, diverted to the potentially acidi contact water pond and sent to treatment facility that will be constructed at the site.

By this system, contact possibility of water having potential ARD with the soil environment will be prevented. Additionally, through the life of the project, necessary technical measures (e.g. providing safe storage conditions, around storage tanks the creation of protective pools contaminated soil storage area construction and in case of spillage intervention kit etc.) will be taken to prevent a possible soil contamination caused by any chemical material spillage or leakage.

At the project construction, operation, closure and post-operation stages, whether or not any project caused impact exists on the quality of soil will be determined as a result of comparing existing data to analysis results belong to the sampling and analyzing studies conducted in case of any contamination found in the site and regular visual inspections that is in accordance with the Environmental Monitoring Program as described in Chapter 7.

Open pit area will be partially backfilled with the waste rock material at closure stage of the project. In this way, both significant amount of material will be returned to the site and lake formation will be prevented at the open pit base. Additionally, backfilled pit will be in a protective condition against the weather and rainfall impact and this will minimize the erosion and ARD generation risk that may occur at the pit site. Moreover, rehabilitation activities will be the main activity to be carried out at closure phase. This activity will provide soil, stripped at the site preparation and construction phases and

stored in such a condition that it will not loss its productivity, to gain its characteristics again and eliminate the impacts that occurred before soil environment by reusing the topsoil appropriately that is transported to rehabilitation sites and designed as top cover. In this context, impacts on soil environment of activities at the closure phase will be in favorable condition in the long term.

Geological Conditions

Studies to identify and assess the geological features in and around the project area were carried out by specialists. Regional geology of the project area and its surrounding area, detailed information about mineralization features and seismicity evaluation is presented in Chapter 4.3. Main rock types of the mining site where epithermal gold and silver mineralization take place are andesite, andesite feldspar porphyry, dacitic lavas and tuffs, phreatic breccias and phratomagnetic breccias.

Kirazlı mine site has the pattern of typical high advanced alteration of highly sulphidized epithermal system. Silification is the most dominant type that is surrounded by advanced argilic, argilic alteration structure and propylitic zones.

Potential Impacts and Measures to be Taken

Çanakkale province within the project site is located is in the 1st degree earthquake zone. Heap leach pad that will be developed within the scope of the project and will be in the site after closing the operation and waste rock dump design and construction will be based on the values of the effective ground acceleration of 0.4 g. Activities carried out within the scope of the project will comply with the provisions of Regulation of Structures to be Built in Disaster Areas and the Regulation of Buildings to be Built on Earthquake Regions.

In Biga Peninsula where the Kirazlı mine site is located, in past, many earthquakes including large-scale multitude tremors have occurred. The project owner, as taking into consideration the challenging seismic conditions of the region and earthquake hazards, made a site specific probabilistic and deterministic Seismic Hazard Analysis to be carried out by an expert engineering and consultancy company (Golder Associates Co., California, USA). Within the scope of the this analysis, seismic design studies were carried out, Regulation on Structures to be Built in the Earthquake Zones Basis was taken into account, regional faults were evaluated and a site-specific seismic hazard analysis was conducted. These studies were completed between the years of 2010-2012. The results of site-specific deterministic analysis are 50 and 80 percentile for return periods of PGA 250 years and 2.200 years respectively. The results of Seismic Hazard Assessment are described in detail in the Environmental Impact Assessment Report of Chapter 4.3.4.

At the plants such as open pit area, waste rock dump and heap leach pad, because of the natural event or faulty design/operation, a possible slope failure, at the phase of operational phase and through the life of the project, could cause risks both in terms of human health and safety and environment. In this context, necessary measures will be taken to ensure slope stability with respect to he mentioned critical project design and operation of units.

For the open pit slope area bench final slopes, limit equilibrium analyzes were made for static and pseudo-static conditions. Pseudo-static analyzes has served the purpose of evaluation of potential slope problems associated with an earthquake, within the scope of the analysis, the final open-pit mine area that will be obtained after the placement of backfill after taking into consideration at the operational phase the long-term stability was evaluated within the scope of the studies. Pseudo-static safety coefficient value is 1.05 or higher based on the results analysis of the conditions for the pseudo-static analysis for the entire sections of the open pit area, at closing and post-operation phase of the project. As a result, the present design parameters provide adequate security and in this context no additional backfill support structure needs to be considered.

Similarly, slope stability analysis was carried out for the heap leach facilities, and waste rock dump. Static slope stability analysis aim to evaluate the long-term stability of heap leach facilities and the waste rock dump after the operational phase (non-seismic conditions). Pseudo-static slope stability analysis provided the evaluation of the long-term stability of units, as a result of Seismic Hazard Analysis, under the design work mainly of the seismic conditions. Stability analysis within the scope of the project specially carried out for different seismic load conditions and all of the safety factors calculated according to the method of limit equilibrium and was higher than the minimum stability criterion. This result shows that heap leach facility and waste rock dump area will be stable under even 11.000 and 12.0000 return period of an earthquake event, ensuring a design significantly conservative with respect to Turkish and internationally accepted engineering standards.

Meteorological and Climatic Properties

The Kirazlı mine project is located in the District of Çan, in the Province of Çanakkale, Turkey, within the geographic area generally known as the Marmara Region. Çanakkale lies between the Sea of Marmara to the north, the Aegean Sea to the south and west, and is bordered by the Province of Balikesir to the east. Çanakkale Province is a coastal-continental transition zone between the Marmara and Aegean Seas and the higher mountains inland to the southeast. The climate in the region is temperate Mediterranean climate with distinct seasons throughout the year (*Çanakkale Governorship, 2007. Çanakkale Province Environmental Situation Report).*

Snow falling generally is seen at the higher elevations and snow covered day number is limited. Project areas receive some snowfall during the winter season, but it is intermittent and the hydrologic regime of this site is rainfall dominated with most precipitation between October and March.

According to the average values over many years (1970-2011), the annual average temperature 15.0°C belongs to the province of Çanakkale. The highest temperature during the period of observation in July 2007 is 39.0°C. and the lowest temperature as in February of 2004 is -11.2 °C. The highest temperatures usually take place in coastal areas of the province, and as going inside or high segments, it is visible that temperatures trend is downward. Recorded total annual average rainfall of is 594.6 mm. The average total monthly rainfall of 98.4 mm takes place in December as the highest and as the lowest value in August 5.2 mm. According to last 40 years observations, the highest daily total rainfall was 110.0 mm in May in 1996. On the other hand, the project area is located at elevations considerably higher than the eleveation at which the Canakkale Metorology Station is located. Therefore, average precipitation at the project site is higher than the precipitation data recorded at the Canakkale Metorology Station. Rainfall amounts shows declining trend as moving from northeastern parts to southwestern parts of the province.

Annual number of wind blows is 1st degree dominant wind direction north-northeast (NNE), 2.degree dominant wind direction north-east (NE) and 3.degree dominant wind direction east-north east (ENE).

Flora and Fauna

The first studies of biodiversity research is based on the last period of the year 2006 belong to the Kirazlı Gold and Silver Mine Project area and its surroundings. Following the preliminary studies, between 2010 and 2012, six bio-ecological field works carried out about the flora and fauna properties in the project area and its surroundings. In this context, the studies carried out field research include literature scans. During the investigation, it was aimed to evaluate the affected states by project activities of identified endemic or national/international importance species in the study area (the possibilities and the impact of interference levels).

Study area is extended to reference areas defined in the year of 2012 and this area is aimed to identify the possibility of exposure to physical impacts of the project is assessed as likely to determine the significance of impacts on flora and fauna species between the years of 2006-2011. Reference areas are defined as areas with similar ecological structure to project area where species may be permanently affected by the physical impacts of the project. The studies conducted in the reference areas aimed to detect especially endemic and internationally important species. According to the results of the field of flora studies conducted in the project area, belonging to 56 families, 283 species and infraspecific level of taxon were identified.

According to the Turkey Red Data Book (Ekim et al. 2000, the International Union for Conservation of Nature and Natural Resources - IUCN 2001), 7 of the identified species are endemic. In addition to these species, Cyclamen hederifolium type, although is not and endemic species widespread and regional, due to take place in the category of national danger was added to this list. A list of all 283 species identified in the study area, are presented in Appendix 14. In this context, identified endemic species contains the type of widespread endemic species (Acanthus hirsutus, Aristolochia hirta, Campanula lyrata subsp. Lyrata, Crocus Candidus, Ballota nigra subsp. Anatolica, Thymus have zygioides. Lycaonicus, Cyclamen hederifoium) and the regional endemic Verbascum hasbenlii. A detailed endanger categories assessment of these species are available in Chapter 4.7. Only 7 of the 283 species identified in the study area are endemic for Turkey flora. According the given the rate of endemism in Turkey that is around 34%, the assessment can be made that the rate of endemism is extremely low in the study area.

Terrestrial fauna studies, carried out between 2010-2011 years took into account the studies of the fauna in the project area and impact area of the project site. In addition, ,for the project activities in areas outside the reference with similar ecological conditions, in order to determine the regional and the rare occurrence of endemic species of assets identified during fieldwork in August of 2012, the reference areas were included in the study. Accordingly, as a result of fauna field studies carried out between 2010 and 2012 years, around the project area, 18 mammals, 41 birds, 10 reptiles, 1 amphibian and 117 insect species have been identified. Chapter 4.7 presents these species assessments of hazard categories.

Aquatic fauna studies were carried out in the existing streams (not dry as seasonal) between the years of 2010-2012 and 1 from Cyprinidae (Cyprinidae) family (Squalius CII), 1 from Cobitidae (Sand Eaters) (Cobitis sp.), for a total of 2 species have been identified. Studies of these species are identified that no conservation status for these species are available according the IUCN Red List (2012), the Bern Convention and CITES.

Potential Impacts and Measures to be Taken

The project has the potential to cause an initial adverse impact on the flora and fauna species, which have been identified in the area during the field studies. Nevertheless, as suitable habitats (called as reference areas) are present in the region; species likely to be affected by the project are expected to regrow their populations in these reference areas. Thus, project activities are not evaluated to be a permanent risk threatening the survival of populations and habitats of these species.

In addition, although the majority of species identified during the field study spread over the sustainability of the natural world, some of the measures for the protection of the ecological balance must be taken.

It is realized that the impact of any mining activities caused by the project activities, the project activities to be used as an alternative to faunal elements can leave the affected area, endemic and/or threatened flora species is found in the extent of the project area, vegetation and topography similar to the "Reference Fields" on non-project sites where terrestrial fauna species identified in the project area to determine the existence, non-project areas for the field study was carried out to determine the similarity with the type of the project area.

Sorensen Similarity Index and fauna species composition is applied by using the method of investigation of the degree of similarity and difference in the reference areas and fauna in the project area in terms of the elements of faunal similarity. Coefficients for all groups were calculated bigger %75 (>0.75). This will be evaluated as "fields show similar characteristics with each other in terms of habitat and species composition of" and for the animal species leaving the project site the field, these areas can be interpreted as "Alternative Area". Accordingly, the population of fauna species losses estimated to be in the taxonomic status of species expected not to create a significant risk.

During construction phase, vegetation and stripping of topsoil operations, identified plant species are endemic and vulnerable population loss occurring in the area is recognized as the most significant impact of the potential impacts on biological resources. However, as the endemic and vulnerable species have been identified in the reference areas as well (which means their populations are not limited to the project area boundaries only and they can grow in reference areas as well) and since monitoring and seed collection efforts will be made in the scope of the project, survival of these species' populations will be ensured in the long term.

Changes in terrestrial habitats for flora and fauna species are affected indirectly, on the other hand, noise, vibration, formation, propagation impacts such as traffic and dust is expected to affect them directly. Therefore, measures are thought to reduce these impacts. In addition, the project area to prevent entry of fauna species will be surrounded by a wire fence. Similarly, due to the construction of the administrative and technical units, loss of some habitat directly will occur. However, it is expected that individuals to leave temporarily and moved an alternative living environment in the nearest destinations.

During the operation phase, because of the habitat loss due to construction activities, it will be provided the left of the mammal, bird and reptile species and they are expected to move back to fields where mining and other anthropogenic activities would not be exist and to use these appropriate habitats for biological activity.

At the project area and its surroundings, the motion capabilities limited some reptiles that are less likely to leave the area during the construction phase and relatively less abundant large mammal species in the project's construction and operational phase was selected for monitoring the effectiveness of measures will be taken to protect these animals and for the determination of the "indicator species need to be followed" criteria. The project area is designated as the indicator species are endemic and endangered fauna species, and activity is expected to be affected by the construction and operation phase to flora species, so the monitoring the execution of the studies will be proposed. Detailed information about the study of monitoring is given in the Chapter 4.7.2.

Under the terms of the current situation in and around the project area, anthropogenic impacts observed in the field limits the natural habitat and species diversity, and leads species of fauna species adapted to a certain extent to the formation of anthropogenic impacts.

In order to minimize impacts on fauna species due to habitat loss, breeding periods of mammals, reptiles and birds will be taken into consideration (for mammals and reptiles during May-June; for birds during April-May-June) when planning the start of construction activities. Accordingly, construction activities will be planned gradually to provide those species with sufficient time to escape alternatives habitats.

Moving relatively slow species that is observed in the project area before construction activities must be collected and transferred to suitable alternative areas outside the project area. In addition, during the construction phase, personnel will be informed and instructed about these species.

Within the context of the aquatic fauna it is observed that aquatic habitats in the project area (streams, creeks, etc.) are usually transient and was completely dry in dry periods. However, in the area remained in the form of deposits in arid parts, fish have been found, particularly with the reproductive period of March, April, May and June, and attention will be given to be careful not to damage to these species and human impacts on the living environment will need to be kept to a minimum level.

In addition, it must be prevented to discharge to the stream beds of any chemical substance used in the study area and/or a mixture of the aquatic ecosystem in the river bed excavation. Species must be presented into the stream bed, especially during the rainy period of the state of implementation and if necessary, measurements must be taken by monitoring studies conducted. By taking into consideration of these issues in the project area that are available for the aquatic fauna of aquatic habitats and aquatic organisms identified in this area ,adversely affected habitat conditions by project activities will be prevented. Rehabilitation will be the most important operation carried out after operational phase.

Topsoil layer that is stripped and stored before starting the construction of the project and in terms the content of organic matter being rich, will be used in the rehabilitation phase. Due to the project area is generally covered with forest vegetation the biorestoration activity must be done well before the planning stages. To do this, at heap leach area, process area, open pit and waste rock dump area, it is envisaged that this topsoil (about 20 cm) rich in organic matter must be stripped and stored before the project commenced. This soil also serves as the gene bank function. After the completion of the activities in the project area, soil cover will be used in the scope of rehabilitation works. In addition, during these studies endemic and/or capable of forming cover seeds will be used in short term. By biorestoration study, redispersion of possible population loss of endemic species is expected to occur in the area.

Protected Areas

Evaluations of protected areas within the scope of the EIA, the project area (EIA area) is built on to a very large area around a radius of 75 kilometers and in this context the necessary areas to be protected under the legislation of the country are determined. The country is a party to international agreements, and protection of areas to be protected designated areas. In this context, areas to be protected under the legislation of the country, as defined and determined under the relevant regulations of national parks, nature parks, natural monuments, nature conservation areas, wild animals wildlife conservation areas and breeding grounds, cultural assets, natural assets and protected areas conservation, water products, production and breeding grounds, defined areas water pollution control regulations, sensitive areas of contamination; special environmental protection areas, areas protected under the Law on the Bosphorus; areas considered as forest area where the structure in accordance with the Coastal Act brought in prohibition areas, about Olive-Growing and Wild Varieties Grafted the Areas of Law, the Law on Pasture Specified Areas; specified in the Regulation on the Protection of Wetlands Areas and Areas that should be protected in accordance with international conventions to which Turkey is a party, and other areas that should be protected (e.g., agricultural land, wetlands, lakes, rivers, groundwater water management areas and areas which are important for the biological environment and natural habitats, etc.) were evaluated.

In this context, as a result of the evaluation and analyze studies, within the scope of the EIA, except for a ban on hunting off-site, there is not any detected protected area. Assessed in all protected areas within the project area (except for areas forbidden to hunt, wild animals outside the breeding grounds and private hunting grounds), the closest site to project area is KıraçTepe archaeological and natural site located about 21 kilometers at southeast of the project site. In the light of these assessments, due to the project activities in the region, a direct physical impact on protected areas will not occur.

5. Evaluations of Project Activities

In this section, potential air emissions of the project, water use and disposal and waste management plans and assessments on the impact of noise from the project are summarized. In addition, the proposed health buffer zone distances, reclamation plan and the main results of the risk analysis are presented in this chapter again.

Emission Calculations

Commercial or industrial activity is not available at the close vicinity of the area that may cause possible source of contamination. Therefore, the current weather conditions are expected to reflect typical rural air quality.

In this context, the settlements available in the close vicinity of the project area for the determination of air quality, collapsing dust, dust (PM10), sulphur dioxide (SO_2) and nitrogen dioxide (NO_2) are measured. All measurement results, as expected, were below the limit values specified on the regulation.

Potential Impacts and Measures to be Taken

Removal operation carried out during the construction phase of the project, excavation materials loading, unloading of materials, soil, roads, vehicle movements and dust emissions by crushers will be generated. At the operations phase, dust emissions will result from removal of rocks loosened by blasting, excavation and at this time trucks' loading and unloading operations and rock (with or without mineral content) transportation activities.

Dust emission quantities due to construction and operational activities in the project area except for chimney defined by regulation, exceed the limit values within the scope of the EIA studies using AERMOD model, the dust distribution of meteorological and topographical conditions were investigated. Other parameters are below the limit values. For this reason, any modeling operation was not carried out.

As a result of model study, expected daily and yearly with the highest dust concentrations and dry deposition values, daily and annual dry deposition values high dust concentrations expected to occur in the settlements around the project area were determined. All of the values obtained as a result of the model, at the border of the project area (construction and operation period) are below the requirements of the limit values. Additionally, measures will be taken to minimize the impacts of dust caused by the project. In this context, watering for dust emissions to be kept under control, vehicle speed limitation will be developed and properly maintained vehicles will be used. Blasting operations will be carried out in accordance with relevant legislation and best industry practices. In addition, measurements will be taken to provide the quality standards recommended by regulation during the deposition of soil cover in the open air.

Besides dust emissions, activities involving cyanide operations during the operational phase of the project, can pose a risk especially for the staff working in the areas or close to these activities, and to nearby settlements in a case of a large-scale event of an emergency.

Therefore, in order to control the project caused HCN gas, pH value of the leaching process will be held within the range of 10 to 12, which is unfavorable for the formation of HCN gas, the pH level of the process set to this range will be controlled by automated sensors continuously and by manual sampling to be done regularly and by placing HCN detectors and alarms at the required points (e.g., heap leach areas carbon tank top, cyanide, storage space, etc.) in the field, fixed level of HCN constantly will be kept under the control. Cyanide Management Plan, as described on HCN gas control, practices and emergency procedures will be complied with all the project activities. In addition, before implementation of the project, background levels of HCN measurement will be carried out within the plant and the nearest settlement and operation of the nearby settlements measurements were made during the possible impact of the possible emergency situations and measurements to be taken against these impacts will be determined.

Water Use and Management

During the land preparation and construction phases of the project, water to be required in construction works, dust suppression, sanitary works, etc. will be supplied from Altınzeybek Reservoir or its alternative. When required (especially for dust suppression), supplying water with water trucks will also be an option. Any land preparation, construction or mining activity that may cause physical damages on the local drinking water resources will not be conducted. At the time when these activities will start, drinking water will already have been provided from Altınzeybek Reservoir or its alternative.

During the operational phase of the project for heap leaching process carried out at the mine site, the ADR process and the other process to be applied to the activities of the service roads and paths, crushing plant and the use of water for dust suppression operations water will be needed. During the operation phase, water demand will be the maximum in heap leach operation activities. Water demand that will arise during the operational phase will be met primarily from potential contact waters and the groundwater inflows (into the pit. If this is not sufficient to meet the demand of water conditions (e.g. dry season), alternative water supply will be provided from Altınzeybek Reservoir. In the closing phase of the project basic water usage will take place during rinsing the heap leach pad.

In this context, after the economic value of gold and silver metals in the ore pile are completely taken, rinsing will begin by being prepared using a catalyst with hydrogen peroxide and cyanide destruction process. The system will run as a closed-loop system and this system will not need a continuous need for clean water. Drainage water, weak acid soluble (WAD) cyanide and other metals and pollutants as reducing appropriate discharge standards after the washing process completed and the drainage water will be discharged into the receiving environment as free of toxic properties. This process will be carried out on a regular basis at the appropriate points, will be kept in check by sampling and laboratory analysis.

At all stages of the project, the staff based domestic water use and wastewater generation depends on water use will be generated. Daily drinking water requirement of the personnel to be employed, during the construction phase and preparation phase is estimated to be a maximum of 90 m^3. Similarly, at the operation and closure stages of the operation, personnel's maximum daily water demand is expected to be around 45 m^3 and 30 m^3, respectively. The drinking water needs of the project staff will be provided by Altınzeybek Reservoir or the alternatives.

Water, Wastewater and Solution Management

At the project construction, operation and closure phases due to the use of domestic water resulted in generation of domestic wastewater will be treated at the package wastewater treatment plant to be established at site in accordance with the relevant regulations and the treated water will be discharged into the closest receiving environment. At the operational phase of the project, surface water management take place in the plant area will be important in terms of both process water needs are met through the site and prevention of the possible pollution. In this context, surface runoff waters will be managed by separating as non-contact water and contact water.

By the construction of diversion channels around the relevant project units, surface runoff will be collected before it contacs with contaminated surfaces within the mine site (e.g. open pit area, waste rock dump area, crushing plant, heap leach area, and etc.). This type of water will be classified as as non-contact water and will be diverted to the nearest

receiving environment through proper sedimentation structures. Surface runoff waters that cannot be prevented to enter into the area of contact with contaminated surfaces and contact with the non-acidic water (the gathered waters from crushing plant, field roads, office buildings, and around etc.) will be governed as acidic potential contact water (waste rock dump and open pit site).

Contact with non-acidic water, after being rested on the ponds of water in contact with will be primarily reused as plant process water and dust suppression water (treated if necessary later). Having the potential to become acidic process water directly in contact with the water need to be evaluated within the part of the plant, and the rest will be established in the field of sufficient capacity water treatment plant will be used as dust suppression after being subjected to the treatment process. Surplus water on average and rainy seasons, purified in accordance with the relevant regulations and discharge standards will be discharged to the receiving environment, if needed. Management of surface runoff waters, except for the management of the environmental aspects of the solution is very important for heap leach facilities.

In this context, solution will be collected from the heap leach liner system installed on the base of it, passed through collection pipes to the pregnant pond (beared with gold and silver cyanide solution), after undergoing the ADR process and addition of necessary cyanide solution and by stacking ore on the heap leach pad with a series to returning to the system activities again, and thus a closed-loop system will be operated and zero discharge principle will be implemented.

Wastes

During the project land preparation, construction, operation, closure and post-operational phases, generation of different types of waste will be generated. In this context, waste produced at all stages of the project (e.g. domestic solid waste, packaging waste and other recyclable waste, hazardous waste, sewage sludge, etc.), and wastes that can be produced in case of the activities carried out in each phase of a project (e.g., land preparation and excavation wastes generated during the construction phase) will also be available. Waste that can be generated during the life of the project site will be disposed of in accordance with waste management legislation, the project owner private Environmental Policy and the mining sectors' international best practices and will be collected separately stored and transported. In this context, priority will be given to the prevention of waste generation and in case it is not possible to minimize the generation of waste, separate collection of hazardous and non-hazardous waste, if possible reuse of waste and/or recycling and final disposal approach will be followed.

Wastes, before final disposal, will be accumulated in temporary waste storage area within the facility. Waste generated within the plant site stored on a regular basis according to the type of waste collected and covered by containers. Waste recycling, transportation and disposal will be carried out by licensed companies or municipalities if it is suitable. In any way, in the field, waste incineration or burial or waste disposal into nearby water sources or at roads will be prohibited. Throughout the project, waste collection, temporary storage, transportation and disposal of all activities related to personnel, or any application that would put public health at risk will be avoided and discharged or recycled will be carried out with in accordance with the regulations about waste disposal and managements. Within the scope of the project, the final design of the site-specific project, Waste Management Plan, will be prepared and this plan will be implemented by the project staff as well as contractors.

Noise Sources, Levels and Blasting

During the activities of construction and operation of the project, formation of the noise will occur. Within the scope of the EIA, will consist primarily with the aim of assessing the impact of noise of the nearby settlements (Kirazlı, Cazgirler and Yukarışapçı villages) background noise levels were measured. At the settlements, identified the background noise levels that can be considered reasonable for rural conditions were at relatively low levels (between 42.8 and 47.4 dBA). Noise calculations within the scope of the project during construction and operation of machinery and equipment, the number of jobs that may be a source of noise in the field, and their sound power levels and background noise levels, taking into account the near field of the EIA residential area and the mine site in the village of Kirazlı, cumulative environmental noise levels from the project were determined.

The calculations for both the construction and operational phases, and at the same time all operated machines and equipment, which represents the maximum sound power level, working status area carried out for the worst scenario and atmospheric absorption create mitigating the impact factors such as topography and vegetation conditions are not taken into account. According to the calculations made in this context, both the construction and operational phase of the project, in the village of Kirazlı, environmental noise level are below the limit values defined by regulation, and at this settlement no significant increase in background noise levels is expected to occur due to the project. Additionally, the project's construction, operation and closure phases, environmental monitoring program for performing monitoring activities in accordance with the noise, the noise from the surrounding settlements will be checked on a regular basis whether or not there is a significant impact exists.

If monitoring activities indicate non-compliance situation with any regulatory limit values, impact of the noise caused activity will be reduced below the limit values and corrective measures will be taken immediately and the project caused potential source of noise will be adjusted to the required accuracy.

Evaluation of Blasting Induced Impacts

During blasting activities carried out within the project, by taking the necessary technical, managerial and organizational measurement and the environmental vibration induced by blasting, air shocks and impact of rock fly problems on the local people and project staff significant will be prevented.

Analyzed the distribution of types of geotechnical materials that make up the scope of the open pit mine area, which is particularly close to the settlements of the northern and southern ends composed of broken type geotechnical materials and the blasting requirement will be minimum for these site. The natural structure of the open pit area is an important advantage for the preservation of the site and the settlements near the project area against blasting impacts (noise and vibration).

Within the scope of the studies, maximum impacts of rock fly problems induced by blasting were also evaluated. According to the calculation results, there will not be any impact induced by blasting rock flying for Kirazlı village, due to the distance to the village of Kirazlı buildings. Additionally, due to proximity to the open pit area of the D-210 state road that is located west and north of the project area, and the relocation road linking the villages of Kirazlı and Yukarışapçı, these roads will be controlled while blasting.

Stemming process to minimize the impacts caused by blasting will be done efficiently transfer of explosive energy into the rock, and thus increasing the efficiency of blasting activities will be provided. Quantities of explosives will be optimized where blasting operations are carried out in accordance with the calculations made, will be provided with the necessary recording and monitoring methods. During blasting, according to relevant regulation, defines as nearest ground vibrations area of usage vibrations caused by explosions in the fields by mining related operation, the limit values will not be exceeded. During blasting, air shock and vibration measurement, records for this on a regular basis, the related values will be continuously monitored compliance with the limit value. In addition, for the employees in a plant remained in the fly rock domain area necessary occupational health and safety measurements will be taken.

Blasting activities take place only during operation hours 8:00 to 18:00 (except in winter) and as long as possible will not be made on Sundays and other holidays. Explosion activities include using ANFO explosives in dry holes, emulsion or bulk-type water-resistant explosive in the wet holes. Blasting system used in all holes will be done by one by one and given delays between holes and low battery and millisecond blasting will be made. The hole number to be blasted at one time is 100, the total explosive amount to be used at one time is estimated to be more than 3.360 kilograms.

Health Buffer Zone

The proposed health buffer zone by EIA report has been determined by assessing the types of different domains caused by the projects and in a case that the impacts will not exceed the outside boundaries of the buffer zone. In this context, for the project, the main effect taken into account when determining the types of health buffer zone were that the plant may not be able to affect the outside air emissions (see Chapter 5.1), and noise and vibration (see Chapter 5.4). Emissions and noise impact assessments within the scope of the EIA Report, due to the measurements to be taken, within the boundaries of the fence, were to lower the limits established with the related regulations Therefore, this unexpected effect to create a domain in any type of off-site, for the project did not generate the limiting factor in determining the health buffer zone.

Additionally, the dominant wind direction’s as carrier medium to the air emissions in the region in to the southwest and south directions, heap leach pad will remain on the field after the completion of the operation phase of the project, open pit project activities are carried out in the field is limited by the fact that the project life of 5 years and north of open pit area where the blasting will be made limited due to geotechnical reasons for considering the types of material property, health buffer zone, in the remainder of the north-northwest around 50 meters, 150 meters from the EIA is recommended as all of the other parts of the area. The recommended ultimate health buffer zone distance, as taking into the consideration of reviews of boards, will be determined by the Special Provincial Administration of Canakkale Province.

Rehabilitation and Reclamation Operations

Rehabilitation activities within the project will be carried out partially parallel to project operations stage and completed after the operational phase. In this context, describing the activities carried out in reclamation (rehabilitation) plan was prepared within the scope of the Environmental Impact Assessment Report (see Appendix 9). This plan of the project summarizes the general features around the project area, as well as summary information on existing environmental conditions, mainly within the scope of work to be done during and after the activity to be made on top soil management practices, loss of

habitats in the project area during construction and operation, and the re-establishment of ecological balance made to the work of planting and monitoring activities, to be used in this context, seed/plant species, the structure of primer sealing systems used in the project areas of stability measures to be taken, water, wastewater and solution management plans of the project, the effects of ARD related problems and the proposed monitoring studies, etc. In addition, a related schedule related to closure and post-closure stages of reclamation activities carried out at the project area will be presented.

In accordance with the implementation schedule, (top) soil will be stripped to be used in reclamation activity at the land preparation phase of the project at the beginning, yet it is not a physical effect on the land and it will be stored not to lose the efficiency until the closure phase and will be stored under suitable conditions. Here, applied fertilizing, seeding and irrigation operations will continue until the closing phase laying operations are completed. Active reclamation operations in the field of operational activities will continue throughout the last two years of the commencement and closure phase. In this context, waste rock dump area, open pit area, heap leach area and other units, facilities, buildings and roads, decommissioning and rehabilitation works will be carried out.

Waste rock dump area, open-pit heap leach field and the closing activities carried out for the area, in general, the rehabilitation operations to be done with the material covering into the appropriate fields, placement of warning signs, fields slope and stability, for the study of pre-planting commercial seed collection, laying topsoil, the ultimate collection of seeds of species and plant species as a species to be planted suitable for the area will be the final step. Additionally, for the open pit site backfilled operations will be performed and for the rehabilitation efforts of heap leaching washing process, in the field of site-specific applications were carried out. Other than that, building plant and removal of field unit’s buildings in the project area and disposal will be a part of the reclamation operation. Reclamation phase which will begin after the completion of the of operational phase in last two years of operation following the heap leach rinsing studies will be completed within approximately 1.5 years. For 3 years (passive-term) after the completion of the reclamation studies, environmental monitoring studies will be continued.

Environmental Risk Analysis

The stage of operation of the project in the EIA report as well as the operational phase of the usual effects of unexpected events, and/or accidents that may occur as a result of environmental risks were also evaluated. In this context, the U.S. National Occupational Safety and Health Administration (OSHA-Occupational Safety and Health Administration) recommended by the Kaiser Foundation risk analysis model, were adapted to the analysis of environmental risks specific to open-pit gold mining activities. Within the scope of environmental risk analysis, primarily for the project environmental risk factors (e.g., event-driven situations of natural, technological malfunction/breakdown induced events, human-induced events, the events associated with the use of hazardous substances) has been determined, then the risk factors identified, assessed for events that occurred in the past in similar companies, Turkey's disaster profile of the literature on the statistical data, meteorological data, taking into account the probability of project design and site conditions, and classified in terms of results (possible, low, medium, high), risk analysis and the analysis results were evaluated by using matrices have been described within the scope of how to manage the risks.

Risk analysis matrices, probability, and the results of the plant specific criteria for the assessment of risk scores have been developed. Using these criteria, risk analysis matrix digitized and evaluated a combination of events, the probability and consequences of the event's overall risk score was calculated. The analysis was done according to a risk

scale formed of negligible, low, moderate and high risk categories. Based on the results of the analysis, the project has been classified as an activity under moderate risk category. Measures to be taken to minimize the project risks are described under relevant sections of the EIA Report. In case the risks taken into consideration take place, the procedures to be applied in emergency situations, were described in the Cyanide Emergency Management Policy and Action Plan of the project.

6. Project Alternatives

Within the scope of the EIA Report, as a basis the technological alternatives of the project, layout alternatives and no-action alternatives were evaluated. Because mining activities have the obligation to be mined at the location of the source, the selection of an alternative location assessment of the project is not available.

Technology Alternatives

Within the scope of the evaluation of technology alternatives, ore production method, process, method, and the closing selection criteria were analyzed.

During the pre-feasibility studies of the project, open pit and underground mining methods within the scope of the ore production method, were evaluated and the geological, physical, geochemical, structural, geotechnical properties of the rock, ore grade, ore veining and the operational costs associated with operation taking into account and open-pit mining method was decided as the only economically feasible alternative. The selected method in terms of environmental and health and safety were evaluated at its own advantages and disadvantages, and land use, habitat degradation, loss of vegetation, the formation of noise and vibration, dust generation, visual changes and etc., the specific case of the selected method, which measures must be taken against the effects have been developed within the scope of the EIA Report.

At process method selection phase, application of ore mining industry methods were considered, the average grade of ore that are available at the Kirazli mine site was assessed, the necessary laboratory tests were performed and the most widely used cyanide leaching of gold and silver mining method is decided to be applied. After that, by taking into account the grade of ore in the site of mining and related investment costs, among different type of heap leaching processes, cyanide leaching process method is decided to be implemented.

Nowadays' technology can be applied to heap leaching process can be used reusable (fill-discharge/on-off) heap leach pads, permanent heap leach pads, and natural valley-type heap leach pads alternatives were evaluated and by taking into account the field conditions, the permanent method of heap leaching pad is concluded as most economically viable alternative in terms of environmental point of view and this alternative on the basis of pre-feasibility studies carried out within the design progress. Within the scope of closure phase, the closure phase of the project to be rehabilitated rather than left open, partly and backfilling method is applied with the aim of preventing the formation of the lake open-pit mining activities caused the formation of pits. In this context, provision of the required material from the waste rock dumps in the site during the operational phase, is considered as the most appropriate method in terms of environmental and economic point of view. Within the closing stages of the project in the field of heap leach ore remaining in the stack after the operation stage, to eliminate generatable effects of cyanide degraded, rinsing operation will be performed. Cyanide management facilities that will be used during the operational phase of the project, ADR building, crushing plant units, conveyors, truck maintenance shop, explosives depot, used pumps, pipes, electrical

transmission lines, and etc. facilities' the removal of the field was evaluated as the most environmentally suitable alternative after the operational activities. Drainage channels used for the management of surface run-off water during the operation phase will be removed at the areas where the mining activities are completed.

Layout Plan Alternatives

Within scope of the project, evaluation of layout alternatives mainly focused on the waste rock dump area and layout of heap leach facilities. Within the choice of locations related to location, recommended areas of capacity, expandability, geotechnical risks, ease of operation, transport distances and height, surface runoff water control, water management risks related to the closure phase (e.g. the risk of long-term infiltration), surface water diversion channels with the conditions for the collection, Atıkhisar Reservoir catchment area by the limits of the license by the limits of location criteria was taken into consideration. By assigning matrix of weighting factors at each criterion and an evaluating by numerical method, the most appropriate layout plans for these facilities were established. In this context, the selection of alternative places within this scope is based on the places assessed in EIA report.

No-action Plan Alternatives

No action plan alternative represents conditions that are not met for the planned project. In this context, in such a case that the project not to take place, the environmental impacts of the project as described in the EIA report (e.g. vegetation loss, dust, noise and wastewater generation, and etc.) will not occur, however, the social, especially economic (national and local scale) benefits (e.g. direct and indirect employment, purchase of goods and services, infrastructure projects, and etc.) are concluded not to occur within the project.

7. Monitoring Programme

Potential impacts of the project and the required mitigation measures to be taken are determined by the EIA Report. Within the context of the EIA report an environmental monitoring programme is developed. This monitoring programme aims to monitor the determined potential impacts for the preparation, construction, operation, closure and post closure (following 3 years after the completion of the closure activities or after operation) phases of the project; the status of the receiving environment after the mitigation measures and for the determination of the on-going impacts.

Environmental monitoring program is developed one by one, by considering the specific impacts of the land preparation, construction, operation, closure and post closure phases. Within this context, the monitoring issues discussed covers the flowing; surface and ground water (quality and flow rate), air quality, soil environment, flora and fauna, noise and vibration, geology, waste management, occupational health and safety, socio-economy, cultural heritage, emergency cases and rehabilitation.

The appropriate phase of each monitoring issue, the parameters to be used for each monitoring, the monitoring stations (e.g. settlements, project sites, personnel, etc.), technical monitoring techniques to be used, the frequency of the monitoring and the reason, who will be the one bearing the cost and will have the corporate responsibility are determined in the detailed monitoring tables. These mentioned tables are presented in Chapter 7.

The project owner will be the only responsible for the implementation of this environmental monitoring program. The project owner will interoperate with authorized administrations and bodies, foundations and specialists; and will record all the environmental monitoring programme results to be shared with the relevant administrations if necessary. The reports will be submitted to the relevant central and local units of the Ministry of Environment and Urban Planning, according to the proposed frequencies by the Ministry.

Besides, an Environmental Management Plan will be developed for the purpose of reflecting the project changes in technical and economic plans/designs on the project implementation.

8. Public Participation

The Project owner aims to practice the Project in a participatory way by being in communication with the stakeholders during the life of the Project. For this reason, within the scope of the Project a public relations programme has been started by the year 2010 will be continued throughout the project life.

In order to increase the efficiency of the public relations programme, the project owner formed a team from their own personnel and also they hired other consultancy firms. The public relation programme that is started before the EIA process also sustained during the whole EIA process for encouraging the public participation to the process. The relations with the local people will be sustained, in line with the targets mentioned in the previous paragraph, after the EIA process.

Within the context of the public relations programme some different ways of communication were used with the local people. These can be listed as follows; social survey that is carried out nearby the project impact area in July 2010, individual and group meetings, technical site visits and Public Participation Meeting that is carried out in Kirazlı village in August 2012. By carrying out all these studies concerns, suggestions and comments (e.g. impacts on water resources, impacts on flora and fauna, impacts on soil environment, impacts on air quality, waste generation due to mining facilities, impacts after the operation of the mine and risk and economic impacts) of the local people and all stakeholders were obtained.