

Gürmat 2 Geothermal Power Plant, Turkey

Environmental and Social Impact Assessment

Non Technical Summary



| | | | | | |
|-----------|---|----------|-----------|---|----------|
| 1. | Introduction | 2 | | Consultation with the Community | 8 |
| 2. | Description of the Project | 2 | | Compliance with the EBRD E&S Policy | 8 |
| | General Principles of Geothermal Power Plants | 2 | 7. | Potential impacts and their mitigation | 9 |
| | Design of the G2 GPP | 3 | | Impact on surface water, ground water and soils | 9 |
| | Operational Management | 4 | | Emissions to the Air | 9 |
| | Construction Activities | 4 | | Landscape and Visual Impact | 10 |
| | Closure & Decommissioning | 5 | | Noise Impact | 10 |
| 3. | Current Status of the Project | 5 | | Cumulative impacts | 10 |
| 4. | Project Benefits | 5 | | Socio Economic Impact | 10 |
| 5. | Site Location | 5 | | Consultation and grievance mechanisms | 11 |
| 6. | Compliance | 8 | | Contact Information | 11 |

This report has been prepared by WS Atkins International Limited with all reasonable, skill, care and diligence within the terms of Contract with Gürmat Elektrik Üretim A.Ş (the Client) and is addressed to the Client and the EBRD. It takes into account the information made available by the Client, as well as the man power and resources devoted to it by agreement with the client.

This report is confidential to the client and their assigns and WS Atkins International Limited accepts no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known other than as allowed under this Contract

1. Introduction

Guris Holding is planning to build a new 123.3 MWe geothermal power plant near the city of Aydin, 110 km south west of Izmir. Guris Holding ("Guris") is a large, Turkish company with interests in the construction, energy generation, and industrial sectors (www.gurisholding.com). Guris is expanding its renewable energy portfolio rapidly.

The Gürmat 2 Geothermal Power Plant has been developed in line with Turkish legislation and an Environmental Impact Assessment (EIA) has been completed as part of the local compliance process. Another subsidiary of Guris Holding has been operating an existing Gürmat 47.4 MWe geothermal power plant ("Gürmat 1") to the north east of Germencik since 2009.

It is likely that the Gürmat 2 Geothermal Power Plant is to be supported financially by the European Bank of Reconstruction and Development ("EBRD") and the International Finance Corporation (IFC) (jointly referred to as "the Banks" or the "Lenders"). The involvement of such institutions means that both the developer and operator must demonstrate the application of internal standards and international best practice in addition to compliance with local legislation. This Non-Technical Summary (or NTS) provides a description of the Project, the expected environmental and social impact summary of the findings of the local EIA and the level of compliance with the EBRD Environmental and Social Policy (2008) and the IFC Performance Standards on Environmental and Social Sustainability (2012).

The purpose of the Non-Technical Summary (NTS) is to give information to everyone that may be interested in the Project. Within the NTS, consideration is given to both the construction and operation of the GPP, the geothermal boreholes, the power line connection to the national grid, transformer buildings and access roads. The publication of this NTS is in line with international best practice and goes beyond the requirements of Turkish Environmental Impact Assessment regulations.

2. Description of the Project

The Gürmat 2 Geothermal Power Plant ("G2 GPP" or the "Project") will consist of five power generating units as well as the associated boreholes, pipelines and transmission lines. The G2 GPP will not be connected to the existing Gürmat GPP but will occupy two new sites near Germencik close to the Aydin-Izmir Highway (D550).

The development of the G2 GPP will require the construction of:

- Main power plant (EFE 1) of 47.4 MWe (dual flash) and three flash binary plants (EFE 2, 3, and 4), each with a capacity of 25.3 MWe (123.3 MWe in total).
- Fifty four production and reinjection wells.
- Network of interconnecting pipework pumping the geothermal fluid from the wells to the power houses and back to the reinjection wells.
- Transformer station (within the boundary of the main power plant),
- 154 kV power line to connecting EFE 2 with the main power plant and then with the Germencik main transformer station (5.7 km).
- Access roads that connect the boreholes and power plants with public roads,
- Administrative offices and control rooms at the main power plant and the binary plant installations.

Within this NTS, the phrase "the Project" refers to the GPP and the auxiliary facilities listed above. Gürmat have plans to build a fifth unit (EFE 5), a 47.4 MWe double flash plant identical to EFE 1, but this might be delayed beyond 2016 and is not part of the project to be financed by the Lenders. The pipework connections for EFE 5 had not been established (at June 2014) and it is possible that the network may extend northwards to allow reinjection close to the G1 GPP.

Guris have been licensed to use the geothermal energy within the concession area for 49 years and the power plant has therefore been designed with an operational life of 49 years.

General Principles of Geothermal Power Plants

The simplest design of geothermal power plants passes pressurised high-temperature brine drawn from deep underground into "flash tanks" at the surface where the sudden decrease in pressure causes the liquid water in the geothermal fluid to "flash" or vaporise into steam. The steam is then used to power the turbine-generator set.

Modern geothermal power plants are very sophisticated and Gürmat have based the design the G2 GPP on a combination of flash binary cycle and double flash power plants. Rather than directly driving the turbine, a binary plant uses the geothermal fluid to heat a second, working fluid to power the turbine set. The energy stored in the geothermal fluid is transferred to the working fluid through a heat exchanger.

Because working fluid is within a closed loop, the corrosive geothermal fluid does not come into contact with the turbine itself. When the working fluid vaporises in the heat exchanger and steam is produced. After the steam from the working fluid passes through the turbine, it is condensed and piped back to the heat exchanger. The working fluid has a much lower boiling point than water and forms vapour at lower working temperatures. This means that the GPP can work efficiently with medium to high temperature geothermal fluid.

It is important to realise that the geothermal fluid is located several kilometres beneath the surface and has no connection with drinking water supplies. The water at the depth is so salty that it is not fit to drink. The fluid is often called “brine” because of this.

All of the power plants to be used by Gürmat will include a ‘flash’ stage and there will be release of carbon dioxide from the plants. These units can be described as combined cycle units as they use both flash and binary energy conversion equipment. The flash binary plant has air cooled condensers rather than the open evaporative cooling towers used on the double flash units. The flash binary plant exhausts the non-condensable gas (NCG, mainly carbon dioxide) and a small volume of steam as the steam/ gas mixture passes through the vaporizer. In the case of double flash units, the majority of the carbon dioxide is released from the first flash stage and is lost to the atmosphere through the open evaporative cooling towers (as at G1 GPP).

Design of the G2 GPP

The Aydın district is one of the best geothermal energy resources in Turkey with the Germencik-Ömerbeyli geothermal field, having the highest temperature (239°C) in Turkey. Studies have shown that the concession area leased by Guris has an energy potential of 250 MWe and the license application for 162.3 MWe is well within the capacity of the reservoir.

Geothermal fluid from the Germencik-Omerbeyli geothermal field is abstracted from formations of Paleozoic Menderes metamorphic rocks at a depth of 500m to 3,000m.

The G2 GPP will comprise one double flash vapour powerhouse with 47.4 MW installed power and three flash binary cycle powerhouses each with 25.3 MW. The maximum geothermal fluid flow will be 8,000 to 10,000 tons/hr. The G2 GPP will have a capacity three times greater than the existing Gürmat GPP but rather than a single power unit in one location, the G2 GPP will have four power plant buildings in two locations. The Gürmat GPP recovers geothermal fluid from 8 wells (varying in depth from 965 to 2,432m) at a rate of c. 2,500t/h with a temperature of 228°C. There are also 8

reinjection hot wells and a ninth, cold well for the overflow from the cooling tower. The G2 GPP will have 54 wells.



Figure 1–The existing Gürmat GPP

The main power house (accessed from the D550) will contain the 47.4 MW double flash unit and two flashbinary cycle unit of 25.3 MW. This facility will be about three times the size of the existing Gürmat GPP. The remaining flash binary plant will be at a separate location and will be half the size of the existing Gürmat GPP.

The six basic steps of electricity production and distribution from the GPP are:

- Ground water from geothermal reservoir (“geothermal fluid”) is pumped from the ground via the production wells and is transferred by above-ground pipeline to the power generation plant;
- In flash power plant, pressurised high-temperature brine drawn from deep underground into “flash tanks” at the surface where the sudden decrease in pressure causes the liquid water in the geothermal fluid to “flash” or vaporise into steam. The steam is then used to power the turbine-generator set.
- At the binary power plant, heat energy from the geothermal fluid is transferred using a heat exchanger to a secondary fluid (the “motive” or “binary” fluid) which

vaporises. This vapour drives the blades of the steam turbine which is connected to a rotating generator which converts the energy to electricity;

- For those power units that have a “flash” component, NCG is released to the atmosphere;
- The geothermal fluid is pumped back into the geothermal reservoir through the reinjection wells. The geothermal fluid is abstracted at temperatures of about 200-210°C and returned at about 105°C;
- A transformer at the power plant increases the electricity voltage for transmission to the substation by over-ground cables;
- The substation increases voltage for transmission over long distances;
- The electricity is transferred to the grid and distributed.

The operational control of the GPP will be through a fully automated system, managed from a control centre. Maintenance will be undertaken, in line with manufacturer's recommendations and requirements identified by the company's technical staff.

Guris have selected a Mitsubishi steam Turbine (MHI) for dual flash system and an ORMAT® Energy Converter (OEC) unit for the G2 GPP.

The first stage of the main powerhouse system will be the flash separation of the geothermal fluid to high pressure vapour and liquid phases. After the high pressure steam has been flashed from the brine, the residual brine will be taken to a low pressure flash tank to remove additional energy in the form of low pressure steam for the turbine. Vapour from the separator will power the steam turbine; the generator will be connected directly to the turbine. The liquid from the low pressure separator will be pumped back to the reservoir via the reinjection wells.

The exhaust vapour from the turbine will pass through the vapour condenser cooled by water from the cooling tower. Non-condensable gas will be removed from the turbine by means of jet vapour absorbers and the remaining vapour will be condensed in the first stage intercondenser. The non-condensed gases remaining in the last condenser will pass to the cooling tower and released to atmosphere.

In the binary cycle, brine will flash to high pressure vapour and liquid phases. Both steam and brine will pass through a vaporizer which is a heat exchanger. Heat energy from the separated “brine” and “steam” is transferred to a secondary fluid (the “motive” or “binary” fluid) which vaporises. This vapour drives the blades of the steam turbine which is connected to a rotating generator which converts the energy to electricity;

The secondary used in the thermal cycle is N-Pentane, selected for optimal utilization of available heat source. N-Pentane has a closed loop and has no direct contact to atmosphere.

The liquid from the low pressure separator will be pumped back to the reservoir via the reinjection wells. It is intended that geothermal fluid is abstracted from the eastern wells and re-injected into the western part of the geothermal field in Gürmat 1 GPP.

Operational Management

The G2 GPP will be operated by a subsidiary company of Guris Holding. The Project will be staffed by people with previous experience in GPP development projects (particularly from Gürmat GPP) and will operate in accordance with national regulation.

Guris Holding operates an extensive renewables portfolio in Europe and maintains very high standards in environmental management and safety.

G2 GPP will develop a health, safety and environmental management system to manage the development and operation of the project. All of the contractors and sub-contractors working on the Project will be required to work in compliance with this system.

Construction Activities

Drilling of the GPP wells has already started and the work is being undertaken by a specialist contractor. There are 54 wells to be drilled and each well takes 4 to 6 weeks to complete. Completion of all the wells is expected to take almost two years. Each drilling facility is self contained with the construction workers living in on-site accommodation.

The main power house equipment and ancillary plant will be manufactured off-site and delivered to site on large road vehicles. Construction activities will include:

- preparation of each site area for development;
- foundation piling / excavations and construction of the concrete foundations;
- erection of building frame and cladding;
- installation of power plant and turbines;
- installation of related equipment;

- services connections;
- building fitting-out; and
- commissioning.

There will be a construction lay-down area for the storage and assembly of plant components. Construction workers will live on site and welfare facilities will be provided for day-time use.

The G2 GPP will also require a large network of above ground pipes to transport the geothermal fluid to and from the power houses. The routing of these pipelines is not yet confirmed, but the alignment of pipes may affect the ease of access to their land.

The main transport activities will be carried out during the construction stage of the power plant and will include the transport of the engineering components to site, ancillary plant, temporary buildings and aggregate and materials for the concrete foundations, as well as fill material for roads and construction pads.

Local residents will be given prior notice of when the plant, components and materials will be transported to the site. Disruption will be minimised by careful route planning from the main roads through local, minor roads to the site access point.

Closure & Decommissioning

The planned operational life of the G2 GPP is 49 years. Towards the end of the operational life of the GPP a decision will be made as to whether the GPP can continue operation, or to decommission the GPP and close the site altogether.

The operator will produce a decommissioning plan that will be approved by the local authorities before decommissioning commences. The decommissioning stage may take an estimated 1.5 – 2 years and will involve the dismantling and removal of the constituent parts of the GPP and rehabilitation in the affected areas.

3. Current Status of the Project

The construction works of G2 GPP are expected to take approximately 46 months. Of this, drilling the necessary boreholes is expected to take 18 to 20 months. The drilling of wells started in the spring of 2013.

The Company has undertaken preliminary studies and has completed an Environmental Impact Assessment (EIA) for the project in accordance to Turkish regulations.

4. Project Benefits

The geothermal basin found in Aydın Province is the largest geothermal resource in Turkey and is therefore of national importance in reducing reliance on fossil fuels.

Whilst the development of the G2 GPP is a commercial venture the development is in line with the national desire to increase electricity generation from non fossil fuel sources.

The benefits from the GPP are intended to be:

- Sustainable electricity generation from a renewable resource;
- provision of local construction and maintenance jobs;
- provision of revenues to local government authorities;
- improved energy security.

5. Site Location

The GPP is situated within the Germencik area which is one of the best geothermal resources in Turkey. The area is subject to much earthquake activity with numerous earthquakes at 3-5 on the Richter Scale. This activity maintains the heat resource and promotes the permeability of the reservoir.

The area of G2 Geothermal Power Plant Project is located inside the boundaries of Aydın Muğla Denizli Planning Region, Environmental Plan that was assented by the Ministry of Environment and Urban Planning. The area of the project is shown as agricultural land in the Environmental Plan.

Each of the powerhouses is being constructed on agricultural land. The general area is characterised by fruit trees, olives groves and horticultural fields.

The concession area does not contain any protected areas, i.e. National Park, Natural Park, Natural Monument, Natural Protection Area, Wildlife Protection Area, Biogenetic Reserve Area, Biosphere Reserves, Natural Protection and Natural Protected and

Remembrance, Cultural and Historical Sites, Special Environment Protection Area, Touristic Spots and Centre.

Gürmat 2 GPP is being constructed within an already established concession area of 28.3 km² (see Figure 2). Most of the concession area (approx. 75%) is on the territory of Germencik district, while the rest territorially belongs to Incirliova district. Within this concession area is also the already operational Gürmat 1. The green line in Figure 2 shows the boundary of the concession area while the red line shows the boundary of the Gürmat 1 generation licence.



Figure 2–The Gürmat concession area showing the location of the G2 GPP

Gürmat 2 will occupy two locations, with the main plant being accessed directly from the Aydın-İzmir Highway (D550), (see Figure3). The main plant will include units EFE 1, 3 and 4 (shown in red on Figure 3). EFE 2 is located on its own, about 3km to the south west of the main plant (shown in blue on Figure 3). The Gürmat 2 pipework network is expected to be largely to the east of Germencik town and to the south of the D550. The overhead power line for EFE 2 will connect to the GPP switchyard at the main plant and then a 154 kV power

line will connect the GPP substation to the Germencik main transformer station. The locations of existing and planned production and reinjection wells are provided in Figure 4.



Figure 3–The locations of the proposed G2 GPP power plants

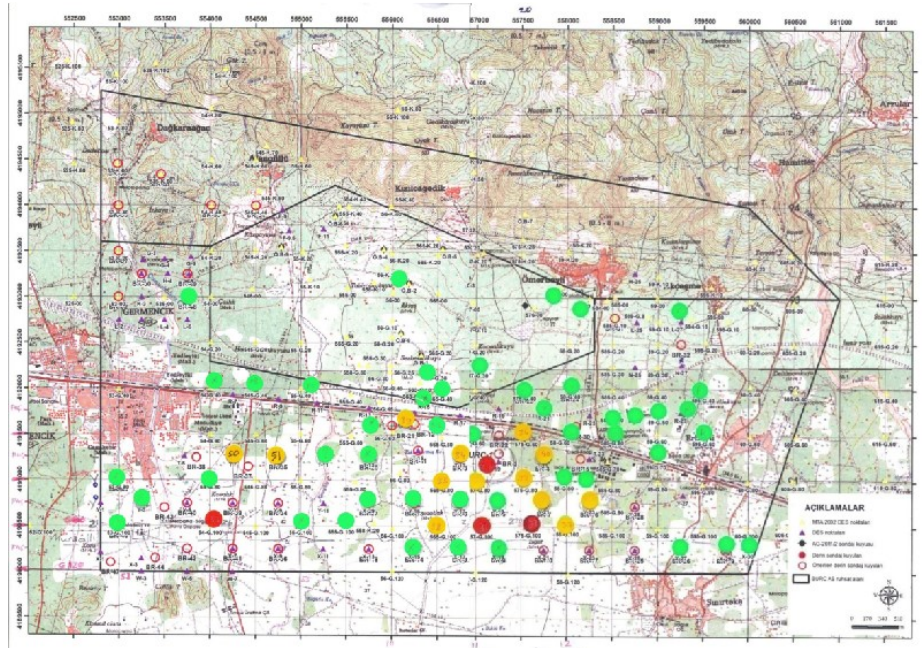


Figure 4–Locations of the G2 GPP boreholes

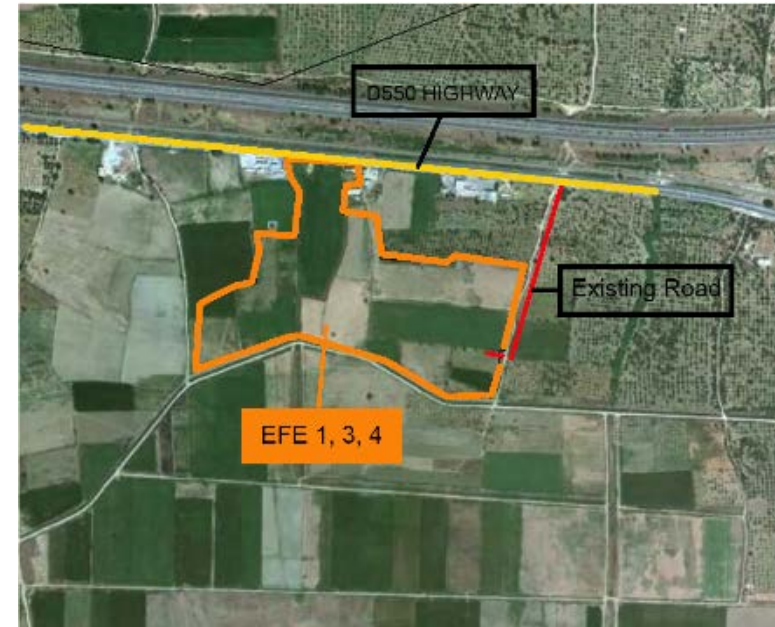


Figure 5–The location of the main power plant, Units 1, 3 and 4

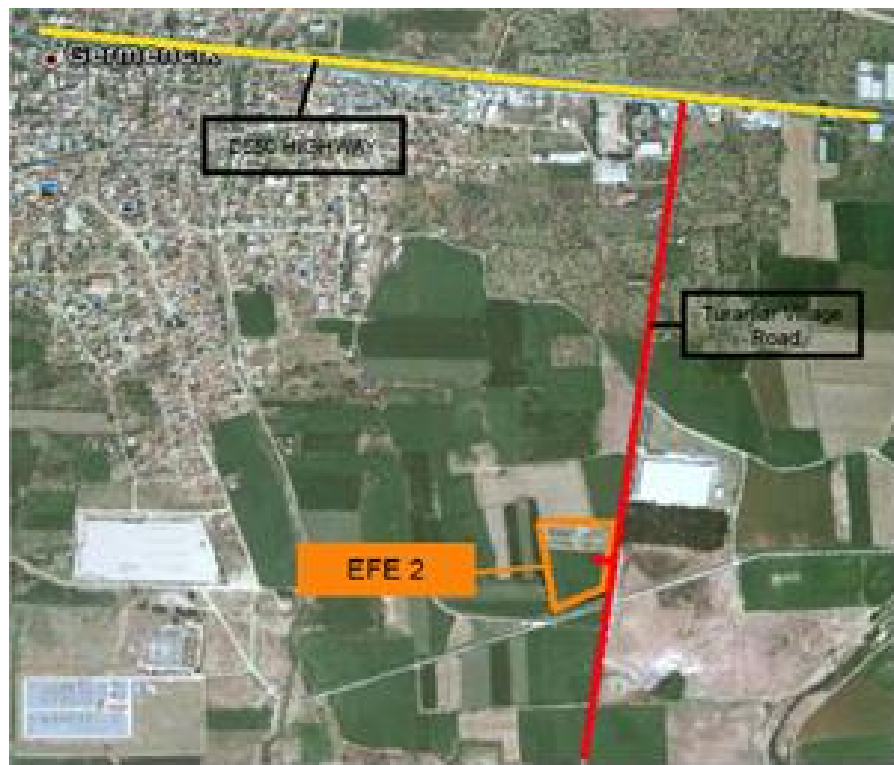


Figure 6–The location of Unit 2

6. Compliance

Environmental Impact Assessment (EIA) is the process for evaluating potential environmental effects of planned activities and related planning, consultation and decision-making processes.

A formal EIA for the project was undertaken in 2012 (as required by Turkish regulations) by an independent Turkish consultant. A single EIA was undertaken for the all of the GPP powerhouses, the pipe network, the high voltage power line connections and the associated infrastructure.

Guris have progressed with the gaining of the necessary operating permits for the G2 GPP. The key permits obtained to date are:

- Operation licence of the Geothermal Field was granted on 28th November 2011.
- License application to Energy Market Regulatory Authority (EPDK) was submitted on 20th January 2012 for 162.5 MWe.
- EIA report submission in summer 2012.
- EPDK has approved the application of EFE Geothermal Power Plant as 162.3 MW as of 13th December 2012.
- EIA Positive Certificate was granted on 29th November 2012.

Consultation with the Community

During the EIA process, a public participation meeting was conducted on 19th March 2012 during which the majority of the local and national governmental offices were represented. The meeting was also attended by local groups (local businesses, farmers etc.).

Consultation with the community will continue throughout the construction process. The Company would welcome any comments made by local residents. Information is provided at the end of this NTS on how to contact the Company.

Compliance with the EBRD E&S Policy

The development of the project is in broad compliance with the EBRD Environmental and Social Policy and the Performance Requirements described within it as well as the IFC Performance Standards which are near identical in content to the Performance Requirements. The EBRD due diligence audit identified a number of environmental concerns and these are discussed in Section 8 of this NTS. Action points to address these issues are summarised in the Environmental and Social Action Plan (ESAP) agreed between the Lenders and the Guris management team.

During the Lenders due diligence of the Project the design, operation and management of the GPP was assessed against international good practice standards. The development of appropriate management systems will ensure that the GPP is operated to a high standard throughout the project lifecycle.

7. Potential impacts and their mitigation

Impact on surface water, ground water and soils

Construction phase

There was a risk of ground/ ground water pollution at the drilling sites for the new G2 GPP boreholes at the time of the audit. The main issues were:

- The practice of discharging drilling mud and some groundwater to an open drainage pit next to the drilling rig.
- Poor storage of hazardous materials; the storage area was poorly organised and secondary containment was provided only to the bulk fuel/ oil tanks.
- Discharge of raw sewage from the on-site accommodation to an open pit.

All three issues were subsequently addressed by the company, e.g. drilling mud pits were lined with impermeable liners, hazardous materials storage was improved and sewage is now being collected and disposed of properly. Contaminated drilling wastes will be disposed to appropriately licensed landfill.

H&S management at the drill sites required reinforcing. Procedures were found to be in place (e.g. evacuation following a H₂S leak) but further practical measures were required by Lenders.

There is a potential risk that noise from the new facility may impact on local residents.

Operational phase

The geothermal fluid is rich in dissolved minerals and some of these are potentially harmful to plants (boron) and humans (arsenic), and it is important the design of the boreholes includes a barrier to prevent these fluids from entering the surface layers. The well casing is the first barrier against pollution and particular care is taken to install and cement multiple casings at shallow depths to provide extra barriers. The casing design was confirmed to follow standard practice. The borehole design includes a double casing beyond depths of actual/ potential freshwater resources at shallow depths.

The risk of an accidental release of geothermal fluid during plant operation is very low as the geothermal fluids, and the binary fluid, are held in separate, sealed systems. Each power plant will be provided with a reserve pit that can hold excess geothermal fluid, in accidental circumstances, where the return into the reservoir is temporarily stopped. This would be a short-term measure, allowing the plant, including pumps to be

shut down for problem rectification, without geothermal fluids being vented into the environment. To date, the reserve pit at the existing GPP has never been needed.

Whilst there are water abstractions from alluvial aquifers across the Büyük Menderes River Basin there are no potable alluvial deposits across the power plant area. This means that any loss of fluids is highly unlikely to contaminate potable water supplies.

Proposed mitigation

- Waste generated in construction and operation will be segregated and disposed of according to local waste regulations.
- All chemicals, fuels and oils will be stored in accordance with international practice (bund and impervious flooring).
- Construction vehicles and equipment will be maintained and refuelled at protected refuelling stations.
- At the end of drilling operations, and perhaps at intermediate times during drilling, the fluids and solids in the reserve pit will be carefully discarded by transfer to a properly certified landfill.

Emissions to the Air

As the GPP does not involve the combustion of fossil fuels there are no gaseous emissions from the plant itself. However, geothermal fluids contain non-condensable gases whose amounts rise with the temperature. The great majority of the non-condensable gases (98%) is carbon dioxide (CO₂). These non-condensable gases are transferred to the recirculating cooling water system within the power plant condensers and this leads to the release of significant quantities of carbon dioxide (CO₂) via the cooling towers.

The G2 GPP that will be the subject of the Banks investment (i.e. EFE 1 to 4 only) the GHG emissions will be around 0.8 to 0.9 kg CO₂/kWh. The CO₂ grid emission factor in Turkey is 0.605 kg CO₂/kWh.

The emissions to air will also contain trace levels of hydrogen sulphide (H₂S - also a non-condensable gas). Whilst the H₂S levels within the emissions to air are sufficiently low to avoid the requirement for regulatory control, the H₂S has a bad smell; similar to rotten eggs. This could present a potential nuisance to local residents. This could present a potential nuisance to local residents (though to date, no complaints have been recorded as a result of the operation of the Gürmat 1 plant).

Landscape and Visual Impact

Particular note is made regarding the extent of the network of pipes that will transport the geothermal fluid. The concession area is large (28km²) and, although centred on each of the powerhouses, the pipe network will be large. The current pipework system is clad with a highly reflective metal which means that the pipes are very visible within the landscape.

The steam plume from the cooling towers located at each power plant will be visible at some distance from the plants.

Noise Impact

There are numerous sources of noise at the power plant but the majority of noise generating equipment will be enclosed to prevent the transmission of noise to neighbours. Where plant cannot be enclosed then noise barriers will be installed.

It is not possible to enclose the cooling towers as this will stop them from working properly. Under some weather conditions at night time it may be possible for neighbours to hear the plant operating. However, the noise levels generated by the plant are well within Turkish limits and should not become a nuisance. The Gürmat GPP has not received any complaints of noise nuisance.

Cumulative impacts

The geothermal basin found in Aydın Province is the largest geothermal resource in Turkey and as a consequence the district is home for a number of geothermal power companies. The geothermal reservoir is large and the heat extraction limits for each plant are set at a level where the reinjected geothermal fluid is re-heated within the ground before being “used again”. In this way, the hot water can be considered to be “cultivated” beneath the ground rather than “mined”.

Socio Economic Impact

The prevailing economic activity within the area planned for the G2 GPP is agriculture. Agricultural land has already been purchased (or leases are being discussed) by Guris Holdings and the land beneath the footprint of the power houses and wells will be lost to agriculture. Guris intends to negotiate the purchase of additional land within the concession area.

There will be a potential opportunity for temporary or permanent employment for people living in the area during the construction and for the operation of the GPP. The company will try to employ people from local communities wherever possible. The company will also try to procure construction materials locally wherever possible.

In accordance with labour legislation in Turkey, the contractors will ensure safe labour conditions for their employees.

Project Monitoring

There will be several monitoring activities required during both the construction and operation stages of the Project. These will include:

- Noise monitoring.
- Environmental management monitoring (monitoring the effectiveness and use of the proposed mitigation measures).
- Grievance mechanism monitoring.
- Gathering the opinion of local inhabitants.
- Safety monitoring for the local community and construction personnel.

The Project will review the findings of the monitoring programmes at regular intervals. If the mitigation measures are insufficient, improvements will be identified and implemented. These may include additional mitigation, or if this is not possible, reducing the impact at source.

Consultation and grievance mechanisms

Key Project stakeholders have been identified as:

- Local Governmental Organisations (e.g. Aydin Municipality, Germencik Municipality, District Governorship of Germencik, Governorship of Aydin, Germencik District Directorate of Agriculture);
- National Governmental Organisations (e.g. Ministry of Forestry and Water Affairs, Ministry of Energy and Natural Resources, Ministry of Environment and Urbanisation);
- Non-Governmental Organisations (e.g. Aydin Chamber of Industry and Commerce,);
- Local communities / residents (e.g. Germencik District, Hidirbeyli Town, Sinirteke Village, Erbeyli Village, Reiskoy Village, Turanlar Village);
- Local businesses (e.g. Elmas Food, Taris Figs Agricultural Sales Coop. Union); and
- Gürmat employees.

To ensure transparency and availability of information regarding the Project, Guris Holdings will implement the following actions:

- Prepare website information concerning construction activities and programme. Any possible inconveniences will be included.
- A newsletter will be prepared and distributed in the local authority offices. The newsletter will include important information about the Project, any possible inconveniences to residents and traffic during construction. It will also provide contact information for Guris Holdings as well as a summary of the Grievance Mechanism.
- Attendance at key community events.
- Community and staff notice boards updated with Project developments and possible disturbance or inconveniences to local population.
- Project office and visitor information points set up for people to address grievances as well as to gain important insight into the Project as a whole.

In order to improve safety issues, signage and safety awareness programs will be implemented around the Project area and access roads to ensure security of workers and surrounding communities

Contact Information

Information about the Grievance Mechanism and other project related information will be available on a dedicated page of the Guris website (www.mogan.com.tr) that will include a link to the grievance redress form. Such information will also be publicised to affected communities through contextually appropriate avenues including the distribution of leaflets, on information boards within the community.

Further information on the Project, as well as copies of environmental impact assessments can be found by contacting Guris Holdings. Please refer to our HELP DESK by phone, letter, fax or e-mail.

Gürmat Head Office

Karaoglanmah. KaraoglanKumeevleri No: 739 Golbasi 06830 Ankara Turkey

Telephone number: +90 (312) 484 05 70

Fax: +90 (312) 484 45 70

Gürmat Omerbeyli Field

Omerbeyli KoyuMevkii, Germencik, Aydin, Turkey

Telephone number: +90 (256) 563 33 25

Fax: +90 (256) 563 35 11

E-mail: info@gurmat.com.tr

Web-site: www.gurmat.com.tr

Our HELP DESK is open for all your queries and comments. Our procedures grant that all matters will be analysed and proper answers returned. We will redirect your query to the appropriate and proper body if the matter is out of our competence.

| | |
|---------------------|------------------------------------|
| Client: | Gürmat Elektrik Üretim A.Ş |
| Project: | EFE Geothermal Power Plant, Turkey |
| Title: | Non Technical Summary |
| Job No: | 5122671 |
| Document Reference: | EFE Guris GPP NTS Rev 7 |

| JOB NUMBER: 5122671 | | | DOCUMENT REF: EFE Guris GPP NTS Rev 7 | | | |
|---------------------|---------------------------|------------|---------------------------------------|----------|------------|----------------|
| 7 | Issue | AGI | JP/ RA | AGI | AGI | September 2014 |
| 6 | Issue | AGI | JP/ RA | AGI | AGI | September 2014 |
| 5 | Issue | AGI | JP/ RA | AGI | AGI | September 2014 |
| 4 | Issue | AGI | JP/ RA | AGI | AGI | September 2014 |
| 3 | Draft for internal review | AGI | JBD | AGI | AGI | August 2014 |
| 2 | Draft for internal review | AGI | JBD | AGI | AGI | August 2014 |
| 1 | Draft for internal review | AGI | JBD | AGI | AGI | August 2013 |
| 0 | Draft for internal review | AGI | JBD | AGI | AGI | July 2014 |
| Revision | Purpose / Description | Originated | Checked | Reviewed | Authorised | Date |
| | | | | | | |

Atkins Water & Environment
Woodcote Grove
Ashley Road
Epsom
Surrey KT18 5BW

Telephone number: +44 (0) 1372 726140

Fax number: +44 (0) 1372 740055

Email: info@atkinsglobal.com

Web address: www.atkinsglobal.com/environment

© ATKINS Ltd except where stated otherwise. The ATKINS logo, the "open A" device and the strapline "Plan Design Enable" are trademarks of ATKINS Ltd.

