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ENVIRONMENTAL AND SOCIAL MONITORING AND MANAGEMENT PLAN

ZORLU DOĞAL – KIZILDERE GEOTHERMAL POWER PLANTS

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TÜRKİYE SİNAİ KALKINMA BANKASI A.Ş.

Quality information

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1 Project Description

Kızıldere I Geothermal Power Plant (GPP), which is the first geothermal power plant of Turkey, was established in Sarayköy District of Denizli Province in 1984 with a total capacity of 17.4 MWe. The plant was operated around 6 MWe capacity before it was tendered by the privatization directorate. In 2008, Zorlu acquired the concession rights of the field for 29 years for utilization and development purposes.

In 2013, Kızıldere II GPP became operational with 80 MWe energy production capacity (60 MWe through triple flash system and 20 MWe through binary cycle system) and 573 GWh electricity production per year.

In 2015, Kızıldere III GPP Unit 1 Project was designed to have an installed capacity of 95 MWe (75 MWe through triple flash and 20 MWe through binary cycle system) in Aydın Province of Turkey. AECOM was retained by the Lenders to carry out an Environmental and Social Due Diligence (ESDD) and prepare an Environmental and Social Management Plan (ESMP) for Kızıldere III GPP Unit 1 Project. Construction activities started in April 2016 and two E&S monitoring studies were conducted by AECOM in May and November 2016 in accordance with the ESMP prepared during the ESDD process. Kızıldere III Unit 1 has become operational as of end of August 2017.

In 2016, Zorlu decided to increase the production capacity of Kızıldere III GPP from 95 MW to 165 MW through the inclusion of Unit 2. EIA Positive decisions of Kızıldere III Unit 1 and Unit 2 were secured on October 8th, 2015 and December 9th, 2016 respectively. Preliminary site preparation works of Unit 2 were started as of December 2016 and commercial operation started in March 2018.

Same as for Unit 1, Zorlu Enerji sought financial support for Kızıldere III Unit 2 project. In this respect, a Supplementary Lenders Information Package (SLIP) containing ESIA Addendum, Environmental and Social Action Plan (ESAP), Stake Holder Engagement Plan and a Non-Technical Summary in line with EBRD Performance Requirements were provided. The SLIP package was also prepared by AECOM.

Bi-annual combined Environmental and Social (E&S) Monitoring Study regarding operation of Kızıldere I, Kızıldere II, Kızıldere III Unit 1 and construction of Kızıldere III Unit 2 is required by the Lenders. In order to comply with this requirement, the first joint E&S monitoring study was performed by AECOM in September 2017.

Within the scope of Kızıldere III GPP Unit 1 and Unit 2 Project, Türkiye Sınai Kalkınma Bankası ("TSKB") considered providing a loan to the Sponsor Company (Zorlu Enerji) together with other lenders (Akbank, EBRD, Garanti Bankası, İş Bankası) for the development of the Project. TSKB is considering to on-lend funds to the Project from IBRD's Geothermal Development Project.

After involving to the project with Unit 1 and Unit 2, a combined environmental and social management and monitoring study in line with World Bank Safeguard s Policies for all existing Kızıldere GPPs (including Kızıldere I, Kızıldere II, Unit 1 and Unit 2 of Kızıldere III) has been prepared.

2 Technical Details of the GPPs

General information regarding Kızıldere GPPs and technical details are provided in the following table.

Table 2-1 General Information and Technical Details of Kızıldere GPPs

Items	Kızıldere I	Kızıldere II	Kızıldere III (Unit 1)	Kızıldere III (Unit 2)
Status	In operation since 1984	In operation since 2013	Under construction from April 2016 to August, 2017. (in operation since 23 August 2017)	Under construction since January 2017
Location	Sarayköy, Denizli	Sarayköy Denizli	Buharkent, Aydın	Buharkent, Aydın
Installed Capacity	17.4 MWe	80 MWe	95 MWe	65 MWe
Technology	Single flash turbine	triple flash system: 60 MWe binary cycle system: 20 MWe	triple flash system: 75 MWe binary cycle system: 20 MWe	triple flash system: 50 MWe binary cycle system: 15 MWe
Number of Production Wells	7	10	15	13
Number of Re-Injection Wells	Uses Kızıldere II reinjection wells	12	9	9

Zorlu Enerji Elektrik Üretim A.Ş. (Zorlu Enerji) increased the capacity of the 95 MW Kızıldere III GPP (Unit 1) to 165 MW through the construction and operation of Kızıldere III GPP (Unit 2). The capacity extension Project is planned to be in the borders of Kızıldere III GPP located in Buharkent District of Aydın Province. The closest settlement to the Project area is Kızıldere Neighborhood at approximately 2,600 m northwest. There is also Karakıran Neighborhood at 3,200 m southeast of the Project. Project area location map is provided below in **Figure 2.1**.

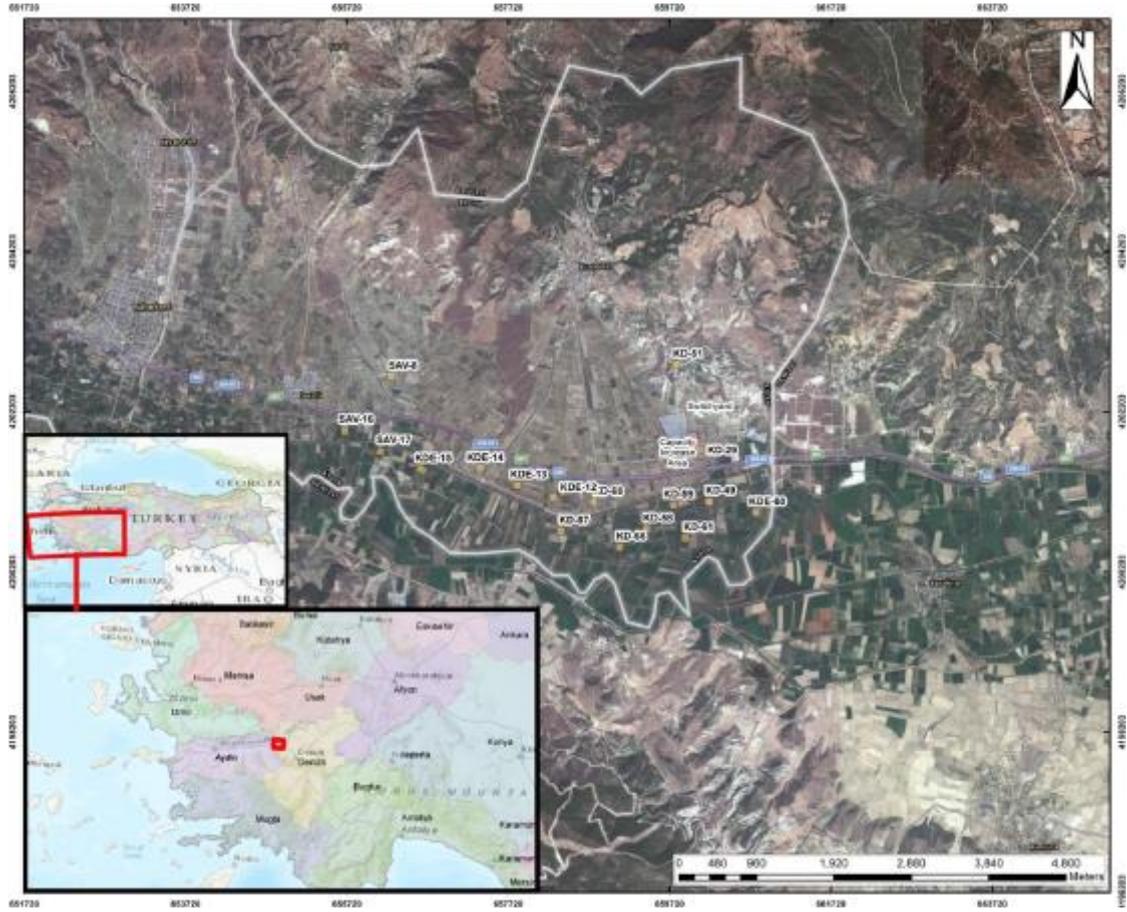


Figure 2-1 Project Area and Its Vicinity

Sensitive locations in the vicinity of the Project area and their distance are provided in Table 2.1.

Table 0-1 Settlement Located near to Project Site

Settlement	Direction	Distance
Kizildere Neighborhood	Northwest	2,600
Karakıran Neighborhood	Southeast	3,200
Aydın-Denizli Motorway	South	180
Railway	South	360
Sarayköy Agriculture-Based Organized Industrial Zone	Southeast	1,000
Kizildere I GPP	Northeast	1,850
Kizildere II GPP	East	950
Drying Channel	Southeast	600
Irrigation Channel	Southeast	200
Büyük Menderes River	South	1,250

3 Legal and Institutional Framework

There is sufficient legal and administrative ground in Turkish for environmental and social management in the process of implementing development projects. The ESIA study considers both the Turkish and the World Bank environmental and social policy documents and guidelines. Concerning the institutional arrangement, Ministries and Organizations has established environmental and social branches to address their development activities.

The principal legislation related to the Project is the Environment Law of August 1983 (amended with the Law dated April 26, 2006; No: 5491). Several by-laws and decrees are enforced under the Environment Law.

Article 10 of the "Environment Law" requires an EIA report for investment projects which may create adverse environmental effects because of their planned activities. The types of projects for which an EIA report is required and the specific topics that should be covered for different cases are described in the EIA Regulation issued by the Ministry of Environment and Urbanization ("MoEU"). Besides the EIA Regulation, other regulations related to environmental, health and safety and social issues mainly include the following:

- Environment Law number 2872 and Law number 5491 About Making Amendments in the Environment Law
- Geothermal Resources and Natural Mineral Waters Law number 5686
- Law on the Underground Waters number 167
- Public Health Law number 1593
- Regulation on Packaging Waste Control
(enacted by publication in the Official Monitor dated 24.08.2011, number 28035.)
- Waste Batteries and Accumulator Control Regulation
(enacted by publication in the Official Monitor dated 31.08.2004, number 25569.)
- Waste Oils Control Regulation
(enacted by publication in the Official Monitor dated 30.07.2008, number 26952.)
- Waste Management Regulation
(enacted by publication in the Official Monitor dated 02.04.2015, number 29314.)
- Herbal Waste Oils Control Regulation
(enacted by publication in the Official Monitor dated 06.06.2015, number 29378.)
- Environmental Permit and License Regulation
(enacted by publication in the Official Monitor dated 10.09.2014, number 29115.)
- Regulation on the Exhaust Gas Emission Control and the Quality of Gasoline and Diesel
(enacted by publication in the Official Monitor dated 30.11.2013, number 28837.)
- Excavation Soil, Construction and Wreckage Wastes Control Regulation
(enacted by publication in the Official Monitor dated 18.03.2004, number 25406.)
- Regulation on the Waters for Human Consumption
(enacted by publication in the Official Monitor dated 17.02.2005, number 25730.)
- End of Life Tires Control Regulation
(enacted by publication in the Official Monitor dated 25.11.2006, number 26357.)
- Industrial based Air Pollution Control Regulation
(enacted by publication in the Official Monitor dated 03.07.2009, number 27277.)
- Water Pollution Control Regulation
(enacted by publication in the Official Monitor dated 31.12.2004, number 25687.)

- Project Approval Circular for the Wastewater Treatment/Deep Sea Discharging Facilities Number 2014/07

3.1 International Standards

ESMMP was prepared considering the World Bank Environmental Safeguard Policies (OP 4.01, OP 4.04, OP 4.11, OP 4.12 and OP 7.50) as well as standards and limits stipulated in Turkish Environmental Legislation.

4 Environmental & Social Management and Monitoring Plan

4.1 Significance of an ESMMP

An Environmental and Social Management and Monitoring Plan (ESMMP) for developing projects is used to provide a logical framework within which identified negative environmental impacts can be avoided, mitigated and monitored. In addition, the ESMMP assigns responsibilities of actions to various actors and provides a timeframe within which mitigation measures and monitoring can be done. The ESMMP is a vital output of an Environmental and Social Impact Assessment as it provides a checklist for project monitoring and evaluation. The ESMMP outlined below will address the identified potential negative impacts and mitigation measures of the project based on the chapters on Environmental Impacts and Mitigation of the Negative Impacts.

4.2 Environmental and Social Management and Monitoring Plan

Environmental & Social Management and Monitoring Plan prepared for Kızıldere GPPs prepared according to **WB Group General EHS Guidelines** for Kızıldere I, Kızıldere II, Kızıldere III / Unit I & Unit II.

Table 4-1 ESMMP

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Air Emissions and Air Quality						
Construction Phase / (Kızıldere III - Unit II)						
Dust	Activities leading to significant dust formation will be monitored and dust control measures will be implemented as recommended. Dust-emitting operations will be interrupted at times when severe winds are observed.	*Regulation on the Control of Industrial Air Pollution *WB EHS Guidelines	The contractor	Visual Inspections	When daily and severe winds are observed	Complied
				Dust and PM10 measurements will be made.	Once every 3 months	Complied Air Quality Dispersion Modelling was conducted for dust emissions generated during construction phase of Kızıldere III GPP Unit 2, and it was observed that the results comply with the requirements of Industrial Air Pollution Control Regulation (IAPCR).
	Soil and similar material stacks will be carefully managed with the aim of reducing the risk of dust being carried by the wind. For example; water spraying system will be implemented to prevent dusting during transport and evacuation of soil piles and other materials in dry weather.	*Regulation on the Control of Industrial Air Pollution *WB EHS Guidelines	The contractor	Visual Inspections	When daily and severe winds are seen	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
				Dust and PM10 measurements will be made	Once every 3 months	Complied Air Quality Dispersion Modelling was conducted for dust emissions generated during construction phase of Kızıldere III GPP Unit 2, and it was observed that the results comply with the requirements of Industrial Air Pollution Control Regulation (IAPCR).
	Filling and discharging operations will be done without scattering in order to mitigate the emissions directly in the emission source.	EIA Commitment	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily	Complied
	Road improvements will be covered by the tarpaulin over the vehicles during the material transport and the upper part of the material will be kept wet.	EIA Commitment	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily	Complied
	On-site roads will be irrigated at regular intervals.	*Regulation on the Control of Industrial Air Pollution *WB EHS Guidelines	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily	Complied
				Dust and PM10 measurements will be made	Once every 3 months	Complied Air Quality Dispersion Modelling was conducted for dust emissions generated during construction phase of Kızıldere III GPP Unit 2, and it was observed that the results comply with the requirements of Industrial Air Pollution Control Regulation (IAPCR).

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
	Irrigation will be carried out on the roads to be used during the transportation of the material in order to avoid dusting if necessary.	EIA Commitment	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily	Complied
Exhaust emissions from vehicles	All vehicles will be maintained regularly in order to prevent emissions from vehicles. Vehicles will not be held in a working position when unnecessary	EIA Commitment	The contractor	Vehicle maintenance records will be checked.	Monthly	Complied
Dust	On-site roads will be irrigated at regular intervals.	*Regulation on the Control of Industrial Air Pollution *WB EHS Guidelines	The operator	Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily	Complied
Exhaust emissions from vehicles	All vehicles will be maintained regularly in order to prevent emissions from vehicles. Vehicles will not be held in a working position when unnecessary.	EIA Commitment	The operator	Vehicle maintenance records will be checked.	Monthly	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Greenhouse Gas Emissions	Greenhouse gas emissions will be calculated and reported.	WB Safeguard OP 4.01	The operator	Greenhouse Gas Emissions Evaluation Report will be presented to the Bank.	Annually	Complied As current best industry practice, monthly sampling is being conducted at all production wells and at the inlet of steam turbines for determination of NCG content. The company states that since the geothermal flow includes three phases including steam, brine and noncondensable gases (NCGs), it is not possible to obtain accurate measurement results through online monitoring. Therefore no online monitoring systems for NCG is in place in any of the wells of the currently operational GPPs. Online NCG monitoring is also not planned for Kızildere III GPP Unit 1 or 2 for the same reason. GHG emissions are in a general decreasing trend, as is the change in percentage of CO2 in the total flow which represents the temporal decrease in %CO2 of the reservoir.
Air Quality	During operation, H2S measurements will be made with the passive diffusion tubes in the project area.	*EIA Commitment * WB Safeguard OP 4.01	The operator	Analysis reports will be checked.	Every 6 months	Complied
Wastewater and Water Management						
Construction Phase / (Kızildere III - Unit II)						
Field drainage	Field drainage systems will be designed with the aim of collecting, balancing, treating and controlling the flow originating from the ground.	*Water Pollution Control Regulation *WB EHS Guidelines	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily and when necessary	Complied Construction works are still continuing and field drainage systems are almost completed.

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Wastewater	Domestic wastewater formed during the construction phase will be discharged to the nearest surface water after being treated in the water treatment plant.	*EIA Commitment * WB Safeguard OP 4.01 *Water Pollution Control Regulation Sampling and Analysis Methods Communiqué	The contractor	Analyzes will be done to check the discharge limits.	Every two months for internal monitoring	Complied A single, 80 m3/day capacity WWTP serves the construction phase personnel needs of both Unit 1 and Unit 2 of Kızıldere III GPP. Wastewater analysis reports are present where sampling at the exit point of the WWTP is conducted, the identified values for all parameters (suspended solids, BOD, COD, pH) are below the limit values provided by the Regulation on Water Pollution Control. The upcoming analysis reports will be checked in the next monitoring period.
					Every six months for audits	
Washing Waters	If cars will be washed in the field, impermeability of the car wash area should be ensured and appropriate drainage systems should be constructed so that the washing waters are discharged after being discharged through the oil / water separator.	Water Pollution Control Regulation	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	Weekly	Complied Vehicles are not washed in the field.
Drainage System	A set or blind chamber (sump) will be installed in areas where there is a risk of oil and other chemical spills.	WB EHS Guidelines	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily	Complied
	Rainwater coming from areas where oil contaminated equipments are collected, will be sent to oil / water separator before being discharged.	Water Pollution Control Regulation	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	Weekly	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Ground-water	Before the operation of the facility, groundwater quality analyzes should be carried out to determine the quality of groundwater.	WB Safeguard OP 4.01	The operator	Depth, static level, temperature, pH, EC, etc. water quality parameters analysis results	Once before operation starts	Ongoing According to agreement <u>agreement</u> with DSI, Zorlu will finance and conduct drill works of 3 groundwater monitoring wells. State Hydraulic Works (DSI) will take over these wells after completion, Therefore monitoring at these wells will be the responsibility of DSI.
Water Quality	Analyzes will be made every 6 months to monitor the water quality of the Büyük Menderes River.	* WB Safeguard OP 4.01 *Surface Water Quality Management Regulation	The operator	Analyzes will be made to monitor the water quality.	Every 6 months	Not complied. Büyük Menderes River water analyzes was carried out before the construction phase. The analyzes will be required in the next monitoring period.
Operational Phase (Kızıldere I, Kızıldere II, Kızıldere III - Unit I & Unit II)						
Wastewater	Domestic wastewater formed during the operation phase will be discharged to the nearest surface water after being treated in the water treatment plant.	*EIA Commitment * WB Safeguard OP 4.01 *Water Pollution Control Regulation Sampling and Analysis Methods	The operator	Analyzes will be done to check the discharge limits.	Every four months for internal monitoring	Ongoing Kızıldere I Domestic wastewater generated by Kızıldere I GPP personnel is collected in an impermeable cesspool and is periodically drawn by sewage trucks of Denizli Metropolitan Municipality, with which a protocol is in place for transfer of domestic wastewater. The wastewater is then transported to Denizli Central WWTP for treatment. Prior to drawing of wastewater by sewage trucks, discharge parameters provided in the Regulation for Discharge of Wastewater to Sewage System are measured.

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
					Every year for audits	<p>Kızıldere II A 10 m3/day capacity WWTP is serving for operation phase personnel needs.</p> <p>Kızıldere III (Unit 1 & Unit II) A 10 m3/day capacity WWTP will serve for the needs of both Unit 1 and Unit 2 operation phase personnel. This WWTP's Project is approved by the Provincial Directorate of Environment and Urbanization.</p>
	If domestic wastewater treatment plant is not installed, it will be collected in leak-proof septic tank and contracted with the municipality and cleaned regularly.	*EIA Commitment *Water Pollution Control Regulation	The operator	Sewage truck records will be checked.	Every 6 months	Wastewater analysis reports are present where sampling at the exit point of the WWTP is conducted, the identified values for all parameters (suspended solids, BOD, COD, pH) are below the limit values provided by the Regulation on Water Pollution Control. The upcoming analysis reports will be checked in the next monitoring period.
Drainage System	A set or blind chamber (sump) will be installed in areas where there is a risk of oil and other chemical spills.	WB EHS Guidelines	The operator	Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily	
	Rainwater coming from areas where oil contaminated equipments are collected, will be sent to oil / water separator before being discharged.	Water Pollution Control Regulation	The operator	Visual inspection with the aim of controlling the functionality of the mitigation measure	Weekly	

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Process Water	If it is mandatory to discharge process water, maintenance water or test water to surface water, dates outside of the irrigation season will be selected.	EIA Commitment	The operator	Discharge records will be checked.	Annually	
	In case of the wastewater is discharged, an application of discharge point coordinates and flow rates shall be filed to the 21st Regional Directorate of DSİ at least 10 days before the relevant discharge date for authority opinion. Following the authority opinion, an application will be filed to the Provincial Directorate of Environment and Urban Planning, which is the authorized institution related to wastewater discharges. After receiving permission, discharge will be made within the framework of related legislation for geothermal wells.	EIA Commitment	The operator	Analyzes will be done to check the discharge limits.	Before discharge	
Geothermal Fluid	The geothermal fluid from well cleaning process and well opening, will not be directly discharged to the receiving water body. It will be stored in an emergency pool with a volume of 20,000 m3 and then will be injected to the leak-proof re-injection wells.	EIA Commitment	The operator	Presence of the emergency pool and records will be checked.	Every 6 months	Complied
	In terms of feeding the reservoir and for the sustainable use of the geothermal fluid source, once its function is completed, the fluid will be re-injected to ground from the re-injection wells that will be opened within the scope of the project.	EIA Commitment	The operator	Presence of the re-injection wells will be checked.	Every 6 months	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
	Geothermal fluid quality analysis will be performed to monitor the change in water quality.	EIA Commitment	The operator	Analyzes will be made to monitor water quality	Monthly	-
Groundwater	Observation wells will be opened continuously to monitor groundwater in terms of depth, static level, temperature, pH, EC, etc. parameters. These datas will be presented to the DSI 21st Regional Directorate and to the Banks monthly.	*EIA Commitment *WB Safeguard OP 4.01	The operator	Water quality parameters such as depth, static level, temperature, pH, EC will be continuously monitored.	Monthly	Ongoing Zorlu will finance and conduct drill works of 3 groundwater monitoring wells. State Hydraulic Works (DSI) will take over these wells after completion, Therefore monitoring at these wells will be the responsibility of DSI.
	Groundwater contamination potential should be minimized by installation of leak-proof well casings in the re-injection wells to a depth to the geological formation.	WB Safeguard OP 4.01	The operator	Water quality parameters such as depth, static level, temperature, pH, EC will be continuously monitored.	Monthly	Complied
	Source vulnerability analysis for groundwater wells (in case the use of ground water for cooling purpose)	WB Safeguard OP 4.01	The operator	Water quality parameters such as depth, static level, temperature, pH, EC will be continuously monitored.	Monthly	Complied A closed cooling system that circulates the cooling water will be used during the operation phase of the Project to reduce the temperature of geothermal fluids. Therefore, the water required for the cooling unit will be procured just once and the system will not require any additional water afterwards. Cooling water is supplied from the municipality.
Drinking Water	Drinking water analysis will be done annually.	EIA Commitment	The operator	Analyzes will be made to monitor water quality.	Annually	Complied For all GPPs, utility water and drinking water for the personnel is supplied by purchasing and no groundwater or surface water resource is being impacted in terms of quantity for this purpose.

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Water Quality	Analyzes will be made every 6 months to monitor the water quality of the Büyük Menderes River. In particular, changes in the sulfur parameter will be monitored sensitively.	*WB Safeguard OP 4.01 *Surface Water Quality Management Regulation	The operator	Analyzes will be made to monitor the water quality.	Every 6 months	Not complied Büyük Menderes River water analyzes was carried out before the construction phase. The analyzes will be required in the next monitoring period.
Hazardous Materials Management						
Construction Phase / (Kızıldere III - Unit II)						
Chemical Storage	Hazardous material storage area will be built in the field which is a impermeable area, protected from rain have a suitable drainage system. Liquid hazardous materials (paint, thinner, various solvents, lubricants and hydraulic oil) that are kept outside the hazardous material storage area will be stored in drums, barrels and tanks which are placed on impermeable surface. These drums, barrels and tanks must have a volume of 110% of the volume of the largest chemical tank or 25% of the total chemical volume.	WB EHS Guidelines	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	Weekly	Complied
Chemical Transfer	Dangerous materials and fuel transfer areas will have impermeable floors.	WB EHS Guidelines	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	Weekly	Complied
Material Safety Data Sheets	Material Safety Data Sheets will be provided from suppliers and should be kept close to the chemicals. Hazardous materials should have "hazardous" labels.	*EIA Commitment *Regulation on the Preparation and Disposal of Safety Data	The contractor	A "Chemicals List" will be formed and it will be checked whether the MSDSs of all the chemicals in the field are found.	Weekly	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
		Sheets for Hazardous Substances		Visual Inspections		
Oil and Chemical Spill	Emergency plan for oil and chemical spills will be prepared and implemented.	WB EHS Guidelines	The contractor	Plan will be checked.	Once before the construction	Complied Emergency Response Plan for Kızıldere III has been implemented.
Operational Phase (Kızıldere I, Kızıldere II, Kızıldere III - Unit I & Unit II)						
Chemical Storage	Chemical storage tanks and oil storage tanks will have a discharge capacity that is greater than the storage capacity of the tanks and will have discharge valves that are kept closed under normal conditions.	WB EHS Guidelines	The operator	Visual inspection with the aim of controlling the functionality of the mitigation measure	Weekly	
Transformers	Transformers will have second containment that can hold 110% of the oil.	WB EHS Guidelines	The operator	Visual Inspections	When necessary	
Material Safety Data Sheets	Material Safety Data Sheets will be provided from suppliers and should be kept close to the chemicals. Hazardous materials should have "hazardous" labels.	*EIA Commitment *Regulation on the Preparation and Disposal of Safety Data Sheets for Hazardous Substances	The operator	A "Chemicals List" will be formed and it will be checked whether the MSDSs of all the chemicals in the field are found.	Weekly	
				Visual Inspections		
Oil and Chemical Spill	Emergency plan for oil and chemical spills will be prepared and implemented.	WB EHS Guidelines	The operator	Plan will be checked.	Once before the operation	Complied. Emergency Response Plans are present.

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Waste Management						
Construction Phase / (Kızildere III - Unit II)						
Segregation	Different types of wastes will be collected separately at the source and stored in the temporary waste storage area.	*EIA Commitment *Waste Management Regulation *WB EHS Guidelines	The contractor	Visual Inspections	Daily	Complied
				Waste records will be checked.	Monthly	Complied
Waste Records	In order to keep records of the wastes regularly, the Waste Registration Information Form will be prepared which includes information on type of waste, waste code number (given in Annex 4 of Waste Management Regulation), waste amount, waste plant, transport facility and transportation method (according to Annexes 2A and 2B).	*Waste Management Regulation	The contractor	Waste records will be checked whether they are filled regularly.	Monthly	Complied
Excavation Soil and Construction Wastes	The vegetative soil shall be stored for reuse not to exceed 2 m apart from the bottom soil. It will be noted that the vegetative soil storage area should not have a slope of more than 5%.	*EIA Commitment *Regulation on Excavation Soil, Construction Waste and Debris	The contractor	Visual Inspections	Daily	Complied
	The excavation that will be formed will be primarily used within the site. The part of the excavation which will not be reused during the construction, will be moved to a dedicated area shown by the municipality.	*EIA Commitment *Regulation on Excavation Soil, Construction Waste and Debris	The contractor	Follow-up of waste disposal records	Monthly	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
	Construction wastes such as sheet and metal parts, packages and boxes, lumber etc. will be evaluated as solid wastes and will be collected separately and recovered. Among these, solid wastes that can not be recovered will be collected periodically by licensed companies.	*EIA Commitment *Regulation on Excavation Soil, Construction Waste and Debris *WB EHS Guidelines	The contractor	Visual Inspections	Daily	Complied
Domestic Wastes	Domestic wastes such as plastic, glass, paper, etc. will be collected separately and recovered.	*EIA Commitment *Regulation for Control of Packaging and Packaging Waste *WB EHS Guidelines	The contractor	Visual Inspections	Daily	Complied
				The protocol with the licensed waste disposal firm will be checked.	When the waste disposal firm is changed	Complied
	Domestic wastes that can not be recovered will be stored in closed sanitary bins and will be collected by Buharkent / Sarayköy Municipality.	*EIA Commitment *Waste Management Regulation	The contractor	Visual Inspections	Daily	Complied
Hazardous Wastes	Hazardous wastes will be temporarily stored in the hazardous waste storage area. To prevent possible soil contamination, this dedicated area will have a concrete floor and is covered with shelter on top. Also the area will have a suitable drainage system.	*Waste Management Regulation *WB EHS Guidelines	The contractor	Visual Inspections	Daily	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
	If the amount of hazardous waste to be generated exceeds 1000 kg/month, permission shall be obtained from Aydın Provincial Directorate of Environment and Urban Planning for temporary storage area.	*Waste Management Regulation	The contractor	Waste records will be checked.	Monthly	
	Hazardous wastes will be stored in containers that are robust, leakproof, safe and in accordance with internationally accepted standards. Containers shall have "hazardous waste" labelling. The quantity of the material stored and the date of storage will be also indicated on the containers.	*Waste Management Regulation	The contractor	Visual Inspections	Daily	Complied Temporary Waste Storage Area is formed in accordance with internationally accepted standards
	A three-year waste management plan will be prepared and presented to the Aydın Provincial Directorate of Environment and Urban Planning.	*Waste Management Regulation	The contractor	Check the existence of a three-year waste management plan	Every 2 years	Complied Temporary Waste Storage Area is formed in accordance with the internationally accepted standards
	The waste declaration form will be filled in the web-based program prepared by the Ministry (until the end of March each year), approved and printed out. The copy will be kept for five years.	*Waste Management Regulation	The contractor	Check the waste declaration forms	Annually	Complied
	Hazardous wastes will be sent to licensed recycling and disposal firms by licensed transportation companies. National Waste Transport Forms will be kept for five years.	*Waste Management Regulation	The contractor	The presence of the protocol signed with licensed recycling or disposal firm and the National Waste Transport Forms (Forms B and C) will be checked.	Monthly	Complied
Waste Oil	Waste oil analysis will be done and the categories will be determined. Analysis reports will be kept for five years.	*EIA Commitment *Regulation on the Control of Waste Oils	The contractor	The presence of the analysis reports will be checked.	Once when the type of oil used is changed	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
	Waste oils will be placed in temporary waste storage area and stored in the "Waste Oil" containers. Waste oils from different categories will be stored separately. The containers will be kept closed and the area will be protected from rainwater.	*EIA Commitment *Regulation on the Control of Waste Oils	The contractor	Visual Inspections	Daily	Complied
				Waste records will be checked.	Monthly	
	Waste oils will be sent to licensed recycling and disposal firms by licensed transportation companies. National Waste Transport Forms will be kept for five years.	Regulation on the Control of Waste Oils	The contractor	The presence of the protocol signed with licensed recycling or disposal firm and the National Waste Transport Forms (Forms B and C) will be checked.	Monthly	Complied
	The waste oil declaration form will be filled and will be sent to the Aydın Provincial Directorate of Environment and Urban Planning (until the end of February each year). The copy will be kept for five years.	Regulation on the Control of Waste Oils	The contractor	The waste oil declaration forms will be checked.	Annually	Complied
Waste Batteries	Waste batteries will be collected separately from other wastes and delivered to authorized organizations.	*EIA Commitment *Regulation on the Control of Waste Batteries and Accumulators	The contractor	Waste records will be checked.	Monthly	Complied
Waste Accumulators	Waste accumulators will be stored maximum ninety days on temporary waste storage area and will be delivered to the battery producers or the authorized firms afterwards.	*EIA Commitment *Regulation on the Control of Waste Batteries and Accumulators	The contractor	Waste records will be checked.	Monthly	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Vegetable Waste Oils	Vegetable waste oils will be collected separately and will be stored in leakproof containers which are corrosion resistant.	*EIA Commitment *Regulation on Vegetable Waste Oils	The contractor	Visual Inspections	Daily	Complied
	Vegetable waste oils will be sent to licensed recycling and disposal firms by licensed transportation companies. National Waste Transport Forms will be kept for five years.	*EIA Commitment *Regulation on Vegetable Waste Oils	The contractor	The presence of the protocol signed with licensed recycling or disposal firm and the National Waste Transport Forms (Forms B and C) will be checked.	Monthly	Complied
Medical Wastes	Medical waste will be stored in special red plastic bags with the "International Biohazard" and the "CAUTION MEDICAL WASTE" labeling which are resistant to tearing, puncturing, explosion. They will be transported apart from other wastes.	*EIA Commitment *Regulation on the Control of Medical Wastes	The contractor	Visual Inspections	Daily	Complied
	Medical wastes will be sent to licensed firms. During the delivery of waste, medical waste receipt documents will be arranged and the specified documents will be kept for one year.	Regulation on the Control of Medical Wastes	The contractor	The presence of the protocol will be checked. Medical waste receipt documents will be checked.	Annually Monthly	Complied
Waste Tires	When vehicle tires are replaced, the old tires will be sent to the companies that sell or distribute tires or to the licensed transportation vehicles(LASDER).	*EIA Commitment *Regulation on the Control of Waste Tyres	The contractor	Waste records will be checked.	Monthly	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Treatment Sludge	If the sludge is used in the soil, the parameters specified in the Regulation on the Usage of Domestic and Urban Treatment Sludge to Soil will be provided and the "Stabilize Treatment Sludge Usage Permit Certificate" will be taken.	Regulation on the Use of Household and Urban Treatment Sludge in Soil	The contractor	Stabilize Treatment Sludge Usage Permit Certificate will be checked.		
	The treatment sludge will be sent to the licensed disposal firms after hazard analysis is made.	Landfill Regulation	The contractor	Analysis reports will be checked.	Once if there is no change in the process.	
Drilling mud	The drilling mud will be stored on the impermeable surface and the hazard analysis will be done at the end of the drilling and it will be disposed according to the analysis result.	Landfill Regulation	The contractor	Analysis reports will be checked.	After every drill.	Complied
Operational Phase (Kızıldere I, Kızıldere II, Kızıldere III - Unit I & Unit II)						
Segregation	Different types of wastes will be collected separately at the source and stored in the temporary waste storage area.	*EIA Commitment *Waste Management Regulation *WB EHS Guidelines	The operator	Visual Inspections	Daily	Complied
				Waste records will be checked.	Monthly	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Waste Records	In order to keep records of the wastes regularly, the Waste Registration Information Form will be prepared which includes information on type of waste, waste code number (given in Annex 4 of Waste Management Regulation), waste amount, waste plant, transport facility and transportation method (according to Annexes 2A and 2B).	*Waste Management Regulation	The operator	Waste records will be checked whether they are filled regularly.	Monthly	Complied
Domestic Wastes	Domestic wastes such as plastic, glass, paper, etc. will be collected separately and recovered.	*EIA Commitment *Regulation for Control of Packaging and Packaging Waste *WB EHS Guidelines	The operator	Visual Inspections	Daily	Complied
		The protocol with the licensed waste disposal firm will be checked.		Annually	-	
	Domestic wastes that can not be recovered will be stored in closed sanitary bins and will be collected by Buharkent / Sarayköy Municipality.	*EIA Commitment *Waste Management Regulation	The operator	Visual Inspections	Daily	Complied
Hazardous Wastes	Hazardous wastes will be temporarily stored in the hazardous waste storage area. To prevent possible soil contamination, this dedicated area will have a concrete floor and is covered with shelter on top. Also the area will have a suitable drainage system.	*Waste Management Regulation *WB EHS Guidelines	The operator	Visual Inspections	Daily	Complied Hazardous Waste Storage Areas are located in every GPP. These dedicated areas have concrete floors and are covered with shelters on top.
	If the amount of hazardous waste to be generated exceeds 1000 kg/month, permission shall be obtained from Aydın Provincial Directorate of Environment and Urban Planning for temporary storage area.	*Waste Management Regulation	The operator	Waste records will be checked.	Monthly	-

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
	Hazardous wastes will be stored in containers that are robust, leakproof, safe and in accordance with internationally accepted standards. Containers shall have "hazardous waste" labelling. The quantity of the material stored and the date of storage will be also indicated on the containers.	*Waste Management Regulation	The operator	Visual Inspections	Daily	Complied
	A three-year waste management plan will be prepared and presented to the Aydın Provincial Directorate of Environment and Urban Planning.	*Waste Management Regulation	The operator	Check the existence of a three-year waste management plan	Every 2 years	Complied Kızıldere GPPs have Industrial Waste Management Plans prepared in line with national legislative requirements.
	The waste declaration form will be filled in the web-based program prepared by the Ministry (until the end of March each year), approved and printed out. The copy will be kept for five years.	*Waste Management Regulation	The operator	Check the waste declaration forms	Annually	Complied
	Hazardous wastes will be sent to licensed recycling and disposal firms by licensed transportation companies. National Waste Transport Forms will be kept for five years.	*Waste Management Regulation	The operator	The presence of the protocol signed with licensed recycling or disposal firm and the National Waste Transport Forms (Forms B and C) will be checked.	Monthly	Complied
Waste Oil	Waste oil analysis will be done and the categories will be determined. Analysis reports will be kept for five years.	*EIA Commitment *Regulation on the Control of Waste Oils	The operator	The presence of the analysis reports will be checked.	Once when the type of oil used is changed	Complied
	Waste oils will be placed in temporary waste storage area and stored in the "Waste Oil" containers. Waste oils from different categories will be stored separately. The containers will be kept closed and the area will be protected from rainwater.	*EIA Commitment *Regulation on the Control of Waste Oils	The operator	Visual Inspections Waste records will be checked.	Daily Monthly	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
	Waste oils will be sent to licensed recycling and disposal firms by licensed transportation companies. National Waste Transport Forms will be kept for five years.	Regulation on the Control of Waste Oils	The operator	The presence of the protocol signed with licensed recycling or disposal firm and the National Waste Transport Forms (Forms B and C) will be checked.	Monthly	
	The waste oil declaration form will be filled and will be sent to the Aydın Provincial Directorate of Environment and Urban Planning (until the end of February each year). The copy will be kept for five years.	Regulation on the Control of Waste Oils	The operator	The waste oil declaration forms will be checked.	Annually	Complied
Waste Batteries	Waste batteries will be collected separately from other wastes and delivered to authorized organizations.	*EIA Commitment *Regulation on the Control of Waste Batteries and Accumulators	The operator	Waste records will be checked.	Monthly	Complied
Waste Accumulators	Waste accumulators will be stored maximum ninety days on temporary waste storage area and will be delivered to the battery producers or the authorized firms afterwards.	*EIA Commitment *Regulation on the Control of Waste Batteries and Accumulators	The operator	Waste records will be checked.	Monthly	Complied
Vegetable Waste Oils	Vegetable waste oils will be collected separately and will be stored in leakproof containers which are corrosion resistant.	*EIA Commitment *Regulation on Vegetable Waste Oils	The operator	Visual Inspections	Daily	
	Vegetable waste oils will be sent to licensed recycling and disposal firms by licensed transportation companies. National Waste Transport Forms will be kept for five years.	*EIA Commitment *Regulation on Vegetable Waste Oils	The operator	The presence of the protocol signed with licensed recycling or disposal firm and the National Waste Transport Forms (Forms B and C) will be checked.	Monthly	

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Medical Wastes	Medical waste will be stored in special red plastic bags with the "International Biohazard" and the "CAUTION MEDICAL WASTE" labeling which are resistant to tearing, puncturing, explosion. They will be transported apart from other wastes.	*EIA Commitment *Regulation on the Control of Medical Wastes	The operator	Visual Inspections	Daily	Complied.
	Medical wastes will be sent to licensed firms. During the delivery of waste, medical waste receipt documents will be arranged and the specified documents will be kept for one year.	Regulation on the Control of Medical Wastes	The operator	The presence of the protocol will be checked. Medical waste receipt documents will be checked.	Monthly	Complied.
Waste Tyres	When vehicle tires are replaced, the old tires will be sent to the companies that sell or distribute tires or to the licensed transportation vehicles(LASDER).	*EIA Commitment *Regulation on the Control of Waste Tyres	The operator	Waste records will be checked.	Monthly	Complied
Treatment Sludge	If the sludge is used in the soil, the parameters specified in the Regulation on the Usage of Domestic and Urban Treatment Sludge to Soil will be provided and the "Stabilize Treatment Sludge Usage Permit Certificate" will be taken.	*Regulation on the Use of *Household and Urban Treatment Sludge in Soil	The contractor	Stabilize Treatment Sludge Usage Permit Certificate will be checked.	Every 6 months	-
	The treatment sludge will be sent to the licensed disposal firms after hazard analysis is made.	Landfill Regulation	The contractor	Analysis reports will be checked.	Once if there is no change in the process.	-
Drilling mud	The drilling mud will be stored on the impermeable surface and the hazard analysis will be done at the end of the drilling and it will be disposed according to the analysis result.	Landfill Regulation	The contractor	Analysis reports will be checked.	After every drill.	-

Biodiversity and Living Natural Resources

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Construction Phase / (Kızıldere III - Unit II)						
Assessment of issues and impacts	Necessary assessments should be implemented.	WB Safeguard OP 4.04	The operator	Assessment reports should be checked.	Once before the construction begins	<p>Complied.</p> <p>Flora/fauna surveys were conducted within the scope of the national EIA process in May 2014 and baseline biodiversity assessment was included in the EIA report. In Kızıldere 3 - Unit 2 ESIA, the list of flora/fauna species identified in the Project area and its vicinity is updated; priority biodiversity features are identified; critical habitats are identified and habitat assessment in the Project area and its vicinity is performed.</p> <p>The vulnerable or near threatened species given below are included in Kızıldere III - Unit 2 ESIA.</p> <p>*Heliotropium thermophilum Kit Tan, A. Çelik&Gemici, a species endemic to Turkey has been identified to have a limited distribution in the Kızıldere GPPs area, especially in the vicinity of Kızıldere GPP I. Therefore, a protocol regarding further studies on these potential species, to be signed between Zorlu and Ege University, has been drafted and submitted to Ege University. Additionally, subjects such as population size, morphological measurements and observations, recording of climate and soil data, determination of habitat characteristics, pollination biology, population genetics, seed germination, obtaining seedlings, etc. are also included in the study scope. The protocol will also cover suggested mitigations for conservation of these species, in case any presence.</p> <p>* Montivipera xanthine (Ottoman viper) (endemic snake species), one of the species triggering the Key Biodiversity Area (KBA) status of Akdağ-Denizli KBA. Monitoring of this species was suggested by the ESIA of Kızıldere III GPP Unit 2. There is no specie specific monitoring suggested in the ESIA. On the other hand, some specie specific assessment and related mitigation measures are provided in the last consolidated monitoring report.</p> <p>* Three amphibian (Pelobates syriacus, Hyla arborea, Pseudepidalea viridis) and one reptile (Ablepharus kitaibelii) species included Annex IV of EU Habitats Directive (Critical Habitat Features (CHF)). All four species are listed in LC category of IUCN. Since these species have common ecological necessities, general mitigation measures defined</p>

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
						in ESIA is expected to mitigate the potential impacts of the Project on these species, no separate Biodiversity Action Plan or Biodiversity Management Plan is suggested.
Legally protected and internationally recognized areas of biodiversity value	Nationally protected areas in the project area should be defined.	WB Safeguard OP 4.04	The operator			<p>Complied.</p> <p>Akdağ – Denizli KBA (at 4 km distance to the Project) Boz Mountains KBA (at 35 km distance to the Project) None of the above listed KBAs are global-level KBAs There isn't an Alliance for Zero Extinction site</p> <p>The closest legally protected and internationally recognized area of biodiversity value is Akdağ - Denizli KBA. The closest point of this KBA is located 7km approximately km southeast of Kızıldere GPP. This KBA is not expected to be affected by operation activities of Kızıldere GPP.</p>

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Habitats of significant importance to endangered or critically endangered species	<p>*Should be monitored periodically during the lifetime of the Project.</p> <p>*All the areas where habitat loss/alteration occurred/will occur will be visually checked to ensure there are no individuals of these species.</p> <p>*Where applicable, fencing the construction and operation areas and especially where these features exist in order to reduce the risk of footprint.</p> <p>*Install drift fences where the traffic load is busy due to Project activities and following the Project units of severe heat.</p> <p>*Fence emergency pond areas and do not allow ponding or excess water accumulation in other areas in order not to attract the amphibian species for spawning and metamorphosis activities.</p> <p>*Where possible, signs for awareness rising with photos of the species will be placed within the area of Project's activity influence.</p>	WB Safeguard OP 4.04	The operator	<p>Visual checks for;</p> <p>*Pelobates syriacus,</p> <p>*Hyla arborea</p> <p>*Pseudepidalea viridis,</p> <p>*Ablepharus kitaibelii</p> <p>*Montivipera xanthine (Ottoman viper)</p>	Every 6 months	<p>Ongoing</p> <p>Since these species are listed in LC category of IUCN and have common ecological necessities, common measures will help to mitigate the potential impacts of the Project. Instead of a separate Biodiversity Action Plan or Biodiversity Management Plan. Monitoring for existence of Montivipera xanthine (Ottoman viper) (endemic snake species), one of the species triggering the Key Biodiversity Area (KBA) status of Akdağ-Denizli KBA was suggested by the ESIA of Kızıldere III GPP Unit 2. During the monitoring activities, Zorlu stated that no such encounter occurred.</p>
Highly threatened or unique ecosystems	A detailed study should be conducted for endemic plants.	WB Safeguard OP 4.04	The operator	Assessment report should be checked.		<p>Ongoing</p> <p>Heliotropium thermophilum Kit Tan, A. Çelik&Gemici, a species endemic to Turkey has been identified to have a limited distribution in the Kızıldere GPPs area, especially in the vicinity of Kızıldere GPP I. Therefore, a protocol regarding further studies on these potential species, to be signed between Zorlu and Ege University, has been drafted and submitted to Ege University. Additionally, subjects such as population size, morphological measurements and observations, recording of climate and soil data, determination of habitat characteristics, pollination biology, population genetics, seed germination, obtaining seedlings, etc. are also included in the study scope. The protocol will also cover suggested mitigations for conservation of these species, in case any presence.</p>

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Invasive alien species	Invasive alien species should be checked.	WB Safeguard OP 4.04	The operator			No invasive alien species identified in the area during the EIA and ESIA studies.
Operational Phase (Kızıldere I, Kızıldere II, Kızıldere III - Unit I & Unit II)						
Habitats of significant importance to endangered or critically endangered species	<p>*Should be monitored periodically during the lifetime of the Project.</p> <p>*All the areas where habitat loss/alteration occurred/will occur will be visually checked to ensure there are no individuals of these species.</p> <p>*Where applicable, fencing the construction and operation areas and especially where these features exist in order to reduce the risk of footprint.</p> <p>*Install drift fences where the traffic load is busy due to Project activities and following the Project units of severe heat.</p> <p>*Fence emergency pond areas and do not allow ponding or excess water accumulation in other areas in order not to attract the amphibian species for spawning and metamorphosis activities.</p> <p>*Where possible, signs for awareness rising with photos of the species will be placed within the area of Project's activity influence.</p>	WB Safeguard OP 4.04	The operator	<p>Visual checks for;</p> <p>*Pelobates syriacus,</p> <p>*Hyla arborea</p> <p>*Pseudepidalea viridis,</p> <p>*Ablepharus kitaibelii</p> <p>*Montivipera xanthine (Ottoman viper)</p>	Every 6 months	<p>Ongoing</p> <p>Since these species are listed in LC category of IUCN and have common ecological necessities, common measures will help to mitigate the potential impacts of the Project. Instead of a separate Biodiversity Action Plan or Biodiversity Management Plan. Monitoring for existence of Montivipera xanthine (Ottoman viper) (endemic snake species), one of the species triggering the Key Biodiversity Area (KBA) status of Akdağ-Denizli KBA was suggested by the ESIA of Kızıldere III GPP Unit 2. During the monitoring activities, Zorlu stated that no such encounter occurred.</p>

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Highly threatened or unique ecosystems	A detailed study should be conducted for endemic plants.	WB Safeguard OP 4.04	The operator	Assessment report should be checked.		Ongoing Heliotropium thermophilum Kit Tan, A. Çelik&Gemici, a species endemic to Turkey has been identified to have a limited distribution in the Kızıldere GPPs area, especially in the vicinity of Kızıldere GPP I. Therefore, a protocol regarding further studies on these potential species, to be signed between Zorlu and Ege University, has been drafted and submitted to Ege University. Additionally, subjects such as population size, morphological measurements and observations, recording of climate and soil data, determination of habitat characteristics, pollination biology, population genetics, seed germination, obtaining seedlings, etc. are also included in the study scope. The protocol will also cover suggested mitigations for conservation of these species, in case any presence.
Noise Management						
Construction Phase / (Kızıldere III - Unit II)						
Machine and equipment noise	The noise level spreading around the site will not exceed the threshold value of 70 dBA in the nearest sensitive receiver points. If the limit value is exceeded, all necessary precautions shall be taken in the noise source.	*EIA Commitment *Regulation on the Assessment and Management of Environmental Noise	The contractor	Monitoring the nearest sensitive receiver with noise measuring device	Every 3 months or in case of complaint	Not complied. Noise measurements are not implemented.
	Construction works will only be carried out in day time. When construction activities are to be carried out in evening and night time, the limit values of 55 dBA for the evening time zone and 50 dBA for the night time zone shall be complied	*Regulation on the Assessment and Management of Environmental Noise	The contractor	Visual Inspections	Daily	Complied
				Monitoring the nearest sensitive receiver with noise measuring device	Every 3 months	Not complied. Noise measurements are not implemented.

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
	with. Permisson from Provincial Local Environmental Board regarding evening and night shifts shall be taken.	*WB EHS Guidelines		The presence of the Provincial Local Environment Committee Decision will be checked.	Once if the construction activities are continued at night and evening time.	Complied It is stated that construction doesn't continue at night and evening time.
	Noise that may occur as a result of site activity can not exceed 100 DBc (Lcmax noise indicator).	Regulation on the Assessment and Management of Environmental Noise	The contractor	Monitoring with noise measuring device	Every 3 months	Not complied. Noise measurements are not implemented.
	On site; construction start dates, end dates and periods of work and information on the permits taken from the provincial / district municipality will be disclosed on a bulletin board where everyone can easily see on the construction site.	*EIA Commitment *Regulation on the Assessment and Management of Environmental Noise	The contractor	Visual Inspections	-	Complied
	An exhaust silencer will be attached to the construction equipment and vehicles powered by the engine.	WB EHS Guidelines	The contractor	Visual Inspections	Before using the vehicles and the equipments	Complied
	The equipment will be selected from low volume models as much as possible.	WB EHS Guidelines	The contractor	Monitoring the nearest sensitive receiver with noise measuring device	Every 3 months	Not complied. Noise measurements are not implemented.
	Restrict through-traffic in residential areas	WB EHS Guidelines	The contractor	-	-	Complied
Operational Phase (Kızıldere I, Kızıldere II, Kızıldere III - Unit I & Unit II)						
Noise	If there is complaint, the noise measurement will be made at the sensitive areas of the work area.	*EIA Commitment *WB EHS Guidelines	The operator	Monitoring with noise measuring device	In case of complaint, 24 hours in the work area and 15 days in the nearest sensitive receiving point	-

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Aesthetics and Landscape						
Construction Phase / (Kızıldere III - Unit II)						
Vegetable Soil	The vegetable soil shall be stored for reuse, not exceeding 2 m apart from the subsoil and closed with an air permeable material. It will be noted that the vegetable soil does not have a slope of more than 5% of the storage area. Preserved soil collected separately and appropriately, will be used in site layout after the construction activities end.	*EIA Commitment *Regulation on the Control of Excavation Soil, Construction and Debris Wastes	The contractor	Visual Inspections	Daily (during site preparation work)	Complied
Natural Resources	Protect sensitive areas within/close to site	WB ESMF	The contractor	Visual Inspections	Before the construction	Complied
	Protect non-construction areas, avoid work in sensitive areas during highly adverse conditions, provide temporary haul roads as appropriate, restore damaged areas	WB ESMF	The contractor	Visual Inspections	Before the construction	Complied
Landscape	Planting activities shall be carried out to prevent the visual effects of the project.	EIA Commitment	The contractor	Visual Inspections	After the completion of the construction.	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Cultural Heritage						
Construction Phase / (Kızıldere III - Unit II)						
Archaeological Finds	The construction work will be monitored for archaeological finds and Chace Find Procedure will be implemented for the ongoing construction activities . If an archaeological remain is found, construction will be suspended.	WB EHS Guidelines	The contractor	Visual Inspections	When necessary	Complied
				Chance Finds Procedure will be checked.	Before the construction	Complied According to Law on Conservation of Cultural and Natural Assets No. 2863 (as amended with the Law numbered 5226) and relevant regulations; Zorlu has prepared a Chance Find Procedure. The document has been checked.
Socio-economics						
Construction Phase / (Kızıldere III - Unit II)						
Socio-economics and sustainable development	The project will use local subcontractors as much as possible.	EIA Commitment	The operator	The presence of the Local Procurement Plan will be checked.		Complied The Local Procurement Plan has not been prepared but local resources are used as much as possible within the scope of construction works and services supplied for the construction site.
	Vehicle maintenance and fuel purchase during the construction period will be provided from the local suppliers as much as possible.	EIA Commitment	The contractor	The presence of the Local Procurement Plan will be checked.		
Socio-economics	During the construction phase, subcontractors will be encouraged to procure their needs such as food, beverages and spare materials etc. from local stores as much as possible.	EIA Commitment	The contractor	The presence of the Local Procurement Plan will be checked.		

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Socio-economics	A Stakeholder Engagement Plan will be prepared before construction begins to ensure active and continuous participation of all stakeholders of the project. This plan will be updated at periodic intervals.	WB EHS Guidelines	The operator	The presence of the Stakeholder Engagement Plan will be checked.		Complied Stakeholder Engagement Plan has been reviewed.
Grievance Mechanism	A grievance mechanism will be created to express the problems and opinions of the workers on the project and the working conditions.	WB EHS Guidelines	The operator	Complaint records will be checked.	Monthly	Complied
Grievance Mechanism	Establishment of grievance mechanism to collect and facilitate resolution of affected communities' concerns and grievances regarding the sponsor's environmental and social performance.	WB EHS Guidelines	The operator	Complaint records will be checked.	Monthly	Complied
Human Resources Policies	Appropriate human resources policies will be developed for the workforce. Recruitment, training and other related procedures will be defined and transparent.	WB EHS Guidelines	The operator	The presence of the HR policies will be checked.	Monthly	Complied
Working Relationships	All employees will be informed about working conditions.	WB EHS Guidelines	The operator	Records of information meetings will be kept.	Every 6 months	Complied Rights under national labour and employment law, working conditions and terms of employment including their entitlement to wages, hours of work, overtime arrangements and overtime compensation, any benefits are documented and communicated to all workers. Personnel information is filed as of job start-up and includes recruitment process & documentation, disciplinary records, copy of ID cards, medical reports (respiratory, eyesight, blood tests, audio tests, etc.). A copy of their contract agreements are given to direct employees. Activities are underway for obtaining SA8000 certification for social accountability in the workplace.

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Operational Phase (Kızıldere I, Kızıldere II, Kızıldere III - Unit I & Unit II)						
Socio-economics	Vehicle maintenance and fuel purchase during the construction period will be provided from the local suppliers as much as possible.		The operator	Through interviews	Annually	Complied
	During the operation phase, needs such as food, beverage and spare materials etc. will be supplied from local stores as much as possible.		The operator	Through interviews	Annually	Complied
	The Stakeholder Engagement Plan prepared for the construction phase will be revised within 1 month from the date of commissioning in accordance with the activities during the operation period.	WB EHS Guidelines	The operator	The presence and the revision of the Stakeholder Engagement Plan will be checked.	Annually	Complied Stakeholder Engagement Plan has been reviewed.
Grievance Mechanism	In operation period, a grievance mechanism will be set up for workers to express their concerns and views.	WB EHS Guidelines	The operator	It will be prepared within 1 month from the date of operation. Complaint records will be checked.	Monthly	Complied
Grievance Mechanism	Establishment of grievance mechanism to collect and facilitate resolution of stakeholders' concerns and grievances regarding the sponsor's environmental and social performance.	WB EHS Guidelines	The operator	It will be prepared within 1 month from the date of operation. Complaint records will be checked.	Every 6 months	Complied
Human Resources Policies	Appropriate human resources policies will be developed for the workforce.	WB EHS Guidelines	The operator	The presence of the HR policies will be checked.	Monthly	Complied
Working Relationships	All employees will be informed about working conditions.	WB EHS Guidelines	The operator	Records of information meetings will be kept.	Every 6 months	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Pipelines	No negative impact will be created on the use of roads of local people by passing underground pipelines or using omega structure.	EIA Commitment	The operator	Route plans and routes will be checked.	Every 6 months	Complied
	During the construction of the pipeline, the safety of the local people will be given utmost importance. Pipelines will be continuously monitored during the operating period for pressure checks and for the detection of faults.	WB EHS Guidelines	The operator	Route plans and routes will be checked.	Continuously	Complied
Occupational Health and Safety						
Construction Phase / (Kızıldere III - Unit II)						
Occupational Health and Safety Plan	A comprehensive Occupational Health and Safety Plan will be prepared which includes the potential risks to the project during construction, measures to prevent specified risks and follow-up plans for measures.	WB EHS Guidelines	The contractor	The presence of the plan will be checked.	Once before the construction.	Complied Occupational Health and Safety Plan is present for Kızıldere III - Unit II.
Occupational Health and Safety Management System	A occupational health and safety management system will be established for the construction phase of the project.	WB EHS Guidelines	The contractor	It will be checked whether the Occupational Health and Safety System is installed.	Once before the construction.	Complied Occupational health and safety management system has been established.
HSE Risks	HSE Risks should be defined and assessed.	WB EHS Guidelines	The contractor	The presence of the assessment will be checked.	Once before the construction.	Complied The HSE Risk Assessment is present.
Emergency Response Plan	An Emergency Response Plan will be prepared for activities under the project. This plan will also include community and environmental health and safety.	WB EHS Guidelines	The contractor	The presence of the plan will be checked.	Once before the construction.	Complied Emergency Response Plan for Kızıldere III - Unit II has been prepared and checked.

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
				Drills aimed to control the efficiency of the Emergency Response Plan will be implemented.	Annually	Complied A drill was held on May 11, 2017.
Operational Phase (Kızıldere I, Kızıldere II, Kızıldere III - Unit I & Unit II)						
Occupational Health and Safety Plan	A comprehensive Occupational Health and Safety Plan will be prepared which includes the potential risks to the during operation phase, including measures to prevent specified risks and follow-up plans.	WB EHS Guidelines	The operator	The presence of the plan will be checked.	Once before the operation period	Complied Occupational Health and Safety Plan is present.
Occupational Health and Safety Management System	A occupational health and safety management system will be established for the operation phase of the project.	WB EHS Guidelines	The operator	It will be checked whether the Occupational Health and Safety System is installed.	Every 3 years	Complied Occupational health and safety management system has been established.
Toxic Gas Emissions	Installation of hydrogen sulfide monitoring and warning systems .	WB ESMF	The operator	Presence of the system will be checked.	Once before the operation period	Complied It was stated that H2S alarm systems are installed at the sites. An online, fixed H2S monitoring system is being established for the projects. In addition, mobile H2S monitoring units will also be available during the operation phase.
	Development of a contingency plan for hydrogen sulfide release events, including all necessary aspects from evacuation to resumption of normal operations	WB ESMF	The operator	Presence of Emergency Response Plan will be checked.	Once before the operation period	Complied Emergency Response Plans are present.

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
HSE Risks	Provision of an emergency response teams, with personal hydrogen sulfide monitors, selfcontained breathing apparatus and emergency oxygen supplies, and training in their safe and effective use	WB ESMF	The operator	Training records will be checked.	Annually	Complied
	Providing workers with a fact sheet or other readily available information about the chemical composition of liquid and gaseous phases with an explanation of potential implications for human health and safety	WB ESMF	The operator	Training records will be checked.	Annually	Complied
	Shielding surfaces where workers come in close contact with hot equipment, including generating equipment, pipes etc.;	WB ESMF	The operator	*The presence of the shields will be checked. *Visual Inspections	-	Complied
	Use of personal protective equipment (PPE) as appropriate, including insulated gloves and shoes	WB ESMF	The operator	Visual inspection with the aim of controlling the functionality of the mitigation measure.	During operation	Complied
	Implementing appropriate safety procedures during operation	WB ESMF	The operator	It will be checked whether the Occupational Health and Safety System is installed.	-	Complied Occupational health and safety management system has been established.
Emergency Response Plan	An Emergency Response Plan will be prepared for activities under the project.	WB EHS Guidelines	The operator	The presence of the Emergency Response Plan will be checked.	Once before the operation period.	Complied Emergency Response Plans are present.
				Drills aimed to control the efficiency of the Emergency Response Plan will be implemented.	Annually	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Well Blowouts	In the operation period, design of emergency response for well blowout and pipeline ruptures including measures for containment of geothermal fluid spills.	WB ESMF	The operator	The presence of the Emergency Response Plan will be checked.	Once before the operation period	Complied Emergency Response Plans for Kızıldere I GPP, Kızıldere II GPP and Kızıldere III has been checked.
	Regular maintenance of wellheads and geothermal fluid pipelines will be checked. - corrosion control and inspection - pressure monitoring	WB ESMF	The operator	Visual inspection with the aim of controlling the functionality of the mitigation measure	During operation	Complied
Public Health and Security						
Construction Phase / (Kızıldere III - Unit II)						
Security Fence	To prevent unauthorized access, the site and drilling areas will be fenced.	WB EHS Guidelines	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	When necessary	Complied
Traffic Security	It will be ensured that the vehicles do not exceed the specified speed limit.	WB EHS Guidelines	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	When necessary	Complied
	Security and traffic signs will be placed around and near the project site.	WB EHS Guidelines	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	During operation	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
	The activities that will affect the traffic will be planned as possible, taking into account the hours when traffic is intense.	WB EHS Guidelines	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	During operation	Complied
	Special loads will use routes predetermined by the authorities. The specified routes will be programmed to prevent traffic congestion on the roads and will be published in advance to prevent possible inconvenience.	Highway Traffic Law	The contractor	The existence of the Special Cargo Permission Certificate will be checked.	Once before the special loads transportation	Complied
	The importance of road safety training and speed limits will be emphasized to all drivers.	WB EHS Guidelines	The contractor	Training records will be checked.	Annually	Complied
Maximum Total Weight	In order to protect existing roads, the weight of vehicles to be used under the project will not exceed the applicable legislative limits.	Highway Traffic Law	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	During operation	Complied
Hazardous Chemicals and Wastes	Hazardous chemicals and wastes will be stored not to pose a threat to public health.	WB EHS Guidelines	The contractor	Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily	Complied
Traffic Management Plan	Traffic Management Plan will be prepared.	WB EHS Guidelines	The operator	Traffic Management Plan's presence will be checked.	Once before the construction begin	Complied Traffic Management Plan present for Kızıldere III - Unit II.
				Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Access of the unauthorized people to the power plant	Fencing around well sites, open ponds and mud pits	WB ESMF	The operator	The presence of the fences will be checked.	Once before the operation period	Complied
Hazardous Chemicals	Hazardous chemicals may accumulate in ponds where reject thermal water to be re-injected to reservoir is collected. Emergency planning involving community input to allow for effective response to monitoring system warnings should be implemented.	WB ESMF	The operator	The presence of the Emergency Response Plan will be checked.	Once before the operation period	Complied Emergency Response Plan is present.
Operational Phase (Kızıldere I, Kızıldere II, Kızıldere III - Unit I & Unit II)						
Traffic Security	The importance of road safety training and speed limits will be emphasized to all drivers.	WB EHS Guidelines	The operator	Visual inspection with the aim of controlling the functionality of the mitigation measure	During operation	Complied
Maximum Total Weight	In order to protect existing roads, the weight of vehicles to be used under the project will not exceed the applicable legislative limits.	Highway Traffic Law	The operator	Visual inspection with the aim of controlling the functionality of the mitigation measure	During operation	Complied
Traffic Management Plan	Traffic Management Plan will be prepared.	WB EHS Guidelines	The operator	Traffic Management Plan's presence will be checked.	Once before the construction begin	Complied Traffic Management Plan present.
				Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Hazardous Chemicals and Wastes	Hazardous chemicals and wastes will be stored not to pose a threat to public health.	WB EHS Guidelines	The operator	Visual inspection with the aim of controlling the functionality of the mitigation measure	Daily	Complied
General						
Zoning Plan	Zoning plan will be prepared and the approval procedures will be completed.	EIA Commitment	The operator	The presence of the approved construction plan will be checked.		Complied
Environmental Management	The package wastewater treatment plant is listed on the Annex-2 list of the Regulation on Permits and Licenses regarding the Environmental Law, and the investor must employ an environmental officer on an ongoing basis or take environmental management services from environmental consulting firms or establish an environmental management unit.	Regulation on Environmental Officer, Environmental Management Unit and Environmental Consultancy Firms	The operator	It will be checked whether the environmental officer is employed or whether environmental consulting services have been received or whether the Management Unit has been established.		Complied
				Internal audit reports will be checked.	Annually	Complied
Environmental and Health & Safety Management Systems	Environmental Management System and Health & Safety Management System will be prepared within 6 months after the operation starts. Applications will be made for ISO14001 and OHSAS 18001. Certificates will be provided within 1 year.		The operator	Establishment of Environmental and Occupational Health and Safety Management System.		Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Environmental Permit and License	An environmental permit for wastewater discharge will be taken for the package wastewater treatment plant.	Regulation on Permits and Licenses regarding the Environmental Law	The operator	It will be checked whether the Environmental Permit and License process has started. Applications should be completed within one month following the start of construction for the power plant.		Complied Temporary Environmental Permit (GFB) on Waste Water Discharge was taken on 02.03.2017.
Health Protection Zone	Applications will be made to Denizli and Aydın Municipalities to define health protection band distances.	*EIA Commitment *Regulation on Start and Operate a Business	The operator	It will be checked whether an application has been made to define the health protection band distances.		
Occupancy Permit	An Occupancy Permit will be issued after the construction phase is completed.	Construction Law	The operator	Presence of the occupancy permit will be checked.		Complied
License to Start and Operate a Business	License will be obtained after the operation period starts.	Regulation on Start and Operate a Business	The operator	Presence of the license will be checked.		Complied
Environmental Lawsuits	If an environmental lawsuit or a follow-up etc. occurs, simultaneous information will be provided to the Banks and the action plan will be transmitted.		The operator	Presence of the lawsuits will be checked.	When necessary	Complied No lawsuit is present.
Olive Groves	The 27 decares area which is in the planning area of the power plant's agricultural quality will be protected and no restructuring will be done according to the Law No. 3573 on the Revision of Olive Groves and Immunization of Olive Groves.	EIA Commitment	The operator	Monitoring Reports	Every six months	Complied

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
Cumulative Impact Assessment	If an additional unit or a new project is planned for the units to be built within the scope of Kızıldere III project around the project area, a Cumulative Impact Assessment study will be done.	WB EHS Guidelines	The operator	Presence of the Cumulative Impact Assessment will be checked.		Ongoing Currently, Zorlu promotes the development of a cumulative impact assessment (CIA) and supports the Geothermal Power Plant Investors Association (JESDER) in seeking funds and resources to do such a study. A CIA Task Force has been formed by JESDER, with the aim of assessing cumulative environmental impacts and cumulative impacts on the shared reserves. Currently; work programs, deadlines and budgets for the work and committees are not yet identified and set. Zorlu will keep AECOM informed on the progress of the work.
Commercial CO2 Trade	Efforts shall be made for commercial CO2 trade as far as possible.	CO2 Sales	The operator	Carbon emission tradings will be checked.	Annually	Complied Currently, there is a CO2 liquidification facility and the capacity of this facility is enough to supply the demand of the company and the existing market.
Soil and Vegetation	In order to determine the change in soil and vegetation quality, the regulation shall be made for the parameters given for 3511 NACE code, once the facility starts operation and annually after.	Regulation on Soil Pollution Control and Point Source Polluted Areas	The operator	Analysis reports will be checked.	Annually	
Plantation	Nazif Zorlu Foundation and associations under the control of Zorlu Holding, Zorlu Dođal and the Zorlu family commit to plant 35,000 trees each year during the construction period and 90,000 trees per year during the operation period in project area.	WB ESMF	The operator	Monitoring Reports	Annually	Complied A protocol has been signed with İzmir Regional Directorate of Forestry on 15 August, 2017, regarding 35,000 sapling plantations in a 140 ha area in Bayındır Forestry Operations Directorate, Tire Forest Sub-district Directorate, Yeğenli neighborhood, Sarılar Eğridere locality. Sapling plantations in this area will commence, in line with the protocol.

Impact	Action	Requirement	Responsibility	Monitoring Criteria	Monitoring Frequency	Status
	<p>A protocol will be signed for the annual tree planting in January of each year in the content approved by the Ministry of Forestry and Water Affairs and the Banks. The content will include the commitment to carry out the maintenance of the trees to be planted for minimum 3 years and the place where the trees will be planted.</p> <p>Every December, a report including the confirmation of the Ministry of Forestry and Water Affairs concerning the annual planting of trees will be prepared and submitted to the Banks after approval by the Environmental Consultant.</p> <p>If related tree planting is made in an area outside the control of the General Directorate of Forestry, how to do the subject reporting will be determined jointly by Zorlu and Banks.</p>	WB ESMF	The operator	Monitoring Reports	Annually	<p>Complied</p> <p>A protocol has been signed with İzmir Regional Directorate of Forestry on 15 August, 2017, regarding 35,000 sapling plantations in a 140 ha area in Bayındır Forestry Operations Directorate, Tire Forest Sub-district Directorate, Yeğenli neighborhood, Sarılar Eğridere locality. Sapling plantations in this area will commence, in line with the protocol.</p> <p>The report on tree planting will be followed in the next monitoring period.</p>
Closing Phase						
Reclamation Plan	A reclamation plan will be drawn up covering the activities to be carried out during the closing phase of the project, including the environmental impacts of these activities.	EIA Commitment	The operator	The presence of the advertising plan will be checked.	Once before the plant activity termination	When the license period expires, the company will transfer all of its assets (power plant, wells, etc) and rights (license, easement, etc) to the state. If there exist any eased land, which is given back to its previous owners in license period, would be reinstated (the eased part) by the company.
Hydrothermal Blow-out	The wells will be closed in such a way that the hydrothermal spray will be prevented and the environmental safety will be satisfied.	EIA Commitment	The operator	Well shutdown data will be checked.	Before the wells are closed and every 6 months	-

5 Institutional Arrangement

In order to implement the placed mitigation measures to reduce and minimize the potential negative environmental impacts expected during both the construction and operation phases a number of implementation arrangements are to be taken including :

- Implementation of the ESMMP of the project.
- Regular environmental monitoring and documentation.
- Daily, weekly and monthly visits (depending on the monitoring frequency) to all sites and project facilities.
- Control of chemical materials -This includes inspection and control to all entered and exist materials from the plant.
- Proper supplement and use for PPE (Personal Protective Equipment) to workers combined with proper HSE induction courses.
- Placement of risk assessment and emergency plans.
- Visual and mechanical inspection on all machinery, tools, pumps and equipments at site.
- Coordination with local municipality and environmental agencies.

The successful implementation of this ESMMP depends on the commitment and capacity of various institutions and stakeholders to implement the ESMMP effectively. Thus, the arrangement as well as the roles and responsibilities of the institutions and persons that will be involved in the implementation, monitoring and review of the ESMMP are discussed below. The roles and responsibilities of the various institutions in the implementation of this ESMMP are outlined below.

Zorlu Enerji

- Management, implementation, monitoring and compliance of the Turkish legislative EIA obligations

Management, implementation, monitoring and compliance of the ESMMP, and any approval conditions, including construction supervision and performance of all Project staff, contractors and subcontractors

- Review of ESMMP performance and implementation of correction actions
- Emergency procedures in the event of breaches of ESMMP conditions that may lead to serious impacts on local communities or affect the reputation of the Project
- Ensure effective communication and dissemination of the content and requirements of the ESMMP to contractors and subcontractors
- Assisting the contractor with implementation of ESMMP sub-plans
- Monitoring of ESMMP performance
- Ensuring compliance to all Project social commitments, including implementation of the social management plans
- Delivery of the monitoring reports to TSKB as defined in the ESMMP
- Report environmental performance of the Project directly to Ministry of Environment and Urbanization
- Prepare environmental reports summarizing Project activities, as required, Representing the Project at community meetings

- Ensuring effective community liaison and fulfilling commitments to facilitate public consultation throughout the Project cycle
- Liaise with other relevant public authorities and NGOs for effective implementation of the ESMMP

Ministry of Environment and Urbanization

- Overall responsibility for environmental performance of projects
- Decision-maker on applicable policies to the projects
- Oversight supervisory role during the construction phase
- Overall responsibility for EIA implementation during the construction and operation phase
- Review reports of the Independent Environmental Monitoring Consultant
- Approves changes to the EIA, as necessary, as part of an adaptive approach to environmental and social management of the projects

Contractor & Subcontractor

- Preparation and implementation of the Construction Management Plan
- Prepare and maintain records and all required reporting data as stipulated by the ESMMP
- Ensure that all construction personnel and subcontractors are informed of the intent of the ESMMP and are made aware of the required measures for environmental and social compliance and performance
- During construction, maintain traffic safety along access roads, with special emphasis on high trafficked areas and implementation of Traffic Management Plan

TSKB

- Overall supervision and provision of technical support and guidance.
- Recommend additional measures for strengthening the management framework and implementation performance
- Sharing monitoring reports and associated documents with World Bank

Reporting

Reports shall be produced through the course of implementation of monitoring programs, collecting incident/grievances forms, consulting with local community and auditing performance of existing programmes/mitigation measures within the ESMMP. Table 6.1 describes the types of reports that shall be produced. Zorlu should provide information and documentation to TSKB by supplying a semi-annual monitoring report that includes the issues represented in ESMMP and accordingly PIU of TSKB should provide the World Bank with report updates.

Table 5-1 Type of Reports

Responsibility	Type of Report	Purpose /Details of Reporting	Frequency of Submission	Submit to:
Contractor	Accidents/Incident Report	Filing/notification of accidents or unplanned events	Within 24 hours of the incident	Internal
	Non-compliance Report	Detail the cause, nature and effect of any environmental and/or socio-economic non-compliant act performed	Within one week of the event	Internal
	Monthly Compliance Report	Report of compliance and noncompliance issues / measures	Monthly	Internal
Zorlu	Daily Compliance Checklist	Checklist of environmental and social compliance of construction	Daily	Internal
	Monthly Compliance Report	Monthly report of compliance within 10 days of receipt of report from Contractor	Monthly	Internal
	Stakeholder Engagement	Number of received grievances	Daily	Internal / Local Management
		Number of closed/handled grievances	Every three months	Internal / Central Management
	Social Impacts	Employment statistics	Annually	Internal / Central Management
		Number of procured equipment	Annually	Internal / Central Management
	Noise	Noise level	Every three months	Internal / Local Management
	Air Quality	Gas Ratio (Non Condensable Gasses)	Annually	Internal / Local Management
		Emissions	Every three months	Internal / Local Management

Water procurement/management	Amount and source of procured drinking water	Annually	Internal / Local Management
	Amount of utility water used during operation	Annually	Internal / Local Management
Wastewater Management	Amount of generated domestic wastewater and storage method	Every three months	Internal / Local Management
	Amount of disposed domestic wastewater and disposal method	Every three months	Internal / Local Management
	Wastewater disposal documents	Every three months	Internal / Local Management
Chemical Management	Chemical inventory	Every three months	Internal / Local Management
	Material safety data sheets	Every three months	Internal / Local Management
	Chemical storage (compliance with legislation, impermeability measures, labeling etc.)	Every three months	Internal / Local Management
Waste Management Plan	Complete the Waste Management Plan (based on hierarchy of waste)	Every 2 years	MoEU
Waste Declaration	Hazardous and nonhazardous waste amount	Annually	MoEU
Greenhouse Gas Report	Greenhouse gas reporting monitoring and verification	Annually	MoEU
ESMMP Monitoring Report	Report of compliance and noncompliance issues / measures specified in ESMMP	Semi-Annual	TSKB/Lenders

6 Consultations with Affected Groups & NGOs

6.1 EIA Public Participation Meetings

Public consultation has proven to be vital in project conception and implementation. It allows people own the projects and enhances project survival and trust between government and beneficiary community. For this project, critical stakeholders for the overall success of the project are engaged.

For each unit (Unit 1 and Unit 2) of the project a “Public Participation Meeting” was organized in a community center in Kizildere Village, within the scope of EIA preparation process. Approximately 40 stakeholders amongst the local community participated in the meetings together with participants from local authorities.

- Ministry of Environment and Urbanization
- Aydın Provincial Department of Environment and Urbanization
- State Hydraulic Works 21. Provincial Department
- Buharkent Municipality
- Buharkent Chamber of Agriculture
- Kizildere Village Headmen
- Çınar Consultancy.

The consultation meetings were held on 04/09/2014 for Unit-I and on 16.07.2016 for Unit-II. Participation lists can be found in Annex 9 in the end of the document.

The stakeholders were invited to the consultation meetings by means of invitation letters to administrative districts in the vicinity several days prior to the meetings and by posting advertisements at the local places. Invitations were announced in local and regional newspapers in advance. Zorlu Enerji and the EIA Consultant presented the Project and potential environmental and social impacts and mitigations to the participants. Selection of the project site and project context was explained in detail during the meeting.

In these two meetings, same considerations arose. Questions from community members comprised mainly of concerns on possible impacts of the project on agricultural production and on regional flora and fauna, the location of the energy production plant, the effluent discharge from drilling works and how the effluent will be managed and social responsibility projects in the project’s district.

One of the major comment is the grievance that the companies do not fulfill the EIA requirements. The public is afraid of the possible impacts of the geothermal fluid because they are not sure the reinjection activities are done properly. They also stated that they want to benefit from the geothermal fluids. The company representative responded to these comments assuring the reinjection and committing the continuation of domestic heating of Sarayköy Village, support of the touristic facilities and Buharkent. The company representative also informed the public that there are no scientific evidence of the harm of steam for the flora.

Another issue raised in the meeting was the total area of the project. The company mentioned that there would not be an additional land need for the power plant additional to Unit-I land (just 2 parcels acquisition finished after public participation meeting).

Ministry representative stated that concerns of the public are assessed regarding the regulations of the related ministries and gave information about the EIA process and mentioned that these concerns were taken into account.

It is understood that local community has negative impressions based on some other geothermal projects in the region, particularly about discharge of geothermal effluent directly on soil and into creeks due to poor EHS management practice. Zorlu Enerji is in close contact with the local communities to ensure that they are well informed about the operation of GPPs.

There is no demand or complaint regarding the land acquisition and compensation rates.

Up to date, as part of stakeholder engagement, the Company has addressed these issues in public meetings with stakeholder groups and through thematic meetings on geothermal energy with the local communities and local authorities as provided in the SEP. Zorlu Enerji together with other developers is looking at ways to both reach any claims further as well as to increase the level of education and information sharing.

In conclusion, for all the Kızildere Projects, Zorlu Enerji has already conducted four public consultation meetings where the last two were held on 04.09.2014 and 16.07.2016 for Kızildere III Unit I and Unit 2 respectively. Additionally, TSKB and WB representatives had a meeting with the village headman and some of the PAPs on 15.11.2017. As a result of above mentioned meetings, the main impression is that the local people have enough information about the geothermal projects and their rights. During the last meeting, they didn't raise any issues. In that respect, it is proposed that for the Kızildere III Project the second public consultation meeting can be omitted.

6.2 Ongoing Stakeholder Engagement Activities with Local Stakeholders

Zorlu Enerji has established an effective relationship and dialogue with local communities by means of organizing thematic meetings. A meeting on "Geothermal Energy" was organized in Sarayköy with the participation of local people from 10 villages in the region.. Another thematic meeting was organized on "Geothermal Energy and its Applications" for 30 staff of Provincial Directorate of Environment and Urbanization. The site social specialists typically conducted 2-3 times per week village visits and meetings as part of regular engagement activities. Additionally, once a month visits are conducted by the environmental and social specialist based in the Zorlu Enerji head office.

The financial magnitude of the CSR Programme conducted is about 2 Million Turkish Liras.

Other CSR activities can be listed as follows:

- **Scholarship Programme** for 70 successful student from Buharkent and Sarayköy districts and villages (further information is available at www.mzv.org);

- **Sponsorship to Local Festivals in Buharkent** for fig production and conservation of cultural traditions of camel wrestling;
- **Support to the Disadvantaged Children and Youth** in Buharkent, in cooperation with Pamukkale University and District Governorship, Municipality and Directorate of National Education. The programme is entitled “Dunk Shot for Life” and aims at adaptation of the disadvantaged (addicted, victims or doers of crimes, those with families in prison, extremely poor, etc.) to the society. (Further information is available at www.hayatasmac.com). The activity has reached out to 150 children and the young by now.
- **Energy for Kids Project** that has been conducted since 2010, supports 3rd and 4th grade primary school curriculum with awareness raising topics such as concepts of energy, energy resources, renewable and clean energy resources and energy conservations. Training of trainers is performed along with performing presentations and games for learning. Project activities also comprise organizing trips for all local stakeholders and their children to Zorlu Center in Istanbul for seeing theatre plays. (further information is available www.enerjimizcocuklaricin.com);
- **Support for the Vocational School in Buharkent**, by means of supplying electronic Office equipment for the academicians for the 2016-2017 education year, as well as the establishment of the Conference Hall and laboratories for alternative energy resources;
- Support to **Buharkent Directorate of Food, Agriculture and Livestock** for farmers training by means of supplying computers and printers (<http://www.buharkent.gov.tr/>);
- **Support to the Secondary School in Sarayköy** for establishing an “information Technologies classroom” (<http://saraykoygaziortaokulu.meb.k12.tr/>);
- **Support to District Commandership of Gendarme** for repairing its building;
- Establishing orchards of figs and olives for transplanting 1000 trees including fig and olive trees which were taken out from the wellpad zone of Kizildere III, by means of transferring and planting the trees on a 35-decare land allocated by the General Directorate of National Property. It is aimed that the plantation will be an income source for the Buharkent Municipality and the district economy.
- **Support for Sports** by means of 2-years sponsorship of Kutbettin Bulut, a national body-building athlete who is an important figure in helping and inspiring social adaptation of disadvantaged children and the young.

Annexure

1. Stakeholder Engagement Plan
2. Chance Find Procedures
3. Emergency Response Plan
4. Health, Safety and Security Plan & Community Health, Safety and Security Plan & Contractor Management Plan
5. HSE Risk Assessment
6. Traffic Management Plan
7. Biodiversity Assessment Update
8. Consultations and Public Participation - CPP

All the below documents has been supplied as a separate file.

Annex 1 → Stakeholder Engagement Plan

Annex 2 → Chance Find Procedure

Annex 3 → Emergency Response Plan

*Annex 4 → Health, Safety & Security Plan, Community Health, Safety & Security Plan
& Contractor Management Plan*

Annex 5 → HSE Risk Assessment

Annex 6 → Traffic Management Plan

Annex 7 → Biodiversity Assessment Update (AECOM)

Annex 8 Consultations and Public Participation - CPP



T.C.
AYDIN VALİLİĞİ
Çevre ve Şehircilik İl Müdürlüğü

ZORLU DOĞAL ELEKTRİK ÜRETİMİ A.Ş
“KIZILDERE-III JEOTERMAL ENERJİ SANTRALİ PROJESİ”
HALKIN KATILIMI TOPLANTISI TOPLANTI TUTANAĞI
04.09.2014

Toplantı Yeri : Kızıldere Mahallesi, Kızıldere köy kahvehanesi/
Buharkent

Toplantı Saati :14:30 Proje Sahibi : Zorlu Doğal Elektrik Üretim A.Ş

26	İsmail Ekin		
27	Mehmet Güler		
28	Mustafa Güler		
29	MUSTAFA GÜLER		
30	Behaet Tunç		
31	Metin KANATLI	DSİ 21. Bölge Müdürü	

Sıra No:	Adı ve Soyadı	Yaptığı İş - Görevi	İmzası
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ZORLU DOĞAL ELEKTRİK ÜRETİM A.Ş TARAFINDAN
Buharkent İlçesi Gökgedik Mevkii içerisinde yapılması planlanan
KIZILDERE-III Jeotermal Enerji Santrali Kapasite Artışı Projesi(100 MWe'den 180 MWe'ye)

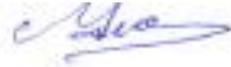
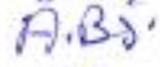
Halkın Katılımı Toplantısı Katılım Listesi

Toplantı Yeri: Kızıldere Köy Kahvehanesi
Toplantı Tarihi ve Saati: 19.07.2016 10:00

No	Adı Soyadı	Nereden Katıldı	İşi/Mesleği	İmzası
1	Himmət BAĞ	Aydın GSİM	Çevre Müh	
2	Orhan YILMAZ	Aydın GSİM	Çevre Müh	
3	Mustafa SENOL	Aydın GSİM	Bürobaşı	
4	Handan KESGİN	Gareve Sok. Bah. Lp1	Fiziker	
5	Ali Güler	Kızıldere Mahallesi	Çiftçi	
6	Muhsin Dilgin	Kızıldere	Çiftçi	
7	Ahmet Özcan	Kızıldere	Çiftçi	
8	Ahmed Yıldız	Kızıldere	Çiftçi	
9	Bekir Karapınar	Kızıldere	Çiftçi	
10	Ali Bilgin	Kızıldere	Çiftçi	A.B.S.
11	Mustafa Çoban	Kızıldere	Çiftçi	
12	Ahmet Baş	Kızıldere	Çiftçi	
13	Musa Çelik	Kızıldere	Çiftçi	
14	RECİP GÜMÜŞ	Kızıldere	Çiftçi	
15	Yılmaz Güzel	Kızıldere	REİBER	
16	Muhammed Güler	Kızıldere Mah.	Çiftçi	
17	Sait YILMAZ	Zahit Eriği	Çevre Müh	
18	Tamer SÖZÜK	"	Çevre Müh.	
19	Demirhan Özgür	Kızıldere	Çiftçi	
20	Ali Y. Hıncal	Novilli	Emekli	
21	Ahmet Ural	Ayçer yön. ev. Güçü	Yönetici	
22	VELİ GÜLMEK			
23	Alihan Öner	Buharkent	Zorlu Enerji	
24	Alihan Öner	Buharkent	Zorlu Enerji	
25	Mehmet Vergali	Ayçer Başkan	Zorlu Enerji	
26	Zeynep Güler	AYDIN YILMAZ	Çiftçi	
27	Ömer İYDAL	AYDIN YILMAZ	Çiftçi	

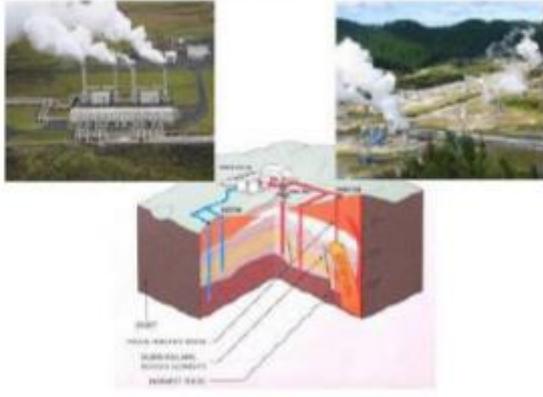
Bu belge 5070 sayılı elektronik imza kanununa göre güvenli elektronik imza ile tasdik edilmiştir.

Etiket sayıları: <http://evdsis.muh.gov.tr> adresinden Etiket Num.: 5214009-22681-E.6244 ve Etiket Num.: 7779367 bilgileriyle doğrulanabilir.

Abdül Yıldırcın	
Adem Özcan	
Selvi Karacıoğlu	
Durmuş Ayarçoğlu	
Ali Güher	
Dhiy. İdris Karacan	
Necip Bilgin	
Bekir Bilgin	
Ali Bilgin	
Mustafa Çoban	
Ömer Arık	
Velî Çatıncı	
Yaşar Tunç	
Maharrem Güher	
Hüseyin Bilgin	
Türkan Karadere	
Mehmet Top	

**KIZILDERE-III JEOTERMAL ENERJİ SANTRALI
KAPASİTE ARTIŞI (100 MWe'den 180 MWe'ye) PROJESİ**

HALKIN KATILIMI TOPLANTISI



AYDIN - 19 TEMMUZ 2016

ZORLU **CINAR**
MÜHÜRLEME VE İNŞAAT



