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5. Project Description

5.1 Introduction

This chapter provides an overview of the principal components of the Öksüt Gold Project ("the Project").

The broad concept for the Project is the surface mining of the gold-bearing Develidağ volcanic ore and the processing of this ore to produce gold doré bars for sale and shipment to smelters for final refining.

The Project will be a conventional open pit, truck and shovel operation undertaken by a third-party mining contractor, with an eight-year mine life. OMAS will supervise mining operations, grade control, survey control, mine planning, and other required technical services.

This chapter provides an overview of the principal components of the Project throughout all phases of the mine life:

- **Pre-construction Phase** (2015 – Q3 2016): all activities necessary to apply for the Mining Operation Permit (MOP), including, detailed engineering studies, approval of the Turkish EIA and disclosure of this international ESIA.
- **Construction Phase** (Q2/Q3 2016– Q3 2017): all activities related to acquisition of land, personnel, and plant and equipment, and the concurrent stages of site preparation, development and construction of related infrastructure, leading to commissioning of the ore processing plant. Construction will be undertaken by contractors under the supervision of OMAS.

  The construction phase is due to commence in June 2016, primarily with site preparation for the heap leach and mining activities; construction of the access road, water supply pipeline and powerline; and mining of preproduction waste rock.
- **Operations Phase** (Q3 2017 – 2024[1]): all site activities undertaken to mine and produce gold doré, including completion of planned mining activities and final processing of available prepared ore feed, at which point operational activity will be deemed to be complete.
- **Closure and Rehabilitation Phase** (2023-2028): activities in accordance with a programme agreed with regulatory authorities for dismantling and disposal of all site equipment and plant and rehabilitation of all areas of site activity to a safe managed state[2].

  Activities of site management and monitoring will continue until a state of safe and stable conditions is achieved and agreed with the relevant regulatory authorities.

5.2 Project Rationale

Turkey has been the largest producer of gold within Europe for the last decade, producing over 17 tonnes of gold in the last 10 years. The Öksüt Gold Project has identified a new gold deposit with mineral reserves of approximately 1.38 million ounces. The purpose of the mine development is to utilise the probable mineral reserve to create value and opportunity for the people of Kayseri Province and Turkey, and for the shareholders of OMAS.

OMAS envisages an initial capital investment of US$221 million for the Öksüt Project. The magnitude of the Project's economic impact, its job creation and business development capacity, can be measured on both a provincial and national scale. The project is expected to create 405 jobs during construction (55 OMAS employees and approximately 350 contractors) and 456 jobs during operation

[1] Placing of ore on the heap leach ends in 2023, with residual gold production in 2024.
[2] OMAS will implement a programme of progressive reclamation prior to closure if appropriate.

(156 OMAS employees and approximately 300 contractors)[3], with an expectation of between 1,140[4]-2,098[5] induced jobs during the operational phase of the Project.

Economic benefits identified as a result of the Project include:

- demand for local labour during construction and operation;
- employment of local residents contributing directly and indirectly to reducing the high unemployment rate within the local young workforce;
- new opportunities for contractors and suppliers;
- increase in government revenues through income, consumption, and taxes payable by the mine and its employees.

5.2.1 Total Projected Cashflows

The Project Feasibility Study includes an estimate of cash flow for the Project has been made using a price of gold of $1,250 per ounce. Key elements of this include:

- Total free cashflows: $436M at gold price of $1,250 per ounce;
- Total tax payments: $46M[6];
- Total State royalty payments: $18M;
- Total payments to employees:$80M;
- Total payments to contractor: $210M[7].

While the overall size of the Project is relatively small by international standards, the Project is financially robust.

5.2.2 Income Tax and Royalty Payments

The income tax regime for a gold mining project in Turkey is attractive by international standards, but requires a complex calculation that takes into account the regional location of the Project and associated tax benefits.

Gold production from the Project is also subject to three royalties. The royalties are as follows:

- A Turkish Government State Royalty that is based on a percentage of gross revenue. The percentage is determined on a sliding scale that is linked to the market price of gold. The opportunity exists to reduce the determined royalty by 50% if the ore is further processed to doré in Turkey which the Project is designed to do.
- A 1% Net Smelter Return Royalty (NSR) payable to Stratex Gold AG (a 100% owned subsidiary of Stratex International PLC) payable up to $20 million dollars.

[3] The Turkish EIA reported that 500 people will be employed during construction and 300 during operation. For the purposes of this ESIA, the projected number of OMAS employees for operation has been updated based on the new Resource Model, which has been updated since the 43-101 Report was published in September 2015.
[4] The International Council for Mining and Metals (ICMM) Toolkit (2008) states that induced employment is typically in the range of 165-250% of the sum of direct and indirect employment. This indicates that 752-1,140 induced jobs will be created by the Project supply chain. The higher multiplier of 2.5 has been assumed for this Project as OMAS is committed to using local content where possible.
[5] Using a multiplier of 4.6 for gold mining that was used in the Turkish EIA suggests 1,380 indirect/induced jobs will be created (Alkın, Erdoğan (1992), Gelir ve Büyüme Teorisi, İstanbul) during operation with a workforce of 300, which was the estimated number of employees at the time of writing the Turkish EIA. Using the Alkın multiplier, a workforce of 456 indicates that 2,098 indirect and induced jobs will be created by the Project.
[6] this assumes a strategic designated Investment Incentive Certificate.
[7] includes the mining contractor.

- A sliding scale NSR Royalty payable to Teck Resources Limited. The royalty rate is based on the cumulative ounces produced over the life of mine. Centerra has estimated this royalty to be 0.6% of total gold revenues.

The total effective royalty rate used for the economic analysis, at an assumed gold price of $1,250/oz, is 3.6%.

5.3 Project History

In August 2009, Centerra, through its now wholly-owned Turkish subsidiary, Öksüt Madencilik Sanayi ve Ticaret A.Ş. (OMAS), formed a joint venture with Stratex International plc (Stratex) on the Öksüt Project. In October 2012, Centerra increased its interest in the joint venture to 70%. In January 2013, Centerra purchased Stratex's remaining 30% interest. Centerra now has full ownership of the Project through its Turkish subsidiary, OMAS.

The Öksüt Project was first discovered in 2007 when geological staff of Stratex identified gold mineralisation in reconnaissance rock chip sampling from outcrops located on what is now referred to as the Güneytepe deposit area. In 2008, Stratex began a drilling campaign which was continued through the joint venture and resulted in the first Centerra publication of a mineral resource estimate on the Project in February 2013.

There are several gold occurrences in the Öksüt Project area. The most important are the Keltepe deposit and the smaller Güneytepe deposit.

5.4 Reserves and Resources

Öksüt Mineral Reserves are summarised in Table 5-1 at a 0.30 g/t cut-off grade for the Keltepe and Güneytepe deposits[8].

Table 5-1: Summary of Öksüt Reserves by classification using a cut-off grade of 0.30 g/t[9]

	Keltepe			Güneytepe			Combined		
Class	**Tonne (Mt)**	**Grade (g/t)**	**Contained Gold (koz)**	**Tonne (Mt)**	**Grade (g/t)**	**Contained Gold (koz)**	**Tonne (Mt)**	**Grade (g/t)**	**Contained Gold (koz)**
Proven	-	-	-	-	-	-	**-**	**-**	**-**
Probable	22.8	1.4	1,036	3.3	1.2	125	**26.1**	**1.4**	**1,162**
Total	22.8	1.4	1,036	3.3	1.2	125	**26.1**	**1.4**	**1,162**

The estimated Öksüt Project indicated probable mineral reserves from the Keltepe Deposit stand at 22.8 million tonnes grading 1.4 grams per tonne of gold, containing 1.036 million ounces of gold. Probable mineral reserves located at the smaller Güneytepe deposit stand at 3.3 million tonne grading 1.2 grams per tonne of gold and containing 125,000 ounces of gold.

[8] Mineral Reserves have been calculated in accordance with the Canadian Institute of Mining (CIM) Mineral Resource and Mineral Reserve Definitions and estimated assuming a gold price of $1,250/oz of gold.
[9] Updated since submission of EIA due to updated Resource Model

5.5 Project Location and Licences

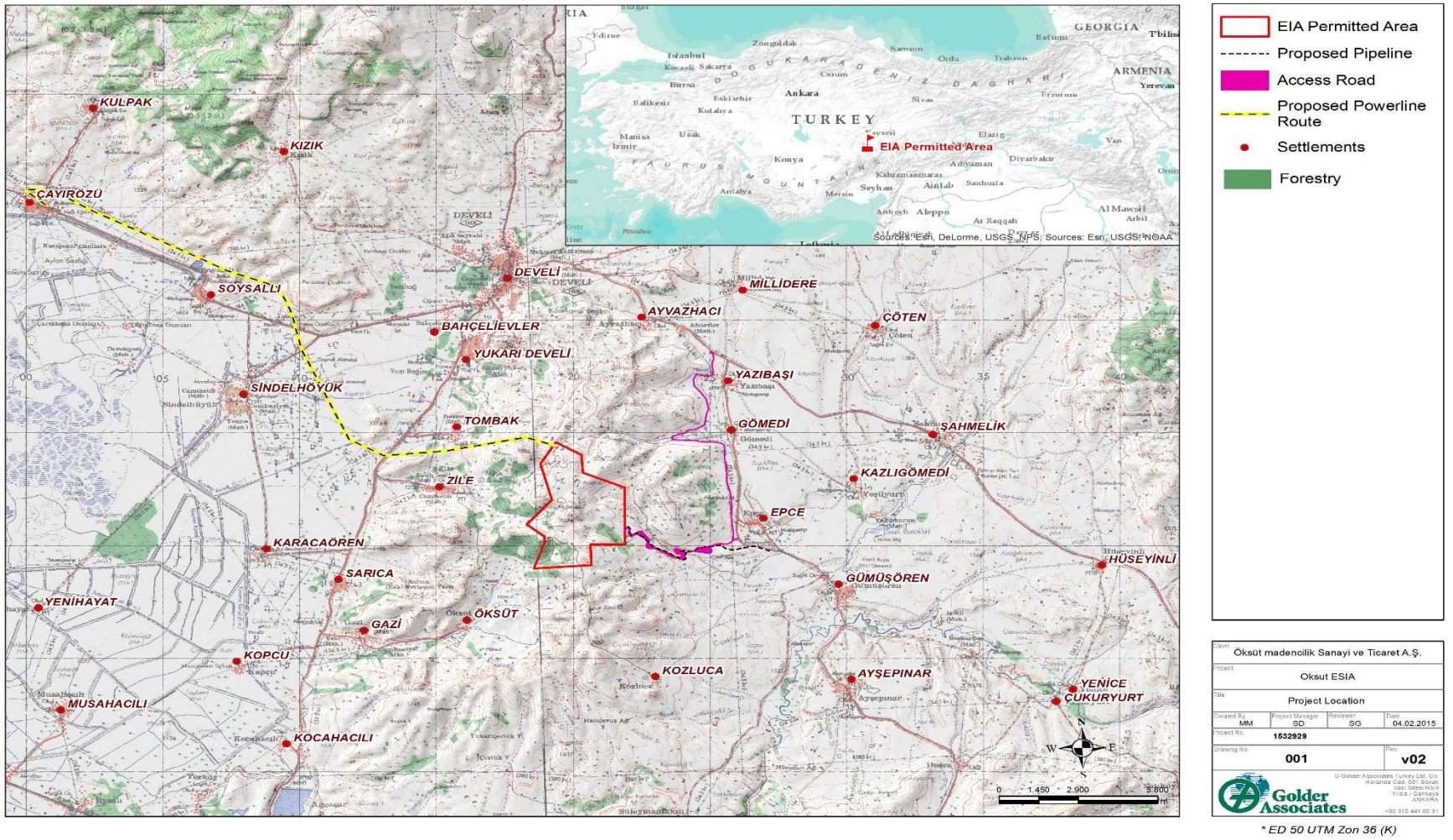
5.5.1 Project Location

The Öksüt Project is located in south-central rural Turkey, 295 km southeast of the capital city of Ankara and 48 km directly south of the city of Kayseri. The nearest administrative centre is the town of Develi (population 39,342) located approximately 10 km north of the Project (Figure 5-1).

The Project Area is located in the Develi Mountains on a north-south trending mountain range. The topographic relief comprises steep-sided V-shaped valleys, high cliffs, capped by flat-lying mesas and plateaus. The Project site is located at an elevation of approximately 1800 m. The valleys are extensively farmed, with the local population living in a number of small villages.

The Project site is currently accessed via two narrow agricultural road from the neighbourhoods of Zile and Yukarı Develi. Due to the condition of the tracks, access to the site in winter is currently limited**.** A new access road is proposed to run from the paved highway located east of the Project.

Figure 5-1: Öksüt Gold Project Location



* ED 50 UTM Zon 36 (K)

The Öksüt Project comprises two operations licenses, shown in Figure 5-2 below, where Licence 82468 is shown in blue and 82469 is shown in red. The licences comprise a total area of 3,995.8 ha. A summary of the licences is provided in Table 5-2.

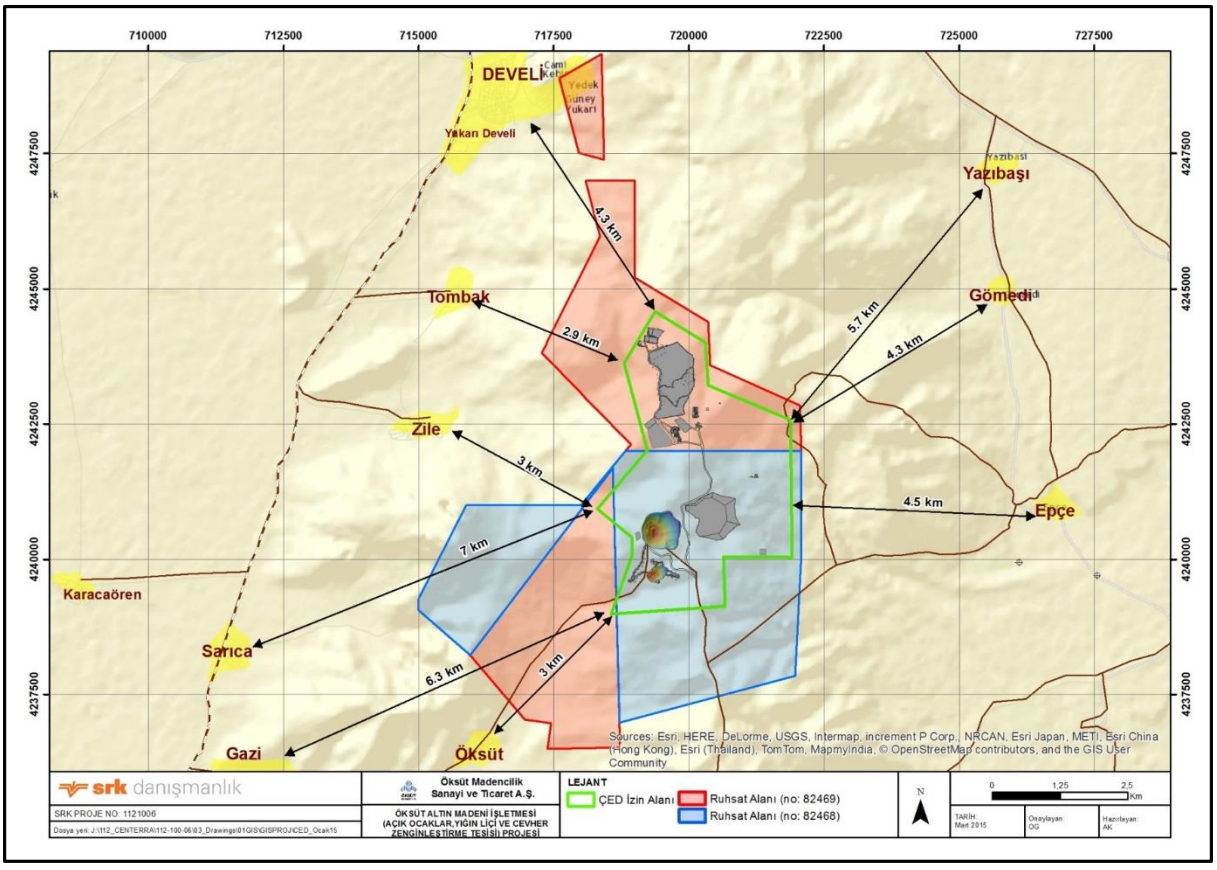
Table 5-2: Summary of OMAS Licences

Licence No	Access No	Type	Area (ha)	Expiry Date	Owner
82468	3 298 759	Operation	1,999.86	16 January 2023	OMAS
82469	3 298 736	Operation	1,995.95	16 January 2023	OMAS

5.5.2 EIA Permitted Area

Within the licences, an area was allocated for construction and operation of the mine and was assessed as part of the national EIA ("the Turkish EIA"). This area is referred to as the "EIA Permitted Area", and is illustrated in green in Figure 5-2 below in relation to the licences. Once the Turkish EIA was approved, OMAS applied for permits to conduct development, operations, and other activities within this permitted area.

Figure 5-2: Öksüt Project Licences



5.6 Proposed Layout

The layout of the principal elements of site infrastructure was determined after a process of evaluation of options, which took account of a number of objectives and constraints which are described in the previous Chapter (*Chapter 4: Alternatives*). Due to the location of the deposits, the layout of the Project has been strongly influenced by terrain, topography and slope stability.

The components of the Project can be split into two areas:

- EIA Permitted Area: This area reflects the area that was assessed as part of the Turkish EIA process and is shown in Figure 5-3 below. The main features include the open pits, waste rock dump (WRD), primary and secondary crusher, heap leach facility (HLF), adsorption desorption recovery (ADR) and administration campus. The plant site area at the northern end of Mount Develi comprises a compact area in which the following will be situated:
  - ore preparation plant area, including pad for run-of-mine ores and crusher facilities
  - heap leach pad (HLP)
  - ADR Plant
  - reagents store
  - cyanide store
  - stockpiles
  - storage ponds
  - administration campus
  - truck shop, fuel farm and mine warehouse.

  The physical mine fenceline is also shown in Figure 5-3, which takes up a smaller surface area than the EIA Permitted Area. For the purposes of continuity between this ESIA and the Turkish EIA, the EIA Permitted Area is referred to throughout this document.
- Infrastructure Corridors, which include:
  - the 16 km access road, which leaves the EIA Permitted Area to the south east, and runs to the east towards the Epçe, where a junction connects to the public road, the access road continues to the north and runs parallel to the public road before bypassing the neighbourhoods of Gömedi and Yazıbaşı, and finishes by linking to the national road to the north of Yazıbaşı (Figure 5-4);
  - the water supply pipeline, which leaves the EIA Permitted Area to the south east, and runs to the east to the wells situated to the south west of Epçe (Figure 5-4);
  - the 25 km powerline corridor to the northwest of the Project Area to the Sendiremeke substation (Figure 5-5).

  Further descriptions of project infrastructure are provided in Section 5.15.

Figure 5-3: OMAS Mine Layout

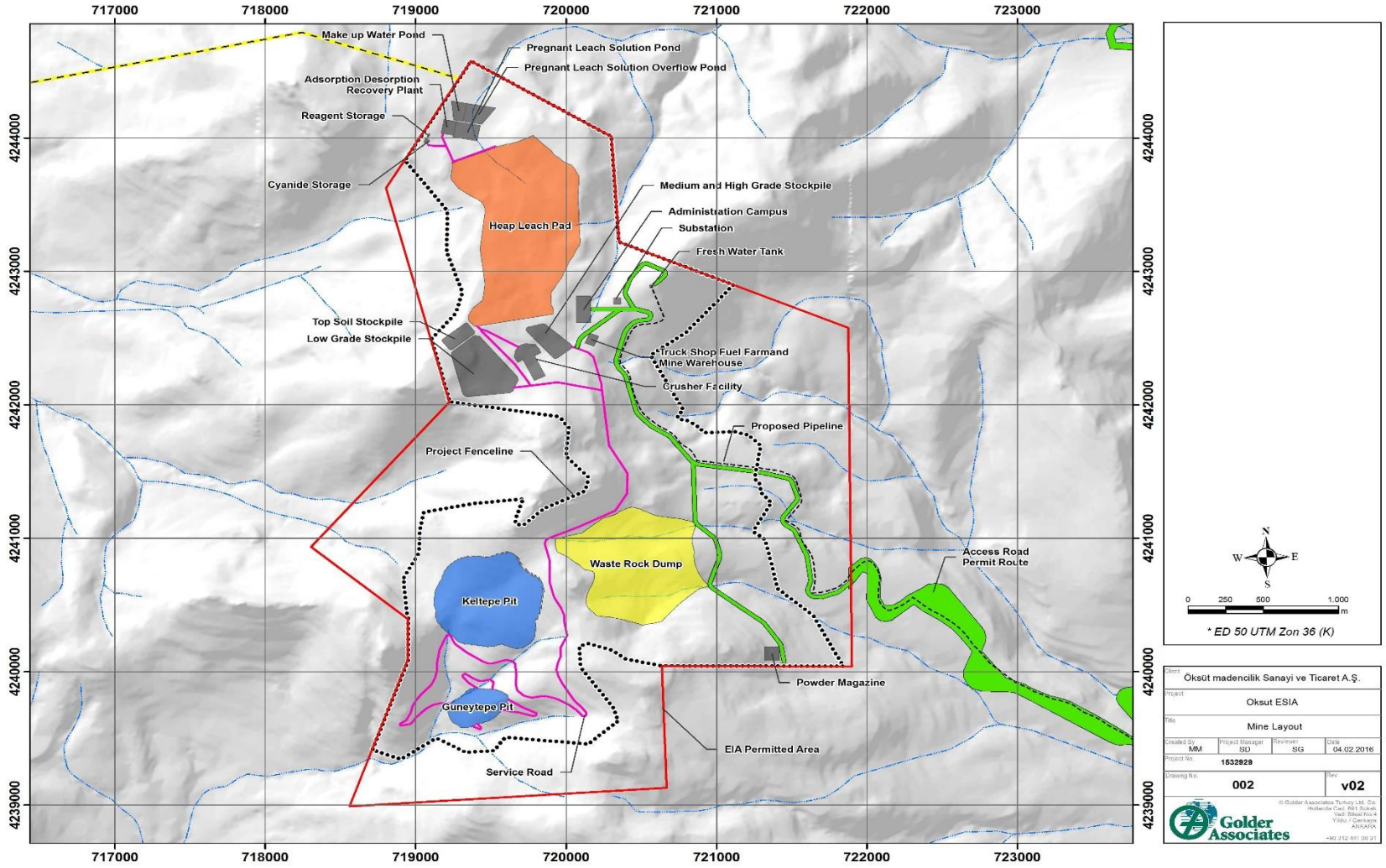


Figure 5-4: Access Road and Water Supply Pipeline Routes

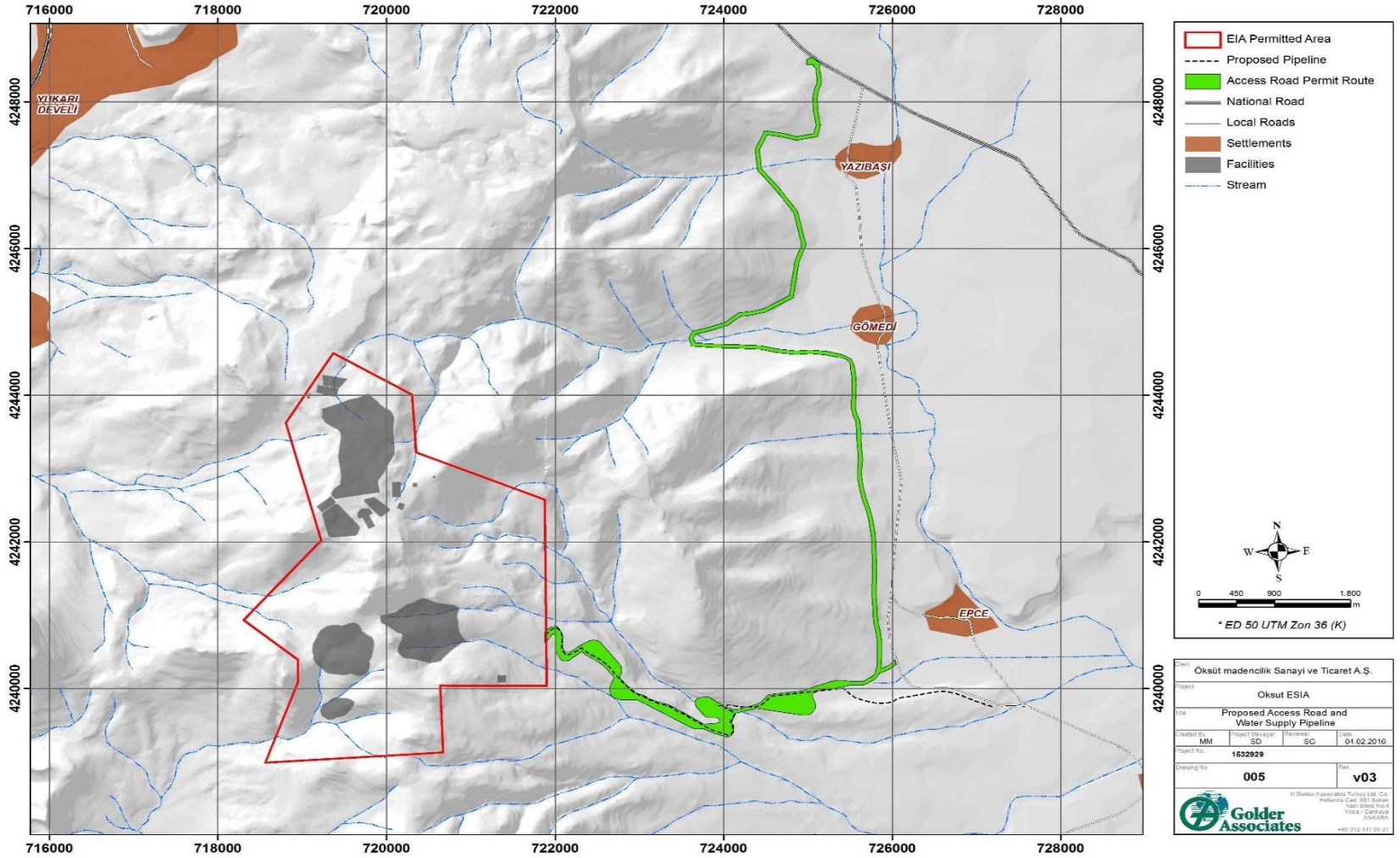
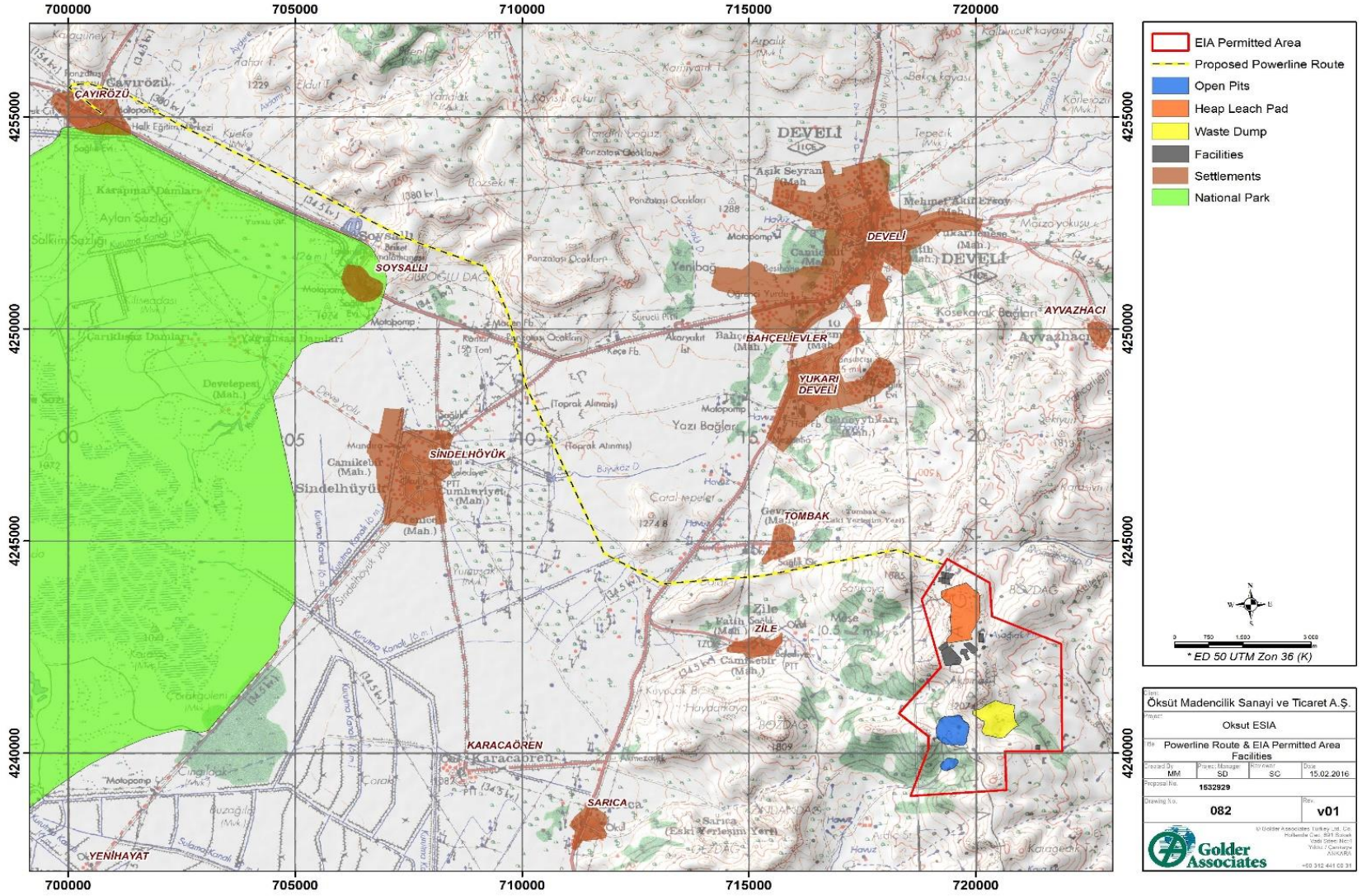


Figure 5-5: Powerline Route



5.7 Permitting

OMAS requires a number of permits, approvals and licences prior to the construction and operation phases of the Project.

5.7.1 Permits in Place

The operation licenses (82468 and 82469) were acquired on 16th January 2013.

The Turkish EIA was approved In November 2015 and an EIA Certificate has been issued. DSI Approval; Meteorology Approval; National Parks and Nature Conservation Approval; and Culture and Tourism Approval are also obtained as part of the EIA Permit.

- The Soil Conservation Permit was obtained following the submission of a soil conservation report which was prepared for the registered area and submitted to the Kayseri Agricultural Department.
- Six months after the EIA Permit is issued, OMAS aims to have a Forestry Land Usage Permit, Pasture Land Usage Permit and Private Land Usage Permit.
- The GSM Permit was approved in December 2015 and GSM Certificates has been issued. The following are also obtained as part of the GSM Permit: Certificate of zoning situation, Certificate of Settlement situation, Working certificate, Fire Department Report (commitment was given), KASKI opinion Letter, Status plan, Explosive Transport & Usage & Temporary Storage & Storage Permit (commitment was given), Capacity Report, Zoning permit (commitment was given) and Construction Permit.
- After completion of construction work, OMAS will apply for a Temporary Activity Certificate. After the Temporary Activity Certificate is issued and within six months an Environment Permit or Certificate will be obtained. This will include Reclamation Plan Approval, Waste Storage Permits, Noise Control Permit, Emission Permit, Discharge Permit and Wastewater Treatment Approval.

OMAS intends to obtain its:

- Operation Permit Licence in June 2016
- Road Connection Permit in June 2016
- Explosive Permits in June 2016.

TEİAŞ expects to receive the Powerline Permit in September 2016.

Water Usage Permits have been obtained. HSE Reports and Permits have been obtained and will be updated on an ongoing basis.

5.8 Land Use Context and Land Take Requirements

5.8.1 EIA Permitted Area

Land ownership classifications within the EIA Permitted area are shown in Figure 5-6 below.

below. The majority of the land is state-owned however, the cadastral status varies and with it the permitting requirements:

- **Pastureland:** The land where the planned HLP, crushers, process ponds, WRD and administrative offices will be situated is currently classified as state-owned pastureland (106.1 ha). OMAS has applied to the General Directorate of Mining Affairs in November 2015, who will send a permit file to the Ministry of Food, Agriculture and Livestock to change the land use classification from pastureland under the Meadow Law (*Law No 4342*).
- **Forestry Land:** The land where the open pits and service road are situated is owned by the General Directorate the Ministry of Forestry and Water Affairs. Whilst in reality there are no trees

on this land, the open pits cover 62.1 ha of land that is classified as “grove”. OMAS has applied to the Kayseri Regional Directorate of Forestry for a Forestry Land Use Permit (under the Forest Law No 6381) in November 2015.[10]

During EIA scoping, the General Directorate of Forestry was consulted and a Forest Rehabilitation Project was prepared.

- **Private Land:** There is one privately-owned 8.3 ha parcel of land in the Licence Area. This land parcel is owned by 27 households from Öksüt and Zile and is an old, historical, land holding. There is some discrepancy over the boundaries of the land parcel and the land owners are currently undertaking a legal process with the Government to define the boundaries. OMAS report no opposition to the Project from the land owners and once the legal boundaries have been confirmed a "willing buyer - willing seller" transaction will be conducted with expropriation as a last resort if required.

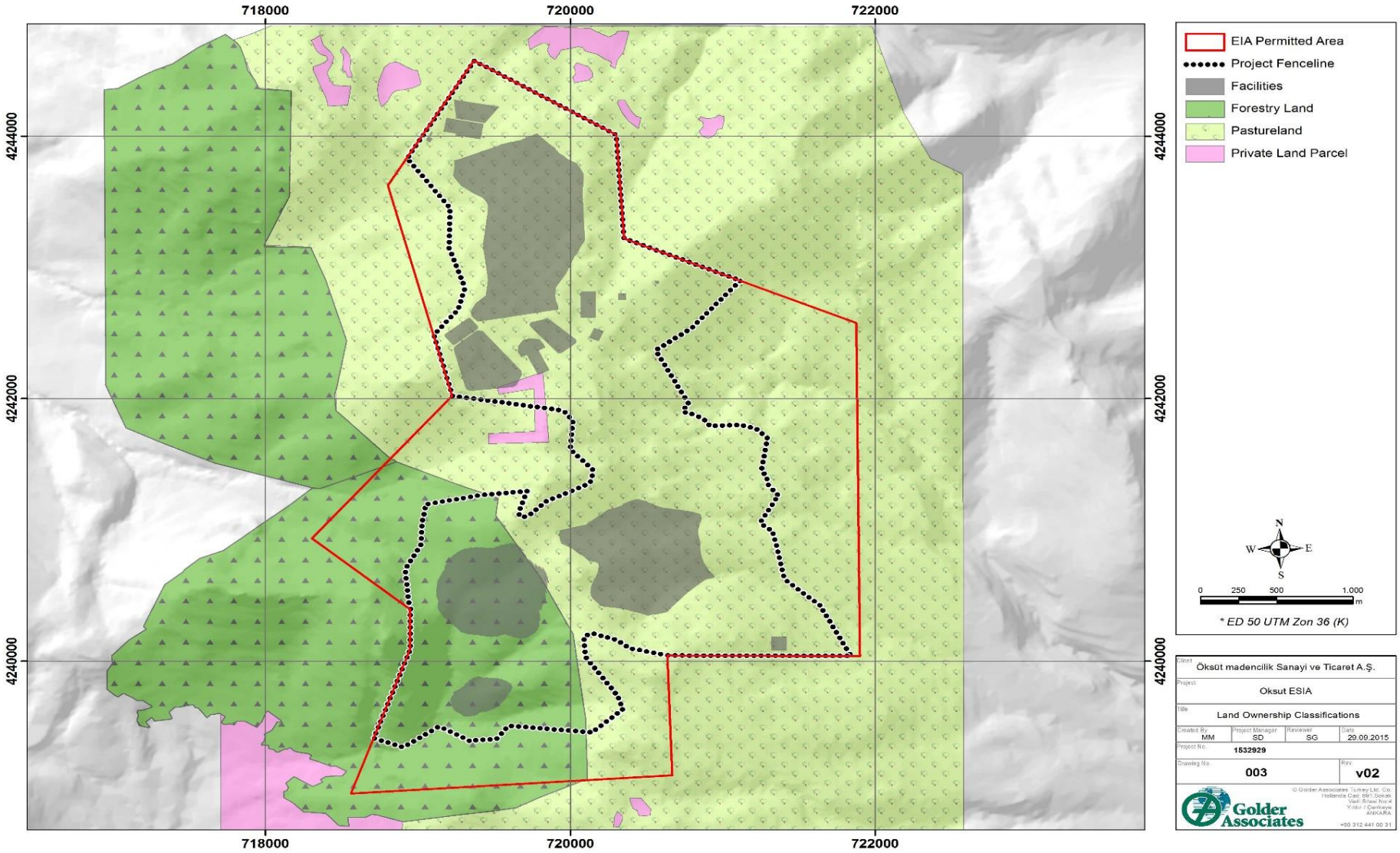
  Most of the private land is now excluded from the fenceline, which OMAS has redrawn around the Project footprint as part of their pastureland permit application (Figure 5-6). This private land parcel is not immediately required for construction, which will allow time for the land acquisition process to be concluded without the need for expropriation. OMAS follows a clear procedure for private land acquisition: firstly, OMAS voluntarily and independently negotiates to buy the land at up to 20% above the national market rate. Only if there is no room for negotiation, will OMAS then apply the legal expropriation process.

Informal Land Use`

Areas within the Mine Licence Area are used on a periodic basis for grazing. OMAS is working with affected livestock herders to ensure that their livelihoods are not adversely impacted by the Project and the project fenceline has been amended to cause as little impact to informal land users as possible. Informal land users (such as shepherds) are not considered under Turkish legislation, but OMAS will manage impacts and compensation for informal land users in line with EBRD Performance Requirement 5[11]. This is set out in the Livelihoods Restoration Plan which is being implemented by OMAS[12].

[10] Prime Ministerial approval is required for all state lands including pasture and forest in addition to the approval relevant state authorities who own the land.
[11] EBRD Performance Requirement 5 – Land Acquisition, Involuntary Resettlement and Economic Displacement.
[12] This is part of the OMAS Environmental and Social Management System.

Figure 5-6: Land Ownership Classifications within the mine licence area



5.8.2 Infrastructure

Outside of the Licence Area, OMAS has purchased two plots of land to the south of Epçe (one plot of 9.2 ha, the other 5 ha) in April 2015, from private landowners. One water supply well and two monitoring wells are located on each land plot, and the water supply wells will be used to supply water to the mine site via a pipeline.

Access Road and Water Supply Pipeline

Land ownership and use has been considered throughout the infrastructure route selection process and OMAS have avoided routing infrastructure over privately-owned land where possible.

Cadastral work to identify land ownership for the proposed access road and water supply pipeline (Figure 5-4) is currently ongoing. An initial study in January 2015 identified three key land ownership classifications for the route including pasture, treasury and private land. Two small parcels of private land have been identified along the water supply pipeline route and the access road does not cross any private land.

During the initial route selection process, it was identified that the route cut through water depots (storage reservoirs) for Gömedi and Yazıbası and as a result it will be rerouted to avoid these.

Both the access road and the pipeline will bisect pastureland and OMAS applied for their pastureland permit in November 2015. Given that the roads will only be used for project traffic (which will be very limited) it is not considered that the roads will cause significant hindrance to access. Speed limits and signs will be used to alert drivers to specific commonly used crossing points. Local residents will be given road safety awareness training.

Powerline

An EIA of the proposed powerline route (Figure 5-5) was undertaken by Turkish Electricity Distribution Company (TEİAŞ) for Turkish permitting purposes and was submitted to MOEU in February 2016. The process to-date is described in *Chapter 4: Alternatives*. The EIA process has been influenced by OMAS as far as possible using the mitigation hierarchy, and will consider route selection, environmental sensitivity, land use and land ownership.

The final decision of the powerline route was made by the TEİAŞ and in accordance with Turkish law the expropriation process of the powerline corridor will be undertaken by TEİAŞ once agreement with OMAS is finalised. OMAS will ensure that land acquisition undertaken by TEİAŞ will be undertaken in accordance with EBRD Performance Requirement 5.

5.9 Open Pits

The operational phase is expected to commence in 2017. The design production rate for the Project is 11,000 t/d of ore feed, with waste rock tonnages varying from year to year.

The mine has been designed to exploit two pits simultaneously, the main pit Keltepe and a small satellite pit Güneytepe. The Keltepe pit will be developed in three stages (cutbacks) in order to optimise waste rock stripping requirements and mine higher grade ore earlier in the mine life. Due to its small size, the Güneytepe pit will be developed in a single cutback.

A breakdown of waste and ore tonnes from each deposit is indicated in Table 5-3.

Table 5-3: Summary of waste and ore tonnes from each deposit[13]

	Keltepe Cutback 1	Keltepe Cutback 2	Keltepe Cutback 3	Güneytepe	Total
Ore (Mt)	2.5	9.5	10.8	3.3	26.1
Waste (Mt)	5.8	16.0	27.1	2.2	51.1
Total Material (Mt)	8.3	25.6	37.8	5.5	77.3
Strip Ratio (w:o)	2.3	1.7	2.5	0.7	2.0

5.9.1 The Mining Process

Öksüt is planned as a conventional truck and shovel open pit mine. Ore will be mined from the open pits through a combination of blasting and excavation. Blasting will be carried out five times per week.

The mining process requires the use of explosives to break apart the rock in the open pit for recovery of the ore for processing and separation from the surrounding waste rock. Packaged explosives will be stored at the fenced and secure explosives magazine that will be located in the south west corner of the mine behind the waste rock dump. The magazines will be accessible from an access road running around the eastern edge of the waste rock dump.

The majority of explosives used will be ANFO (a mixture of ammonium nitrate and diesel) using the millisecond delay method (controlled blasting) which will be carried out to reduce the potential for blasted material cause health and safety risks. Controlled blasting aims to loosen the ore, rather than encourage scattering of blasted material to wider areas. During blasting operations, holes of 171 mm in diameter and 6 m in length will be bored. Based on the hole diameter, the maximum stone flying distance has been calculated at 80 m and the size of flying stones at 3.08 cm[14].

Blasting will be undertaken under the supervision of experienced and specialist personnel and the necessary safety measures will be taken to ensure that only authorised personnel will be allowed into the blasting areas.

All measures required for minimization of vibration, dust and noise generation and stone flying resulting from blasts at the project will be taken, necessary measures will be done and use of the most optimum practice will be ensured during the construction and operation periods.

Following blasting, hydraulic excavators will load haul trucks in the pit with ore for transport to the primary crusher or run-of-mine (ROM) stockpile. The haul distance from the Keltepe pit exit to the primary crusher will be approximately 2.6 km (a 5.2 km return journey). The haul distance from the Güneytepe pit exit to the primary crusher will be approximately 3.8 km (a 7.6 km return journey).

In order to increase production early on in the mine life, lower grade ore will be stockpiled while higher grade ore will be crushed and placed on the pad. All higher grade material will be processed without stockpiling. The low grade stockpile will be used only when there is not enough higher grade ore to fill the crusher. The remaining ore will be processed at the end of the mine life.

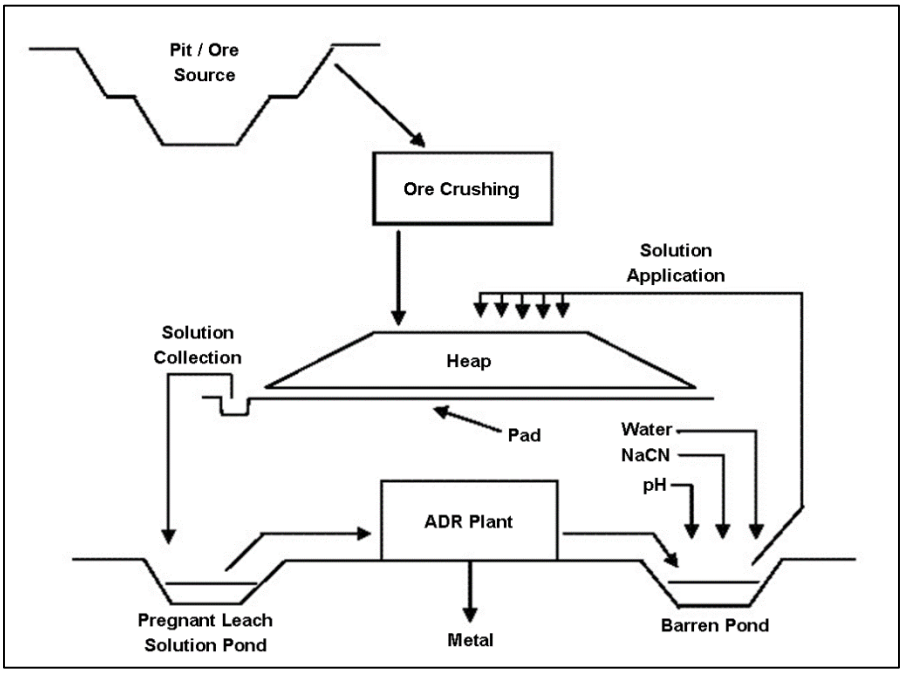
[13] Updated since submission of EIA due to updated Resource Model

[14] Using the following formula: $Lm=260 \times d^{2/3}$ (Lm: Maximum stone fly. d: hole diameter. $\varphi=0.1 \times d^{2/3}$. φ: Size of flying stones. d: Hole diameter)

5.10 Ore Processing

This stage includes primary and secondary crushing, heap stacking and cyanide leaching, carbon adsorption, carbon stripping and regeneration, electrowinning and refining. A simplified process flow chart is set out in Figure 5-7 below.

Figure 5-7: Simplified Process Flowchart



5.10.1 Crushing Plant

Ore from the open pits is crushed in two stages to produce an aggregate that is optimally sized for heap leaching and gold recovery. Future test work and optimisations may lead to changes in the optimum crush size although this should not significantly affect the footprint of the crushing facilities.

Primary Crushing

Ore is delivered by 36 tonne haul trucks to the primary crusher. The ore is dumped on the stationary sorting grid installed over the 80 tonne truck dump hopper. Oversize rocks are handled by a jaw crusher which crushes material to a maximum diameter of 150 mm prior to being conveyed by conveyor belt to the secondary crushing circuit.

Secondary Crushing

The product from the primary crushing circuit feeds a 600 kW cone crusher. A conveyor belt transports crushed ore to a radial stacker after quicklime has been added to the crushed ore. A 10,000 tonne capacity stockpile will be formed by stacker installation.

Dust collection units are provided at the crushers discharge and transfer points in both crushing buildings and a dry fog system will be installed at the truck dump to reduce dust emissions.

5.10.2 Heap Leach Facility

Heap Stacking

The crushed ore is trucked from the crushing facility to the heap leach pad (HLP), which will be developed in three phases that will correspond to 12.4 Mt (Phase 1), 13.6 Mt (Phase 2) and 14.0 Mt (Phase 3), respectively, for an ultimate ore capacity of 40 Mt.

Heap Leach

The heap is irrigated with a diluted cyanide solution recirculated from the gold recovery circuit, via a network of piping covering the active surface area under leach. The leach solution is pumped from a tank at the adsorption-desorption-recovery (ADR) plant to the heap. Cyanide concentration is adjusted and pH is controlled so that poisonous Hydrogen Cyanide (HCN) gas formation is inhibited.

The leach solution percolates through the heap leach and the pregnant leach solution (PLS) containing dissolved gold flows by gravity through a network of collection pipes at the base of the heap to the PLS pond prior to being pumped to the ADR plant for precious metals recovery.

5.10.3 Gold Recovery Plant

Adsorption

The pregnant solution passes through a trash screen prior to distribution to the carbon-in-column (CIC) circuit to extract the gold from the solution. The solution trickles through tanks of activated carbon, to which the dissolved gold becomes attached. Discharge from the last tank goes through the carbon safety screen to remove any remaining carbon and is sampled again, to ensure all carbon and gold has been removed, prior to being pumped to the barren solution tank for recirculation on the heap. Overflow from the carbon safety screen is recovered and recycled into the CIC system.

Acid Wash Vessel

The carbon slurry containing gold is then moved to the acid wash vessel where 3% hydrochloric acid solution is added to remove inorganic contaminants. The hydrochloric acid solution is recycled and reused.

Once the acid wash process has been completed, the carbon slurry is neutralised with a 2% caustic solution. The neutralised solution is then recycled to the barren solution tank and is then irrigated back onto the HLP, as a continuous process.

Desorption and Electrowinning

Once the acid wash process is completed, the gold-containing carbon slurry is transferred to the elution column where the precious metals are stripped from the carbon using the pressure Zadra process.

The circuit comprises a 3-tonne capacity carbon elution column and a barren strip solution tank with pumps. In the elution column, a hot strip solution containing sodium hydroxide and sodium cyanide is circulated which causes precious metal desorption from the carbon. Gold and silver is then removed from the solution by electrowinning[15]. Stripped carbon is returned to adsorption for reuse following carbon regeneration.

Carbon Regeneration

Thermal regeneration is used to remove organic materials (such as oil or biological matter) that have accumulated on the activated carbon during the adsorption process. Carbon regeneration us undertaken by heating the carbon in the presence of steam to 750°C in a gas fired reactivation kiln. The combination of high temperatures and the steam environment removes organic contaminants and regenerates the carbon for re-use.

[15] Electrowinning is the recovery (electro-deposition) of metals from their ores that have been put in solution via a process commonly referred to as leaching.

5.11 Heap Leach Facility Design

5.11.1 Site Layout and Development

The heap leach facility (HLF) will be located on a natural plateau at the northern side of the Project which generally slopes south to north at an average grade of approximately 7%.

There are two main drainages on the plateau, which converge just up-gradient of the HLF's toe (i.e. just up-gradient of the pond area). The drainages are dry during most of the year, and flow only during snowmelt and following rainfall events. The drainages are separated by relatively shallow ridges. Most slopes within the area are less than 2.5H:1V and are suitable for construction of the proposed composite liner system. Four small areas are steeper and require limited regrading to facilitate liner construction.

Because of the location on a plateau, the ground on all sides of the facility generally slopes away from the HLF, which is ideal for water management. Areas within the HLF perimeter slope towards the facility toe, while areas outside the perimeter generally slope away from the mine facilities.

5.11.2 Heap Leach Pad (HLP) and Ponds

The HLP will have a total area of 945,000m^2 and will be constructed in three phases with approximate areas of 578,000 m^2, 212,000 m^2 and 155,000 m^2 for Phases 1, 2 and 3 respectively.

Heap Leach Stacking

The ore heap on the leach pad will be stacked in 10 m thick horizontal lifts in three stages. The heap stage tonnages, number of lifts, elevations, and stacking schedules are described below.

- Phase 1 is sized to contain nominally 3 years of ore production (12.4 Mt) while maintaining a relatively flat configuration, ore will be stacked against the foundation forming a wedge with a larger slope on the down gradient side and nearly no elevation difference between the top of ore and foundation grades on the up-gradient side.
- Phase 2 is sized to contain nominally 3 years of additional ore production (13.6 Mt) while maintaining a relatively flat slope.
- Phase 3 is sized for the total storage capacity of 14 mt (with a total LOM storage capacity of 40 Mt), with ore stacked up to the maximum allowable height (10 m). Sufficient top surface areas shall be maintained to facilitate leaching of the uppermost lifts.

Key Components

The major components are:

- Composite (geomembrane/soil) lined HLP with lined perimeter berms providing a total lined pad area of approximately 778,000 m^2. The maximum ore height will be 80 m and will provide capacity for approximately 40 Mt of ore at an overall dry density of 1.45 t/m^3.
- Solution collection system consisting of a minimum 0.6 m granular drain cover fill layer and a network of double walled, perforated, corrugated high-density polyethylene (HDPE) solution collection piping and HDPE solid wall conveyance piping, with associated valves and fittings, for solution management and control.
- Solution storage ponds consisting of a pregnant leach solution (PLS) pond, a PLS overflow pond, and a make-up water pond. The PLS pond has been designed to allow gravity flow of solutions from the heap. The PLS and PLS overflow ponds include a double liner system. The make-up water pond uses a composite (geomembrane/soil) liner system.
- Temporary and permanent surface water diversions to manage run-on surface water around the perimeter of the HLF.

Liner System

The HLP liner system will be constructed as a composite liner with a 2.0 mm thick linear low-density polyethylene (LLDPE) geomembrane overlying a 500 mm thick low-permeability soil liner. An alternative study has been prepared to evaluate the potential pros and cons of several different liner systems. Liner system alternates were evaluated based on technical criteria (e.g., slope stability, durability) and based on expected costs. Golder has studied alternative liner systems including 2 mm HDPE overlying an internally-reinforced geo-composite clay liner (GCL) overlying 500 mm thick layer of suitable bedding soil.

Leach Solution Collection

Applied leach solution that has percolated through the leach pile will be collected by a solution collection system constructed directly above the liner system. The solution collection system consists of a layer of drain cover fill and perforated corrugated high-density polyethylene (PCPE) pipes. These pipes will convey solution to the toe of the HLP, where primary solution collection pipes will pass through a lined solution channel and transfer collected solutions to the PLS pond. The solution channel liner system will consist of a composite liner with a 1.5-mm thick HDPE geomembrane overlying a 500 mm thick low-permeability soil liner, with rubsheets used beneath the pipes to protect the primary geomembrane.

Pregnant Solution Pond

The PLS pond liner system is designed as a double liner system with a leak detection and recovery system (LCRS) provided between the two liners. The primary (upper) liner will consist of a 1.5-mm single sided textured (textured side up) HDPE geomembrane.

The LCRS will consist of a 5-mm HDPE geonet draining to a gravel filled collection sump at the pond low point. A smooth-walled, solid HDPE riser pipe will be installed within the LCRS sump and up the pond side slopes to accommodate a submersible pump to remove solution that may report to the LCRS sump. The secondary (lower) liner will consist of a 1.5-mm smooth HDPE geomembrane overlaying a 500-mm thick low permeability soil layer.

The PLS pond is designed with a capacity to contain a minimum working volume (assumed to be 3-m solution depth), 8-hours operational storage, capacity to manage small storm events (assumed to be 25-mm precipitation over the full pad footprint), plus maintain an additional 1m of freeboard as a safety margin.

Following periods of high precipitation or rapid snowmelt, the PLS pond may fill to the point that some solution passes through an overflow spillway into the PLS overflow pond. The PLS overflow pond also contains a double liner system with an LCRS between the two liners, similar to the PLS pond. During drier parts of the year, water collected in the PLS overflow pond will be used as make-up water. The PLS overflow pond was designed with sufficient capacity such that there is a 95% probability of non-exceedance, as calculated using a probabilistic water balance, plus 1m freeboard.

Make-Up Water Pond

The HLF design also includes a make-up water pond. Water will be pumped into this pond from other areas of the mine, or from the raw water supply pipeline, and stored for use in the leach circuit during drier parts of the year when evaporation, low precipitation, and water uptake by the ore create a water deficit. The make-up water pond will use a single composite liner system which includes a 1.5-mm single sided textured (textured side up) HDPE geomembrane overlying a 500-mm thick low permeability soil layer. An overflow spillway will be constructed to allow solutions to pass from the PLS overflow pond into the make-up water pond during extreme upset conditions. The make-up water pond does not have a spillway. The HLF as a whole (HLP, PLS pond, PLS overflow pond, make-up water pond) has been designed as a zero discharge facility.

A Monte-Carlo simulation was used to calculate the required makeup water and pond storage capacity for the 10th, 50th and 95th percentile climatic conditions (i.e. dry, average, and wet). Based on

the results, the PLS overflow pond was designed with a capacity of 83,800 m³ (plus 1 m freeboard), and the make-up water pond was designed with a capacity of 26,250 m³ (plus 1 m freeboard).

5.11.3 Solution Collection System

The drainpipe network is designed to drain the planned operational solution flow plus the additional flow from meteorological sources, while maintaining acceptably low hydraulic pressure on the pad's composite liner system (i.e. less than 0.6 m).

The drainpipe network on the HLP will be covered with a 0.6 m thick (minimum) drain cover fill layer. The drain cover fill will consist of crushed and/or screened low-grade ore, mine waste, and/or natural borrow material. The drain fill permeability requirement is $1x10^{-3}$ m/sec or greater under the 80 m maximum ore heap load to ensure drained heap conditions.

5.11.4 Heap Leach Facility Drainage Controls

Surface water drainage around the HLF and ADR plant will be controlled with 0.5 meter deep "v" shaped diversion channels which have been designed to withstand a 1-100 year storm event. During Phases 1-2, temporary 1.5 m high storm water management berms will be constructed along the south side of the HLF to prevent surface water from entering the HLD during expansion.

The HLF site is located on a natural plateau with no active springs or seeps within the planned facility footprint.

The HLP will have a 1.5 m perimeter berms to prevent applied solution and rainfall/snowmelt water within the pad from overflowing the pad. The solution and storm flows are collected by a drain pipe network constructed above the pad liner and routed by gravity to the process pond.

5.12 Water Use and Management

The estimated water demand for the Project is 35 L/s. The main objectives of water management for the Project are to minimise water usage, recycle and reuse wherever possible, and to ensure that if water discharges were required, they are of suitable quality for release into the environment. During operations the Project is designed as a zero contact-water discharge process.

Water Supply

Process water supply for the Project will be sourced from two licensed water wells from land owned by OMAS and located near the village of Epçe. Submersible pumps will pump water from the wells through 150 mm DR17 HDPE pipelines running from the well to the main pump station. At the main pump station, two vertical turbine pumps mounted in a concrete sump will deliver water to the main site via a 150 mm carbon steel pipeline. The location of the Epçe water wells and the water supply pipeline route are shown in Figure 5-11.

Cyanide Management

Cyanide solution will be circulated between the HLP, solution collection ponds, and ADR plant, with no liquid discharge points (i.e. it is a 'closed system'). The only water leaving the closed circuit will be evaporative losses. More information on cyanide management can be found in Section 5.17.1.

Water for Construction Activities

During the construction phase, water is required for dust suppression and concrete production. Prior to the water supply pipeline operation, water will be brought in by local haulers.

Potable Water

Potable water for site use will be supplied from the raw water tank which will be located in an elevated position and will gravity feed the kitchenette, showers and washbasins in mine site buildings. Raw water will be treated in a package treatment unit via cartridge filters and UV light.

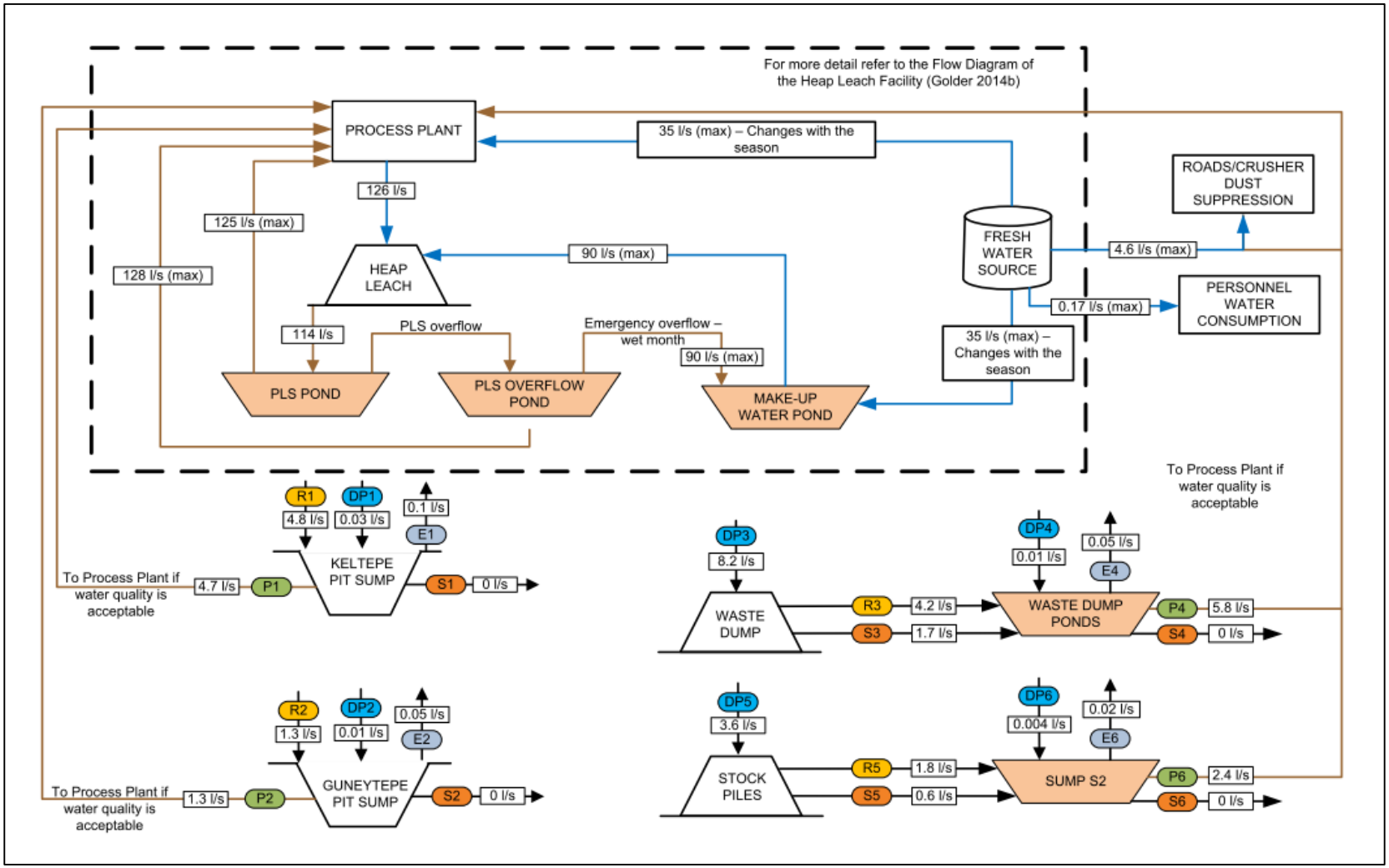
5.12.1 Project Water Balance

A probabilistic water balance model was developed for the HLP to simulate the performance of the facility. The objectives of the analysis were to evaluate the demand for makeup water from external sources and the volume of excess water generated during HLP operation (i.e., for use in event pond sizing). The water balance model was developed using GoldSim software.

The water balance identifies net quantity of water passing into and from the site, to evaluate the demand for makeup water from external sources and the volume of excess water generated during operations, to evaluate the water treatment rate, and to size various ponds.

The water balance covers the open pits, HLF, WRD, and other site facilities (crusher plant, maintenance workshop and haul roads). The conceptual Project water balance is shown in Figure 5-8 below.

Figure 5-8: Conceptual Project Water Balance



All contact water will be collected in the ponds and sumps, which are expected to receive a daily amount of water ranging from 50-75% of the total capacity of the pond. As such the dewatering system for each pond is sized to allow removal of the full pond capacity in one day to minimize the risk of unplanned discharge to the environment from the ponds.

5.12.2 Site Drainage

Drainage from the site will be managed so as to separate non-contact and contact water. The non-contact water diversion system will be composed of a network of diversion channels around the waste dump and the pits collecting water from un-disturbed catchments located upstream of the mine facilities. The contact water collection system will be composed of a network of channels, underdrains and ponds to collect contact water runoff and seepage from the waste dump, stockpiles and pits.

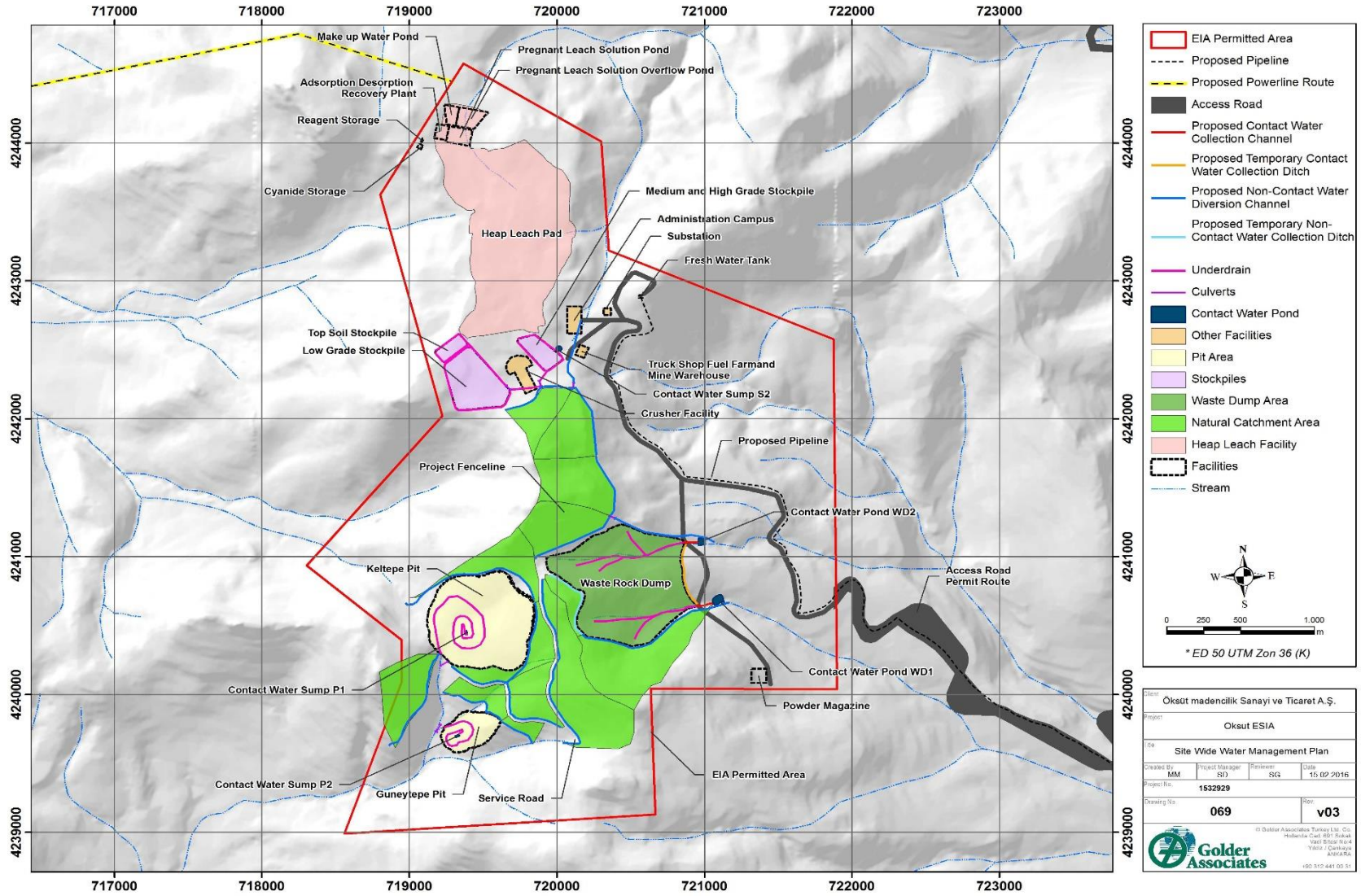
Non-Contact Water

Non-contact water will be managed through a series of channels located along haul roads and perimeters of open pits and waste rock dumps. Discharge structures at the downstream and of the channels will provide energy dissipation and route to sediment ponds and ultimately to the natural drainage. Diversion channels to be lined with a 200 mm thick reinforced concrete underlain by 0.1 m thick prepared sub-grade.

Contact Water

A network of collection channels, underdrain, ponds and sumps is proposed to collect contact water drainage from the stockpiles, the pits and the waste dump. Locations where contact water will be collected are shown in Figure 5-9 below.

Figure 5-9: Site Water Management Plan



Stockpile and WRD Contact Water

A network of collection channels and culverts will be constructed around the three stockpiles located upstream of the HLF to collect contact water from the stockpiles and convey it a contact water pond (Pond S2). These channels will be constructed along the toe of the stockpiles as part of the stockpile platforms preparation and along the haul road to the stockpiles. Culverts will be constructed along the contact water collection channels where they cross haul roads. All culverts will be constructed using corrugated HDPE material.

Two temporary channels along the eastern toe of the waste dump will convey runoff and seepage from the waste dump to contact water collection ponds WD1 and WD2. These temporary channels will be present during the development of the waste dump, and relocated periodically as the dump expands. These channels will be excavated in natural ground and will be lined with 1.5 mm HDPE geomembrane underlain by non-woven geotextile.

The WRD underdrain system (rockdrain) located at the base of the WRD along natural creeks, will convey seepage from the WRD to the contact water collection ponds (WD1 and WD2). The rockdrains will be composed of sorted rocks with a D50 (diameter at which 50% of the stones by weight would be smaller) of 200 mm.

The contact water collection ponds (WD1, WD2 and S2) will be excavated in natural ground downstream of the waste dump and the stockpile area. The ponds are designed with 2.5H:1V containment slopes and will be lined with two layers of 1.5 mm HDPE geomembrane separated by 5 mm geonet layer and underlain by non-woven geotextile. The double geomembrane layer is intended to reduce risk of leakage of the contact water to the environment; the geonet layer would allow for leak detection. The leak detection system includes a small sump at the bottom of the ponds, filled with gravel material. Leakage through the first geomembrane layer will report to this sump through the geonet layer. A 2-inch HDPE leak detection riser pipe would be installed between the two geomembrane layers to reach this sump; the part of the pipe in the sump will be slotted. A piezometer will be installed in the riser pipe to detect leakage. If leakage is detected, water from the sump would be removed via pumping. The design volumes of the ponds and the total storage capacity (including snowmelt contingency and freeboard) are shown in Table 5-4. Water collected in the ponds will be regularly dewatered and will be trucked to process facility to be reused as process water.

The contact water containment ponds have been sized to accommodate the 100-year, 24-hour storm event. They have also been sized to accommodate a prolonged and significantly wet year and incorporate a contingency to cover a 0.5 m snowmelt.

Table 5-4: Summary of Contact Water Storage Capacity

Contact Water Pond	Volume (m^3)
Pond WD1	1,855
Pond WD2	1,460
Pond S2	1,170

5.12.3 In-Pit Water Management System

The pit floor will not intersect with the groundwater table, and so no groundwater inflows into the open pit are anticipated. However, rainfall, snowmelt and runoff water will report to the open pits and will need to be pumped out. For the duration of operations, pit water will be collected in sumps and trucked to process facility to be reused as process water.

The in-pit water management system is considered an operational system that will need to be relocated and adjusted throughout the mine life as the pits expand, and include non-contact drainage

trenches around the open pit excavations as they are excavated to final Life of Mine profiles. A preliminary estimate of total storage capacities of the sump for Keltepe Pit and for the Güneytepe Pit and are 20,000 m^3 and 5,400 m^3 excluding freeboard, respectively.

5.12.4 Heap Leach Facility Water Circulation

During the operational phase, the HLF will be operated as a closed circuit. There is no planned discharge from the facility during the operational phase when cyanide is applied to the heap. Water abstracted from the Epçe wells, make-up pond and PLS overflow pond is used to make up water losses due to evaporation and also in the wetting of the ore in the heap leach.

Solution application on the HLP is primarily by a drip system. Evaporation is minimised through this system as water flows slowly out of the drip tube network.

In the case of major storm events, pregnant leach solution may overflow into the event pond, which has been designed to take into account the 1 in 100 year storm event. As the event pond is double lined, it will prevent any cyanide discharge from occurring. Water that collects in the event pond (via overflow or precipitation) is pumped back to the barren tank, and then on to the HLP.

5.12.5 Domestic Water Treatment

There will be a main sewage treatment plant located at the administration building campus. Sewage from the ADR plant building will be discharged to a sewage treatment plant installed on a granular pad next to the ADR building. The plant will consist of insulated containers with heating, lighting, ventilation, control and power services. Mobile trucks will empty the tanks at regular intervals and take the wastewater to the main sewage treatment plant. Sludge generated in the sewage treatment plant will be taken to designated and licenced landfill area. Treated effluent from the treatment plant will be stored in tanks and used as make-up water for ore processing. Chemical wastewater produced in the assay process in the laboratory will be treated by neutralization and integrated into the main sewage network.

5.12.6 Firewater

The main raw water supply tank will act as water storage for both process/fresh water and fire water. The tank will be at an elevation which will allow for the gravity distribution of both raw water and firewater. A pump house will be constructed next to the raw water tank will house firewater pumps and any future process water pumps.

5.13 Waste Rock Management

A total of 51.1 Mt of waste material will be mined from the open pits (24,356,877 m^3). The waste rock dump (WRD) will be located at the Eastern Valley from the proposed Keltepe pit.

Development of the WRD will take place in phases. Dumping will be undertaken using a top-down approach as the intermediate faces of the dump are expected to be stable, although short-term deformations may occur during the development phase. As the waste dump development progresses, dump stability will improve.

The WRD area is expected to cover an area of 57.2 ha with a maximum height of 180 m and an average height of 62 m. It is designed to have a capacity of 35,296,175 m^3, which will be enough to contain all waste rock at the assumed swell factor of 30%. Interception channels will be built at the north and south of the WRD to divert surface waters.

Due to the depth of the water table at the WRD location, no artificial liner will be used and the WRD will use the impermeable nature of the underlying geology to prevent significant migration of leachate. OMAS is unable to undertake detailed site investigations to confirm detailed soil and geological permeability until the Pastureland Permit has been issued. At this time, OMAS is assuming that there

is sufficient clay at the site to form an impermeable base later. If additional clay is required, this will be obtained either from on-site borrow pits or from the DSI stockpile located approximately 5-6 km south of Epçe village. The stockpile comprises spoil from the excavation of the Zamanti tunnel and regulator.

All drainage water from the WRD will be collected in the contact water sump for re-use within the processing system.

5.14 Onsite Project Infrastructure

A "campus" approach has been adopted by grouping associated buildings together in order to minimise service requirements, daily movements across the buildings and costs associated with the infrastructural needs.

5.14.1 Administration Campus

The administration building is the largest of all support buildings. The facilities will be contained in a U-shaped pre-fabricated unit with a total footprint of approximately 1,450 m^2. The Administration campus is located northeast of the crushing area to eliminate dust accumulation.

- **Administration Building**. The Administration Building has a car park for employees with two reserved parking spaces for disabled person and ambulance. Beside the car park is a bus park that provides parking space for 6-7 full size buses.

  The First Aid station will be located in the south wing of the Administration Building and will house four sections within the station. These will include the doctor's room, first response room, sick room for three patients and a medical storage area. The First Aid station will also be effectively equipped for emergency first-aid procedures and urgent care services

  The First Aid station will have a separate door within the Administration Building for easy access to the Ambulance. An ambulance will be provided, installed with standard emergency response equipment.
- **Dry Building**. The dry building is designed as a pre-fabricated building with a footprint area of 251 m^2. The dry building is located in the vicinity of Bus Park to minimize walking distance of employees upon arrival/departure. One dry building has been selected to serve the Project site in order to optimize service requirements.
- **Dining Hall**. The dining hall will be contained in pre-fabricated units with a total footprint of approximately 293 m^2. The dining hall is downwind of administration building to eliminate any smell. It is centrally located and easily accessible from the administration building and laboratory.
- **Laboratory**. The assay and environmental laboratory will be located in a separate building in the Administration campus. The laboratory will be a pre-engineered single level building and will contain all the assaying and environmental sampling and testing facilities plus associated offices for the laboratory personnel. The Laboratory will also be equipped with a loading area sized for container for long term storage of samples.

5.14.2 Mining Campus

- **Truck Shop**. The Truck Shop will include areas for vehicle service bays, tyre shop, electrical maintenance area, mechanical maintenance area, tool crib, utilities, and lubricant storage. The Truck Shop will be used by the Mining Contractor to service their haul trucks throughout the life of mine and will also house offices for the Mining Contractor senior management.
- **Fuel Storage Area.** The fuel storage and distribution area is located between the internal service road and the haul roads in order to provide services to both roads at the same time without the need for an intersection. The tank farm will hold 250 m^3 of diesel, with a day fuel tank that holds 20 m^3 which connects to the one fuel dispenser. The ground will be made and there will be a

concrete curb around the fuel island to prevent spills from contaminating the environment. The curbing and sloped concrete will also direct the spills to the sump/closed drainage system.

- **Mine Warehouse.** The warehouse is located in the Mining Campus to enable quick access by both mine and process staff. The building will be a pre-engineered steel building approximately 320 m^2 and will include indoor office space, a tool shed and fenced outdoor storage area for oversize inventory.

5.14.3 Gatehouse and Weigh Scale

The Gatehouse Building is located on the main access road, within the Project fence line. It is equipped with a room for security personnel, a meeting room and an office, in addition to sanitary and kitchenette facilities. It is designed as a single story pre-fabricated building of approximately 78 m^2. Due to its remote location with respect to other buildings a standalone sewage, HVAC, water and fire protection systems will be included. The gatehouse building will have a car park for visitors and truck drivers to park their vehicle during execution of registration procedures.

The truck weigh scale is located near the Gatehouse Building and consists of a weigh scale platform and a small prefabricated kiosk.

5.14.4 Cyanide & Reagent Storage Area

The Cyanide Storage Building is planned as a 324 m^2, pre-engineered steel building and is located next to the ADR Building for easy transportation of cyanide. The facility is enclosed with a secured fence and has concrete containment.

Similar to the cyanide Storage Building, the Reagent Storage Building will store other reagents as a 250 m^2, pre-engineered steel building and located next to the ADR Building for easy transportation of reagents. All wet reagent storage systems will be bunded.

5.14.5 Haul Road

The haul road will be used by haul trucks to deliver ore and waste materials to their respective destinations. The haul road has been designed to be a minimum of 100 m from the fence line of the property to allow for drainage ditches. The haul road will be 25 m wide, allowing for a 15 m wide segment for haul trucks and a separate 10 m wide segment of the road for light vehicles and other traffic. The haul road has been divided into 4 sections:

- **Keltepe pit entrance – WRD entrance**. This section is designed at a 10% gradient and is located on steep terrain. This road section will be constructed first in the sequence as mining cannot start until access from the pits to the waste dump is available.
- **WRD entrance – HLF.** This segment is designed at neutral/shallow gradients leading to the various infrastructure facilities of the Project, such as stockpiles, truck shop, fuel farm administration building, crusher and heap leach facility. This segment will be constructed second in the sequence, as stripping activities can start prior to its completion. Earlier completion of this road may allow waste rock from the pits to be used in the construction of the HLF, reducing the cost of earthworks.
- **Upper Güneytepe road**. This road segment is designed at 10% gradient and dissects the Güneytepe open pit providing access to the upper benches of the pit down to an elevation of 1,645 m asl where the pit entrance is designed. This must be completed in order to begin mining at Güneytepe.
- **Güneytepe entrance – Keltepe entrance.** This segment is designed at +10% gradient and connects the Güneytepe pit with the main haul road. This also must be completed in order to begin mining at the Güneytepe pit.

The road will be constructed using a cut and fill method and there will be no need for additional material. Table 5-5 summarizes construction requirements for the road sections.

Table 5-5: Haul Road Design Summary

Road segment	Cut (kt)	Fill (kt)	Length (m)
Keltepe (Keltepe pit to WRD)	220	286	2,023
Keltepe (WRD to HLF)	685	696	2,611
Güneytepe Lower (Güneytepe pit entrance to Keltepe pit entrance)	194	203	1,193
Güneytepe Upper	420	191	1,748
Total	**1,520**	**1,376**	**7,575**

5.14.6 Site Services

Site services will include security personnel and equipment, a first aid station, and telephone and internet communications.

5.15 Offsite Project Infrastructure

5.15.1 Worker Accommodation

Due to the relative proximity of the Project to local settlements, it will not be necessary to build accommodation for project personnel. OMAS aims to recruit 100% of unskilled employees and 70% of semi-skilled employees from the directly-affected local settlements. It is expected that the remainder of employees will live in Develi. A shuttle bus system will transport staff between the mine and residential areas for each shift (there will be three shifts per 24 hour period). The shuttle busses will be rented from a local services company. Personal vehicles will not be permitted on the mine site.

The Project anticipates 405 workers during construction with 456 expected during operations. OMAS is assuming that approximately 350 workers will be hired locally and a maximum of 100 workers will therefore be in-comers to the Develi District. On the conservative assumption that all workers are married and bring their families (assumed to be a wife and two children) with them to live in Develi, OMAS estimates that a maximum of 400 people will move to Develi due the project. All worker accommodation will be managed in line with EBRD guidelines[16].

5.15.2 Access Road

A 16 km access road covered in a 4 cm stone mastic asphalt layer will be constructed to connect the mine with the public highway southeast of Develi. The access road will leave the Develi highway just north of the turning to Yazıbaşı, and will bypass the neighbourhoods of Yazıbaşı and Gömedi, before running south parallel to the public road where it will turn to the west near the neighbourhood of Epçe. There will be two connections with the Turkish road network, near Epçe and just outside Yazıbaşı.

The conceptual alignment of the access road has been designed (as at March 2016), however the final alignment of the access road is still to be confirmed as it may change slightly for optimization and constructability. For the purposes of this ESIA, it is assumed that the road will be 10 m wide and will sit within the access road pastureland permit corridor, as shown in Figure 5-10.

The road alignment has avoided water depots outside Yazıbaşı, Gömedi and Epçe. There are 27 planned culverts which have been considered for all streams (including ephemeral streams). The design involved investigating the existing drainage patterns and proposing a compatible drainage

[16] World Bank. 2009. *Workers' accommodation : processes and standards - a guidance note by IFC and the EBRD*.

system to maintain positive drainage at all times. Culverts are designed to convey runoff peak flow from the 100-year return period storm.

The road will be designed to the criteria described in Table 5-6 and the route is illustrated in Figure 5-10. The access road will not have security gates but will have signs stating that the road is a private road for mine vehicles only. Based on consultation with pastureland users, there will be designated crossing points for shepherds; drivers will be trained in safe driving techniques and speed levels will be imposed on the road.

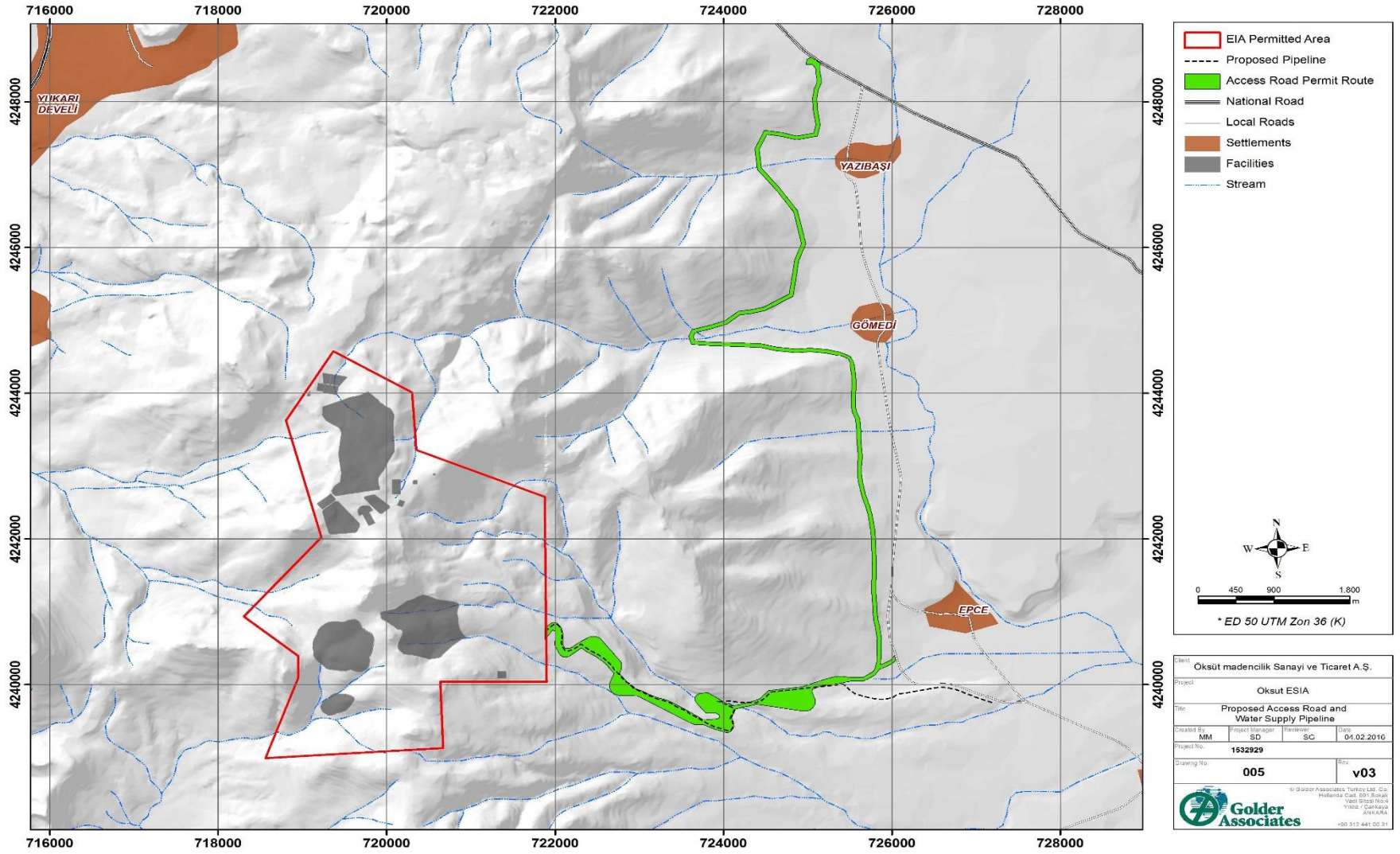
Table 5-6: Road Design Criteria

Design Criteria	Design Value
Number of Lanes	2
Lane Width	5 m
Total Road Width	10 m
Minimum Longitudinal Slope	0.5 %
Maximum Longitudinal Slope	9.0 %
Maximum Transverse Slope (in any cross-section)	2.0 %
Maximum Design Speed	35 km/h
Side Slope – Cut Sections	1H:1V
Side Slope – Fill Sections	2H:1V

Construction will commence in June 2016 and will take four months. Currently no borrow pits are planned as it is assumed that excavated material will be suitable to be used as base and sub base layers. The cut and fill ratio of 70:30 is arranged not to need any additional quarry. There will not be any crusher/cement batch plant as ready mix concrete will be bought from a commercial concrete batch plant. Laydown areas are not anticipated. A construction camp is not anticipated, however if one is required, it will be small scale and will be designed in accordance with IFC/EBRD requirements.

Whilst the access road is being constructed, the tracks from Yukarı Develi and Zile will be used for initial groundwork access and to enable haulage road development to begin concurrently with the access road construction from Epçe. The track from Yukarı Develi will be used where possible and the Zile track will only be used if necessary and with previous agreement with the Zile *muhtar*.

Figure 5-10: Proposed Access Road and Water Supply Pipeline Routes.



5.15.3 Water Supply Pipeline

Two water supply wells are located to the west of Epçe. Water will be pumped along a freshwater pipeline to deliver fresh water to the mine site that runs alongside the access road. The maximum licenced abstraction rate is 35 l/s.

Submersible pumps will pump water from the wells through a 150 mm HDPE pipeline running from the wells to the main pump station. Two vertical turbines, one operating and one standby, will be mounted in a concrete sump and connected to a 150 mm steel pipeline running 9.3 km to the mine site. The pipeline will be buried at a minimum of 50 cm for frost resistance and minimise vandalism. There will be a sand bed under the pipe.

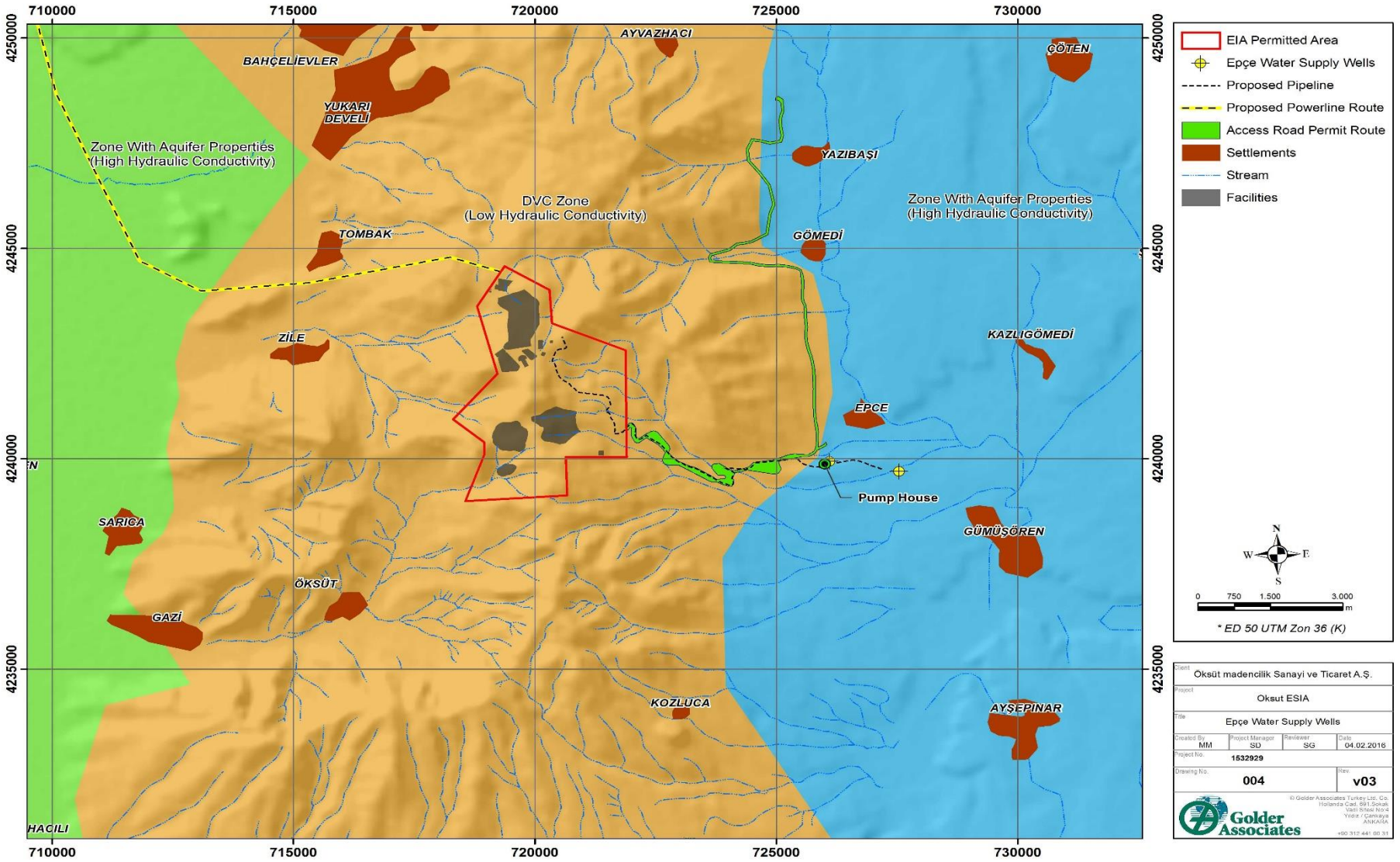
A pump house will be constructed to house the turbine pumps, concrete sump, electrical equipment and an office for the operations staff. Operation of the pipeline will be 24 hours a day 365 days a year, and will only be shut down for regular maintenance.

Table 5-7 provides a summary of the water pump and pipeline information and the route is illustrated in Figure 5-11.

Table 5-7: Summary of Water Pump and Pipeline

Pump System	Pump Type	Maximum Flow Rate (L/s)	Assumed flow balance	Pipeline Length (m)
Well E1TW1	Submersible	22	10	120
Well E2TW1	Submersible	35	25	1,500
Main Pumping System	Vertical Turbine	35	-	9,300

Figure 5-11: Location of Epçe Water Supply Wells



5.15.4 Powerline

The Project site will be fed by a 26 km, 154 kV powerline with a step-down transformer onsite to reduce the site distribution voltage to 31.5 kV. There will be 75 towers of varying heights. The location of the towers and powerline route is illustrated in Figure 5-12 below.

The powerline will have 7 turning points, and will be constructed in three segments from the Sendiremeke substation, where it initially heads northwest out of Çayirözü, before running back on itself and heading south east parallel to the public road, passing to the north of Soysalli where it then turns to the south south east and runs to the east of Sindelhöyük. The powerline then turns to the east and runs in between Tombak and Zile before reaching the northern point of the EIA Permitted Area.

The powerline will have:

- Rated operational voltage: 154 kV @ 50 Hz;
- Three-phase conductors of type 636 MCM ACSR “Grosbeak”, no neutral;
- Structures type: steel pole or steel tower, with anti-cascading structures at approximately each fifteenth (15th) structure.

The total installed electrical load will be 7.8 MW and the net power draw will be 4.55 MW (Table 5-8).

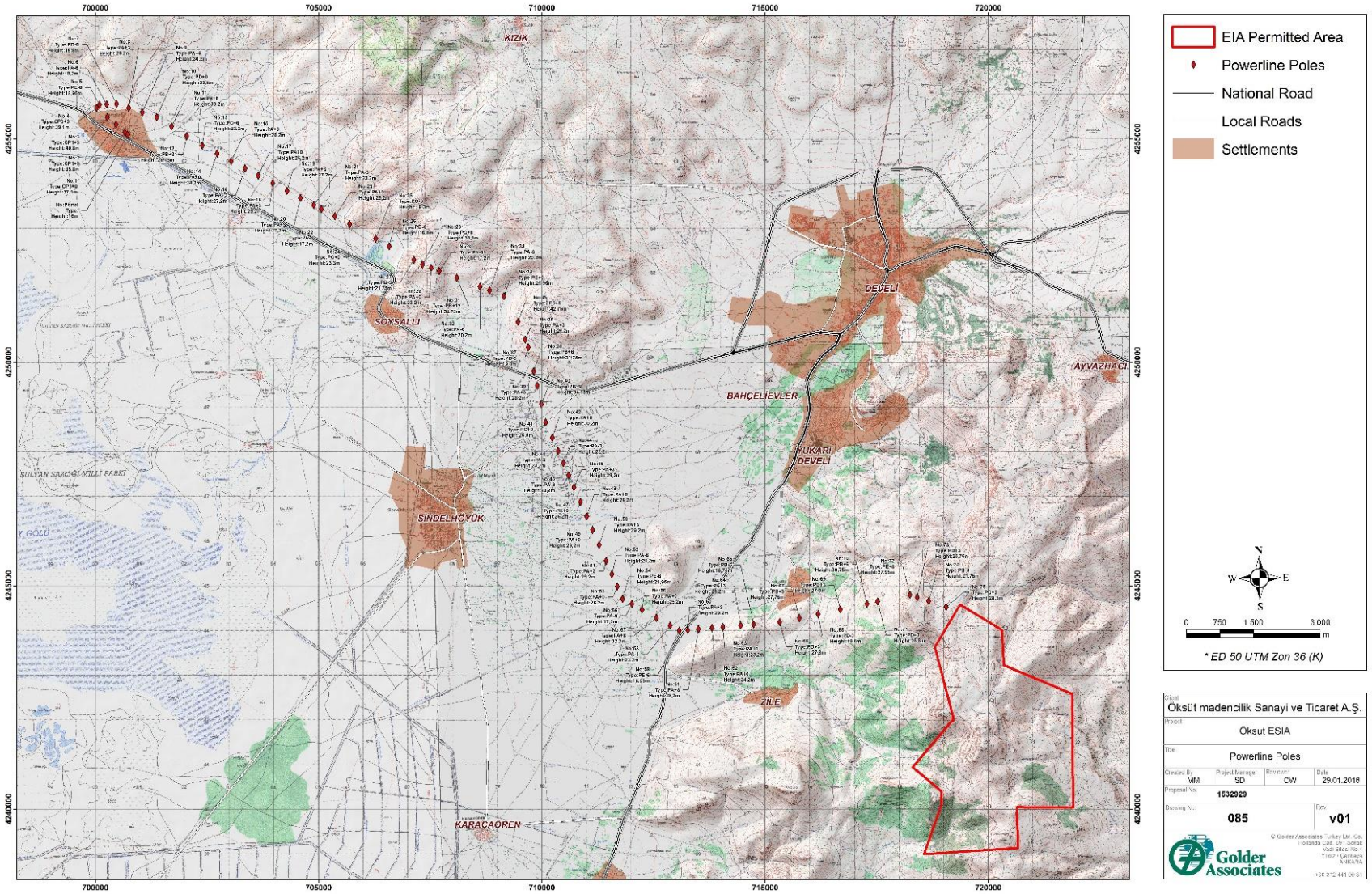
Table 5-8: Power Demand

Area	Power demand (kW)
ADR Plant	2,100
Crushing Plant	1,500
Site Infrastructure (Admin., Truck shop, etc.)	600
Off-site Infrastructure (Fresh water, Operations camp)	350
Total	**4,550**

Emergency power will be provided by two diesel generators located at the process plant and administration campus. Generators will start automatically upon power loss. The emergency power required for critical process equipment is minimal and will mostly be used for process agitation and recirculation to prevent freezing in winter and building services, such as heating and lighting. Each diesel generator has been preliminarily sized at 200 kW.

Construction of the powerline is planned to start in April 2016, once TEIAS have completed the expropriation process in conformance with OMAS requirements that land acquisition and land access is undertaken in line with EBRD PR5.

Figure 5-12: Proposed powerline route with locations of towers



5.16 Project Traffic

OMAS has estimated that there will be 371 vehicle movements per week during construction, and 725 vehicle movements per week during operation. A detailed breakdown of Project traffic is provided in TablesTable 5-9 andTable 5-10 below.

Table 5-9: Estimated Project Vehicle Numbers during Construction

Vehicle Description	Capacity (Tonne)	Estimated Number of vehicles per day							Estimated vehicles per week	Estimated vehicles per month
		M	T	W	Th	Fr	Sat	Sun		
Solid Waste Truck	15	3	3	3	3	3	3	3	21	84
Employee Buses	5	14	14	14	14	14	14	14	98	392
Automobile	1.5	15	15	15	15	15	15	15	105	420
4x4 Pick-Up	2	5	5	5	5	5	5	5	35	140
Medium Loaded Commercial Vehicles	1.5	6	8	5	9	4	7	4	43	172
Truck	4	10	9	5	7	6	8	3	48	192
Other	-	3	3	3	3	3	3	3	21	84
Total		**56**	**57**	**50**	**56**	**50**	**55**	**47**	**371**	**1,484**

Table 5-10: Estimated Project Vehicle Numbers during Operation

Vehicle Description	Capacity (Tonne)	Estimated Number of vehicles per day							Estimated vehicles per week	Estimated vehicles per month
		M	T	W	Th	Fr	Sat	Sun		
Reagents Trucks	40	1	1	1	1	1	1	1	7	28
Cyanide Truck	40			1					1	4
Explosives Truck	20		1		1				2	8
Solid Waste Truck	15			1					1	4
Employee Buses	5	12	12	12	12	12	12	12	84	336
Automobile	1.5	20	20	20	20	20	20	20	140	560
4x4 Pick-Up	2	35	35	35	35	35	35	35	245	980
Medium Loaded Commercial Vehicles	1.5	2	4	3	5	2	1	1	245	980
Total		**70**	**73**	**73**	**74**	**70**	**69**	**69**	**725**	**2,900**

5.17 Hazardous Materials Management

Hazardous materials used will include:

- Cyanide;
- Reagent chemicals;
- Anti-scalant;
- Diesel fuel.

5.17.1 Cyanide Management

As a Centerra-owned business, OMAS will conform to the International Cyanide Management Code (ICMC) and will be independently certified and audited. OMAS, in conjunction with its cyanide supplier[17], will develop a Cyanide Management Plan which includes worker safety, emergency response, employee and contractor training and transportation. Prior to completion of the Cyanide Management Plan, a Cyanide Management Framework (OMAS-ESMS-CY-PLN-001) has been prepared by OMAS setting out key approaches and commitments related to cyanide management.

Cyanide Supplier

OMAS has selected CyPlus GmbH as its cyanide supplier.

CyPlus GmbH is a globally established company in cyanides and technologies and services covering the whole life cycle of cyanides. The company meets the extensive and strict requirements of the international mining industry as a supplier of cyanides in accordance with the guidelines of the International Management Code (ICMC).

In addition to being a signatory as well as certified Producer, CyPlus has become a signatory Consignor to the ICMC. The Consignor coordinates and oversees the transport of cyanide by contracted carriers and becomes a signatory Consignor. As a result, the full supply chain from production, transportation through to end use will be undertaken by ICMC signatories and independently audited by ICMC accredited auditors.

CyPlus Solids to Liquids System

OMAS will use the CyPlus[18] solids to liquids system. This system has been in use in Turkey since 2013 at the Kisladag project operated by TÜPRAG Metal Madencilik.

The CyPlus solids to liquids system is based around the shipment of cyanide in solid briquette form in specially-designed containers (CyPlus SLS containers), which is then automatically dissolved on site and transferred to on-site storage tanks as a ready-to-use cyanide solution.

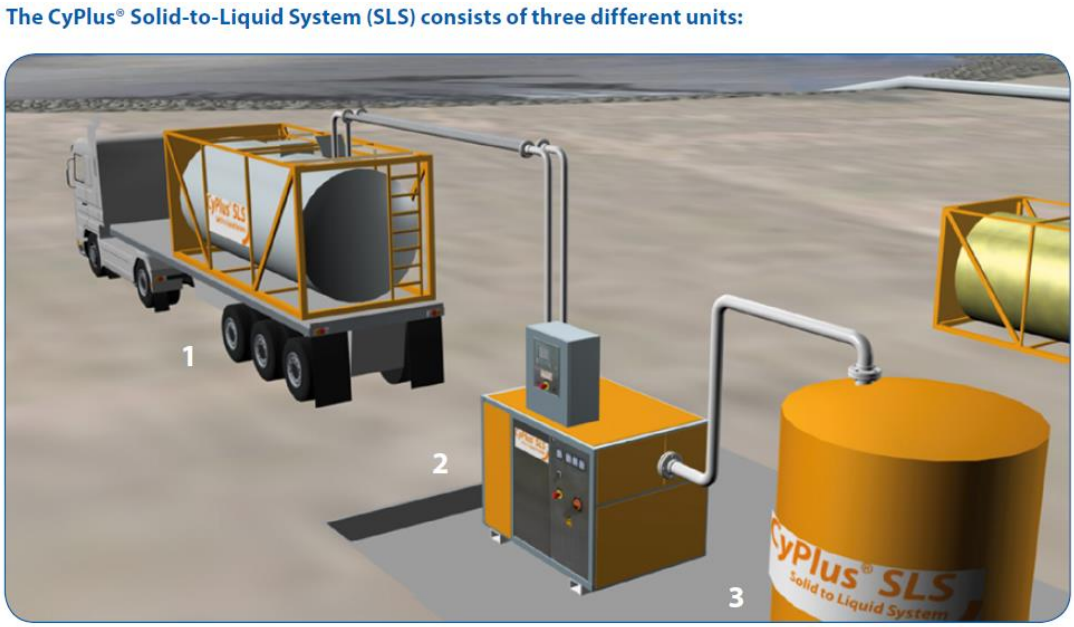
Once on site, the CyPlus SLS container is attached to a CyPlus dissolution station via two hoses (inlet and outlet). Water is pumped into the container and the resultant cyanide solution is then pumped into the on-site storage. When the dissolution process is completed, the CyPlus SLS container is automatically rinsed with water and purged with air.

The key advantages of the CyPlus solids to liquids system over conventional packaging, transportation and storage systems include:

- Cyanide is transported in solid briquette form in a purpose-built ISO-tank container that provides multiple layers of protection in the event of accidents;
- Workers are not exposed to cyanide during the dissolution process whereby the solid briquettes of cyanide within the ISO-tank are dissolved into a cyanide solution and pumped automatically into holding tanks;
- The “dissolution station” is a purpose-built unit, supplied by CyPlus, and specifically designed to ensure full containment of cyanide solution and no exposure to workers;
- The use of a returnable and reusable cyanide container (the CyPlus SLS container) does not lead to cyanide-contaminated packaging waste being generated.

[17] All cyanide suppliers being considered by OMAS are ICMC certified.
[18] www.cyplus.com

Figure 5-13: CyPlus SLS System Overview



1. CyPlus® SLS container
2. CyPlus® dissolution station
3. Existing storage tank for cyanide solution at the customer's site

CyPlus SLS containers are specially designed for the transportation and dissolving of solid cyanide. The largest container is a 20 metric tonne ISO-tank container with a stainless steel pressure vessel and a high-strength carbon steel frame.

Figure 5-14: CyPlus SLS Container 20 Tonne ISO-tank

The CyPlus dissolution station is delivered to the site as a fully assembled and tested package unit which is located in a containment area as close as possible to the cyanide storage tank.

Figure 5-15: CyPlus Dissolution Station

Cyanide Solution and Fugitive Emissions Management

The pH of the cyanide l solution will be controlled to minimise the generation of HCN gas. Due to the closed-loop nature of the heap leach process, all cyanide bearing solution is recirculated onto the pad after the gold recovery process.

Emissions to the atmosphere from process units will be controlled by implementing the appropriate design measures, as described in Table 5-11 below.

Table 5-11: Emission Points and Control Measures

Name of the Unit	Emission Point	Control Method
Primary Crusher Secondary Crusher	Primary Crusher Exit Fan Secondary Crusher Exit Fan	Dust collector Dry-mist system at the truck unloading section
Burnt Lime Silo	Silo Ventilation Exit	Dust collector
HLF	Leach Surfaces	Burnt lime will be added to the ore and heaped in the site
NaCN Preparation Tank Ca(OH)2 Preparation Tank NaOH Preparation Tank	Discharge Fan	Washing unit at the discharge fan outlet to prevent dust emission.
PLS Pond PLS Overflow Tank and Additional Water Tank	Evaporation-induced emission expected	By adding lime milk into the barren leach solution, the pH of the solution is enabled to be above 10 at all points.

Electro-recovery Cell Leach Solution Tanks Carbon Regeneration Kiln	Discharge Fan	Condenser, mist preventer, carbon absorption tank

Management of the Heap Leach Facility

As there is no tailings management facility in a heap leach process, there will be no discharge of residual cyanide in tailings. Upon mine closure, the heap leach pad will be capped with a 0.5 - 1 m thick layer of clay material to prevent any future contamination of residual cyanide.

Transportation

The cyanide transportation route within Turkey will be by road from the port of Mersin. A detailed route survey will be undertaken by CyPlus as part of the development of the Cyanide Management Plan for the supply chain.

Worker Safety

Detailed design of cyanide detection systems will be developed as part of the detailed design of the HLF. In addition to the cyanide detection system, all persons working in a cyanide area (ADR or Heap Leach) will also wear a personal cyanide monitor that will emit a noise if atmospheric cyanide concentrations rise above safe threshold levels are detected.

OMAS will train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner. Training will include the hazards associated with cyanide use; OMAS procedures and systems; and how to respond to exposure and environmental releases of cyanide.

Emergency Response

The OMAS Cyanide Management Plan will set out emergency response procedures related to cyanide management and will include both on-site and off-site emergency scenarios. The Emergency Response Plan (OMAS-ESMS-ERP-PLN-001) within the OMAS ESMS sets out key requirements and procedures for on-site and off-site emergency response and coordination with appropriate authorities in the event of an incident or accident.

5.17.2 Reagents

Reagents will be delivered to the site by road and stored on-site in the reagents store to the northwest of the Project site adjacent to the ADR plant. On-site access roads will be put in place for delivery vehicles to reach each location where reagents are needed.

A summary of the specific transport and storage arrangements for each reagent and/or raw material required in mining and processing is summarised below.

Table 5-12: Summary of Reagent Transportation and Storage

Reagent/Raw Material	Transport	Storage
Quicklime (CaO)	▪ delivered in super bags or tote bins ▪ delivered to the mine site by truck.	▪ Stored in a 100-tonne silo located in the vicinity of the secondary crusher ▪ silo will be equipped with a dust collector to control lime dust emissions during delivery ▪ lime will be withdrawn from the silo by a screw conveyor and fed onto the belt conveyor transporting the crushed ore to the radial stacker.

Reagent/Raw Material	Transport	Storage
Sodium cyanide (NaCN)	▪ delivered in 20 tonne capacity Iso-Containers ▪ delivered to the mine site by truck	▪ In a closed building with restricted access ▪ In accordance with International Cyanide Management Code guidelines. ▪ supplied in 20 tonne capacity Iso-Containers ▪ Fresh water will be added to the Sparge system to produce a 30% NaCN solution ▪ The cyanide solution will be transferred to a holding tank and will be pumped through a loop from which it will be metered to the barren solution tank and the carbon stripping circuit
Hydrated lime ($Ca(OH)_2$)	▪ supplied as a powder in bulk bags ▪ delivered to the mine site by truck ▪ to control lime dust emissions during bulk bags unloading, the exhaust from the mixing tank vent will pass through a scrubber.	▪ bulk bags will be unloaded by a screw feeder into the agitated lime mixing tank ▪ Fresh water will be fed along with the solid ▪ resulting milk of lime, at approximately 15 percent by weight $Ca(OH)_2$, will then be transferred to the holding tank ▪ From there it will be pumped through a distribution loop from which the milk of lime will be fed to the barren solution tank.
Hydrochloric acid	▪ delivered at a concentration of 31.5% w/w by 18-tonne tanker trucks.	▪ transferred to the 25 m^3 hydrochloric acid holding tank ▪ hydrochloric acid will be diluted prior to being used in the stripping circuit for acid washing of the carbon.
Carbon: Natural coconut shell-type activated carbon (typical dimensions 6 mesh x 12 mesh) will be used in the CIC circuit to recover dissolved gold and silver	▪ delivered in super bags ▪ delivered to the mine site by truck.	▪ introduced in the CIC circuit via the carbon pre-attrition tank to compensate for circuit losses.
Sodium hydroxide (NaOH)	▪ delivered to the mine site by truck ▪ supplied as a powder in bulk bags ▪ to control sodium hydroxide dust emissions during bulk bags unloading, the exhaust from the mixing tank vent will pass through a scrubber.	▪ be fed to the agitated NaOH mixing tank, along with fresh water to form a solution of 20% NaOH ▪ The solution will be transferred to the NaOH holding tank and will be pumped to the carbon stripping circuit and cyanide mixing tank using metering pumps ▪ system is sized to dissolve one (1) 1,000 kg-bag.

5.17.3 Anti-Scalant

Anti-scalant will be used in various areas of the process plant to minimize the scale build-up in equipment, piping and drip emitters. It will be obtained in tote bins and distributed into the pregnant solution pond, the barren solution tank and the carbon stripping circuit by pipeline, using a dedicated metering pump for each area.

5.17.4 Diesel

Diesel fuel will be required for the process plant and mining operations. The most significant diesel users will include mining equipment, light vehicles, and generators. Monthly diesel consumption is expected to around 500,000 L. Diesel will be supplied from one of the major oil companies in Turkey through a long-term purchase and dealership agreement. Machinery operating only in the mining areas will be refuelled by service and refuelling trucks. Further details about the fuel storage area are provided in Section 5.14.2.

5.18 Project Operations and Management

5.18.1 Contract Mining

Contract mining will be used at Öksüt. All mine planning, surveying, and ore control activities will be the responsibility of OMAS. The mining contractor will be responsible for:

- all direct operating costs, equipment and maintenance;
- consumables such as fuel, explosives and capital related to the mining operation;
- activities associated with mining including drill & blast, loading, hauling, road and dump maintenance;
- supervision of their own personnel;
- estimating and supplying the equipment required to meet the mining plan supplied by OMAS.

Major contractors will have their own environment and community relations managers. They will work within the Framework of the OMAS ESMS in coordination with the OMAS Community Relations Manager and Environment Manager, and will meet the requirements of the OMAS Contractor Management Framework (OMAS-ESMS-CM-PLN-001).

5.18.2 Workforce and HSE and Social Management

The total workforce during construction is estimated at approximately 405. The construction workforce will be made up of 55 OMAS staff, and approximately 350 contractors. Much of the bulk earthworks associated with the HLF and WRD will be undertaken by local Turkish contractors.

The total workforce during operation is estimated at 456, made up of 156 OMAS employees plus approximately 300 contractor staff. The bulk of the workforce during operations, approximately 85%, will be employed in the mining and processing departments.

OMAS Organisation Structure

The planned organisation structure for OMAS operations is illustrated in Figure 5-16. The detailed structure for the Health, Safety, Environment and Training Department is shown in Figure 5-17. The detailed structure of the External Affairs and Sustainability Department (including which positions are located onsite and in Ankara) is shown in Figure 5-18 below.

EIA and ESIA compliance, including reporting of monitoring activities, will be the responsibility of the Environmental Coordinator, who sits within the Health, Safety, Environment and Training Department. This position will be in communication with the Community Relations team (including the Social Performance Specialist) within the External Affairs and Sustainability Department. The Environmental Engineer and Technicians will undertake routine site monitoring activities.

Contractor compliance with OMAS contractual requirements will be monitored by the Project Manager and Mine Operations Manager in cooperation with Health, Safety, Environment and Training Manager, Human Resources Manager and Community Relations Manager on site.

Figure 5-16: OMAS Organisation Structure

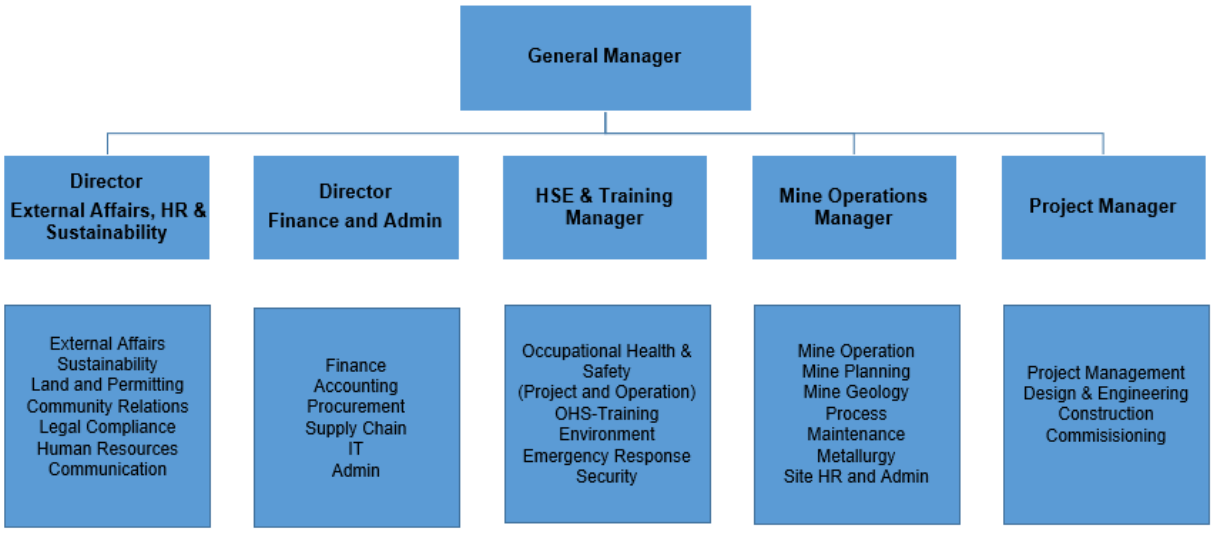


Figure 5-17: OMAS Health, Safety, Environment and Training Structure

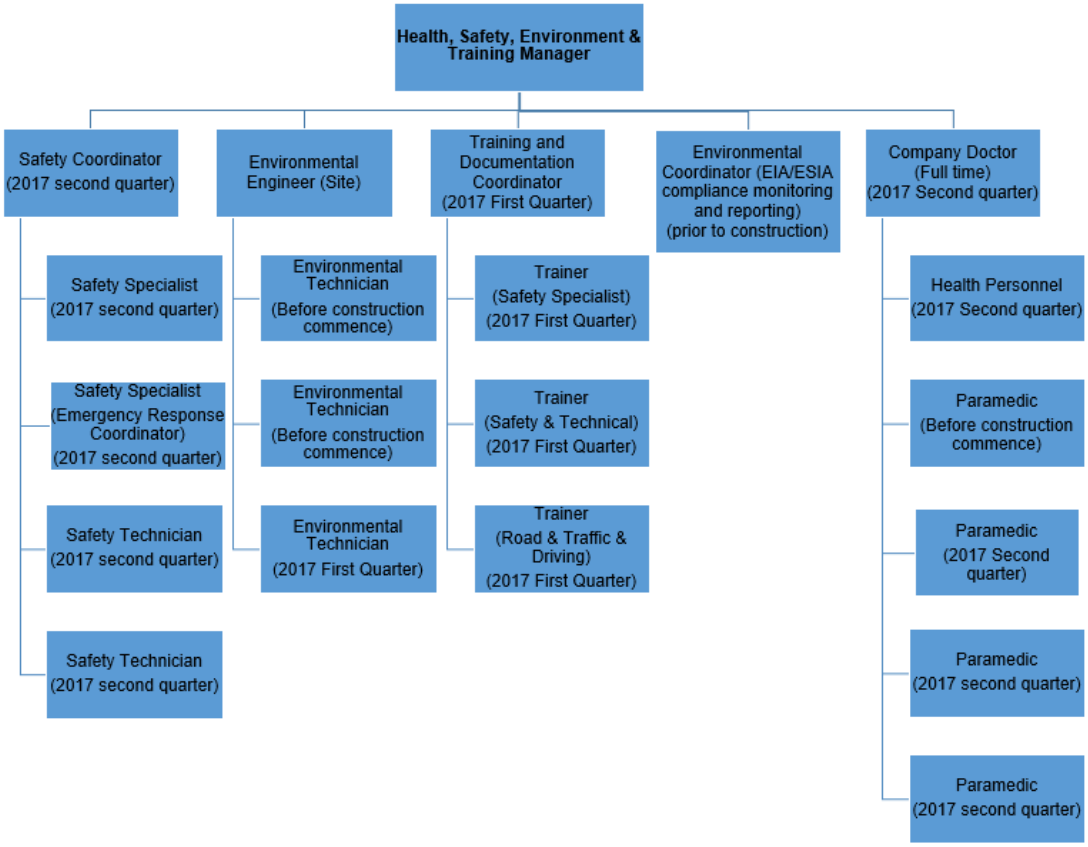
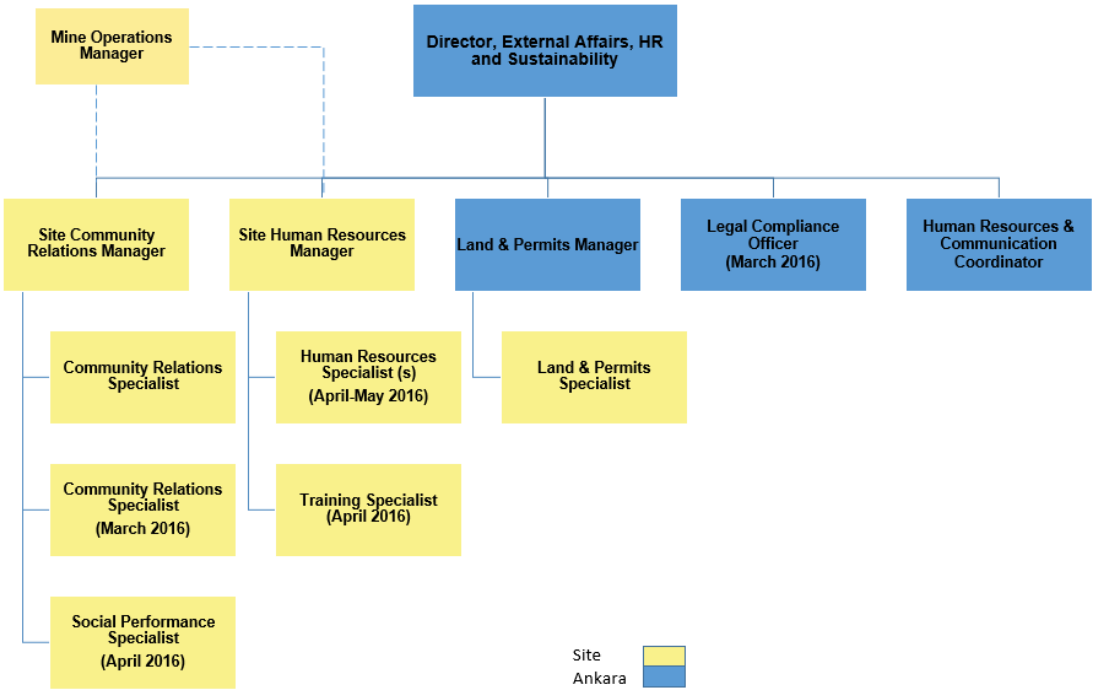


Figure 5-18: OMAS External Affairs and Sustainability Structure



OMAS HSE and Social Management System

OMAS has an integrated approach and structure to the planning and management of HSE and Social risks. The hierarchy of company policies, systems and plans comprises:

- Centerra HSE and Sustainability Policies which set out Centerra's overall commitment to protect the environment, health and safety of colleagues and the communities in which it operates.
- OMAS HSE (OMAS-HSEC-POL-001) and Sustainability (OMAS-HSEC-POL-002) Policies.
- The OMAS HSE and Social Management System Framework (OMAS-ESMS-001) which outlines 'who does what' at OMAS. The Management System is divided into 13 components, some of which are inter-related. Each component addresses a specific objective that enables OMAS to manage HSE and Social risks. The Management System is designed as a continual improvement cycle and adopts the methodology of "plan do-check-act".
- Implementation documents (documented plans, procedures, recommended practices and reference documents). The OMAS HSE and Social Management System Framework Document sets out the processes to be adopted across all HSE and Social functions to achieve OMAS HSE and Social objectives. OMAS' implementation documents are outlined in Table 5-13 and Table 5-14 below.

Table 5-13: OMAS Environmental and Social Management Plans and Frameworks

Name	Document #	Approval Date
Air Emissions Management Plan	OMAS-ESMS-AE-PLN- 001	1st March 2016
Biodiversity Management Plan	OMAS-ESMS-BIO-PLN-001	1st April 2016
Biodiversity Offset Strategy	OMAS-ESMS-OFF-PLN-001	1st April 2016
Community Health, Safety and Security Management Plan	OMAS-ESMS-CHSS-PLN-001	1st March 2016
Community Development Framework	OMAS-ESMS-CD-PLN-001	1st March 2016
Conceptual Mine Closure Framework	OMAS-ESMS-CP-PLN-001	1st March 2016
Contractor Management Framework	OMAS-ESMS-CM-PLN-001	1st March 2016
Cultural Heritage Management Plan	OMAS-ESMS-CH-PLN-001	1st March 2016
Cyanide Management Framework	OMAS-ESMS-CY-PLN-001	1st March 2016
Emergency Response Plan	OMAS-ESMS-ERP-PLN-001	1st March 2016
Hazardous Materials Management Plan	OMAS-ESMS-HM-PLN-001	1st March 2016
Labour Management Plan	OMAS-ESMS-LM-PLN-001	1st March 2016
Livelihood Restoration Framework	OMAS-ESMS-LR-PLN-001	1st March 2016, Plan will be in place prior to construction start.
Mineral Waste Management Plan	OMAS-ESMS-MW-PLN-001	1st March 2016
Noise and Vibration Management Plan	OMAS-ESMS-NV-PLN-001	1st March 2016
Non Mineral Waste Management Plan	OMAS-ESMS-NMW-PLN-001	1st March 2016
Security Management Plan*	*	Prior to operation
Stakeholder Engagement Plan	OMAS-ESMS-SEP-PLN-001	1st March 2016
Transport Management Plan	OMAS-ESMS-TMP-PLN-001	1st March 2016
Water Resources Management Plan	OMAS-ESMS-WR-PLN-001	1st March 2016

*Security Management Plan will be developed but will not be disclosed

Table 5-14: OMAS Policies, Plans and Procedures

Document #	Name	Effective Date	Description
OMAS-GEN-POL-001	Code of Ethics Policy	October 2015	The Code embodies the commitment of Centerra Gold and its subsidiaries, including OMAS, to conduct business in accordance with all applicable laws, rules and regulations and high ethical standards.
OMAS-GEN-POL-002	Whistle-blower and Reporting Policy	October 2015	a summary of reporting procedures for employee concerns over accounting and auditing matters, and violations of Centerra Gold Inc.'s ("Centerra Gold") Code of Ethics (the "Code").
OMAS-GEN-POL-003	Gifts and Hospitality Policy	August 2015	to regulate the disclosure of casual benefits that have been offered and given, or accepted and received by employees that are within allowable exceptions as defined in the Code of Ethics Policy.
OMAS-HR-POL-001	HR Policy	October 2015	OMAS HR Policy.
OMAS-HR-POL-002	Respectful Workplace Policy	October 2015	Commitment to behaviour consistent with the principles of integrity, trust, mutual respect, cooperation, and understanding.
OMAS-HR-PRC-001	HR Policy and Procedure	October 2015	Overarching HR Policy and goals, based on based on the principles outlined by the ILO Convention, Human Resource Plans, Procedures, and Codes of Conduct of Centerra Gold Inc. and as well as the requirements of Turkish Labour Law and applicable international principles, standards and best practice.
OMAS-HR-PRC-003	Employee Grievance Procedure	October 2015	to provide all employees with a uniform process for the resolution of employment concerns not addressed by the existing HR policy, plans and specifically in the Respectful Workplace Policy.
OMAS-HR-PRC-004	Recruitment Policy and Procedure	October 2015	guidelines on a structured, formal process to recruit new employees to OMAS.
OMAS-HR-PRC-004	Local Employment and Training Procedure	October 2015	Targets for unskilled and semi-skilled workers from affected settlements, districts and provinces; recruitment procedure; non-discrimination and equal opportunity; scoring system for local employment; training and development.
OMAS-HR-PRC-005	Recruitment Procedure for Contractors	February 2015	Contractor requirements to comply with OMAS policies, including Human Rights, ILO, systems for grievances and requirement for reporting on recruitment, transparency and local employment.
OMAS-HSEC-POL-001	HSE Policy	February 2015	OMAS HSE Policy.
OMAS-HSEC-POL-002	Sustainability Policy	February 2015	OMAS Sustainability Policy.
OMAS-HSEC-POL-003	Community Conflict and Resolution Policy	February 2015	guideline required to solve issues that may arise between OMAS and its shareholders, consultants, contractors, sub-contractors and the public neighbouring the project.
OMAS-HSEC-POL-004	Social Investment Policy	August 2015	the general approach of the Company regarding its social investments and community outreach

Document #	Name	Effective Date	Description
			programs in Turkey.
OMAS-HSEC-PRC-001	Health Safety Procedure	October 2015	OMAS requirements for management of Health and Safety. Includes Health and Safety Policy.
OMAS-HSEC-PRC-002	Risk Management Procedure	October 2015	system for hazards and environmental impacts, their root causes and other deficiencies found. Includes Risk Matrix and Risk Level Determination Chart.
OMAS-HSEC-PRC-003	Personal Protective Equipment (PPE) Procedure	October 2015	Outlines OMAS PPE requirements and equipment issue to staff.
OMAS-HSEC-PRC-004	Accident Incident and Medical Evaluation Reporting Procedure	October 2015	Reporting protocol for accidents, incidents and medical evacuations.
OMAS-HSEC-PRC-005	Grievance Procedure	August 2015	complaints from local communities of OMAS's project sites, individuals and other third parties are managed parallel with Centerra's Grievance Management and Resolution Procedure
OMAS-HSEC-PRC-006	Construction Impacts Management Procedure	August 2015	actions that must be implemented to minimise the disruption and negative impacts for all settlements affected by construction activities of OMAS.
OMAS-HSEC-PRC-007	Cultural Heritage Management Procedure	August 2015	ensure that the Öksüt Project has minimal impact on the cultural heritage and resources of the project area including Chance Finds Procedure.
OMAS-HSEC-PRC-008	Traffic Management Plan	October 2015	Responsibilities and requirements for regular traffic rules during construction and operation.
OMAS-HSEC-PRC-009	Environmental Monitoring and Measurement Procedure	October 2015	Environmental monitoring procedure from commitments in the Turkish EIA, for air quality, noise, vibration, surface water, groundwater, acid rock drainage, soil quality and topsoil.
OMAS-HSEC-PRC-010	Waste Management Procedure	October 2015	Process for management of collection, storage, transportation and disposal of all hazardous, non-hazardous, inert and domestic Wastes.
OMAS-FIN-PRC-001	Procurement of Goods and Services Policy and Procedure	September 2015	to ensure that all acquisitions of material and services authorised by management are carried out in a timely, cost effective and well controlled manner, and are supported by an authorised requisition, purchase order or formal contract. Includes guidelines to maximise local supply of goods and services; outlines supplier and contractor zones; and lists items that should be locally procured.
OMAS-FOM-PLN-001	Contractor Management Plan	Tbc.	systematic approach to the management of contractors.

5.18.3 Contractor Management

Under the OMAS Contractor Management Framework, all OMAS standards and requirements will be applicable both for OMAS employees and direct activities and for contractor employees and activities. OMAS requirements are set out in contract documentation for contractors and all operational supervision, monitoring and reporting procedures will cover both OMAS and its contractors. The OMAS Contractor Management Framework is part of the OMAS ESMS.

5.19 Equipment and Materials

5.19.1 Machinery and Equipment

An estimate for the production machinery and equipment requirements[19] is given in Table 5-15.

Table 5-15: Production Machinery and Equipment

Equipment Type	Number
Primary Crusher (Jaw)	1
Secondary Crusher (Cone)	1
Screens	2
Conveyors	2
Stacker	1
Rock Breaker	1
Haul Trucks	42
Excavators	4
Drillers	4
Graders	3
Dozers	5
ANFO Truck	1
Jib Crane	1
Loader (Ore/waste rock dumping)	1
Loader (other)	1
Light vehicles	10

5.19.2 Raw Materials and Sources

The Project has estimated 400,000 m^3 cut and fill (110,000 m^3 volume of cut and fill for site grading, and 269,000 m^3 for the access road construction). There is no requirement for any quarries. OMAS has identified clay borrow pits underneath the HLP and are undertaking additional geotechnical investigations to determine the size and depth of the clay in this area.

5.20 Solid Waste Management

OMAS is committed to following the waste management hierarchy and will comply with Turkish Waste Management Regulations[20] as part of its Non-Mineral Waste Management Plan (OMAS-ESMS-NMW-PLN-001). Non-hazardous wastes will be collected and stored in the non-hazardous waste temporary

[19] The estimated equipment list has been updated since the Turkish EIA due to the updated Resources Model. This equipment list has been taken from the 43-101 Report.
[20] Waste Management Regulations, Official Gazette No. 29 314 (14/03/2005); Regulation on Control of Hazardous Wastes, Official Gazette No. 25755 (24/08/2011); Regulation on Control of Packaging Waste, Official Gazette No. 21586 (20/05/1993).

storage area. Hazardous Wastes will be stored appropriately before being collected and disposed off-site by a licensed contractor as outlined in the Hazardous Materials Management Plan (OMAS-ESMS-HM-PLN-001).

Estimated non-hazardous and hazardous waste quantities, and the process and location of disposal facilities are outlined below.

Table 5-16: Non-Hazardous Waste

Waste Name	Process	Probable quantity (kg/ mth)	Process Company	City	Cost
Paper	Recycle	300-500	Recycle Co. At Kayseri	Kayseri	Sellable
Nylon	Recycle	700-1000	Recycle Co. At Kayseri	Kayseri	Sellable
Plastic	Recycle	2000-4000	Recycle Co. At Kayseri	Kayseri	Sellable
Glass	Recycle/ Disposal	100	Recycle Co. At Kayseri / Develi Municipality garbage dump site	Kayseri	uncountable
Wood	Recycle	2000-4000	Recycle Co. At Kayseri	Kayseri	Sellable
Metal Scrap	Recycle	5000-8000	Recycle Co. At Kayseri	Kayseri	Sellable
Domestic Waste	Disposal	15000	Develi Municipality garbage dump site	Kayseri/Develi	uncountable
Construction debris	Disposal	n/a	Develi Municipality garbage dump site	Kayseri/Develi	uncountable

Table 5-17: Hazardous Waste

Waste Name	Process	Probable quantity (kg/ mth)	Process Company	City	Cost	Transportation
Waste Oil	Recycle	2000	Acıöz Co. (licensed)	Konya	Sellable	Licensed Transporting Co.
Oil Barrel	Recycle	1000	Varilci Co. (licensed)	Nevşehir	Sellable	Licensed Transporting Co.
IBC Tanks	Recycle	1000	Varilci Co. (licensed)	Nevşehir	Sellable	Licensed Transporting Co.
Laboratory Wastes	Disposal	700-1000	İZAYDAŞ Co. (government facility)	İzmit	200-300$	Licensed Transporting Co.
Contaminated Wastes	Disposal	1000-1500	İZAYDAŞ Co. (government facility)	İzmit	200-300$	Licensed Transporting Co.
Oil Filters	Disposal	700-1002	İZAYDAŞ Co. (government facility)	İzmit	200-300$	Licensed Transporting Co.
Maintenance Wastes	Disposal	1000-2000	İZAYDAŞ Co. (government facility)	İzmit	200-300$	Licensed Transporting Co.
Lamp unites	Disposal	1000-2001	İZAYDAŞ Co. (government facility)	İzmit	200-300$	Licensed Transporting Co.
Electronic Wastes	Recycle	150-200	Doğa Entegre Co (licensed)	İzmit	Sellable	Licensed Transporting Co.
Food Oil	Recycle	200	Kozla Co. (licensed)	Kayseri	without charge	Licensed Transporting Co.
Waste Cell	Recycle	10	TAB (Turkish waste	İstanbul	without	Cargo

Waste Name	Process	Probable quantity (kg/ mth)	Process Company	City	Cost	Transportation
Batteries			cell dept.)		charge	
Waste Accumulator	Recycle	100	licensed Co.	Kayseri	sellable	Licensed Transporting Co.
Waste Toners, cartridge	Recycle	150	Doğa Entegre Co (licensed)	İzmit	Sellable	Licensed Transporting Co.
Contaminated active carbon by mercury	Disposal	400	İZAYDAŞ Co. (government facility)	İzmit	200-300$	Licensed Transporting Co.
Mercury	Disposal	40	İZAYDAŞ Co. (government facility)	İzmit	200-300$	Licensed Transporting Co.
Medical Wastes	Disposal	80	TEK Co. (government facility)	Ankara	50-60$	Government Transporting
Vehicle tires	Recycle	200	Birteks Co. (licensed)	Ankara	Sellable	Licensed Transporting Co.
Conveyor Belt	Recycle	4000	Birteks Co. (licensed)	Ankara	Sellable	Licensed Transporting Co.

5.21 Project Decommissioning and Closure

Current estimates of mine life indicate that mining operations will cease 8 years after the start of open pit mining operations, although actual length of mine life will be determined by recoveries, commodity price performance, and other factors. When mining ceases, the final stockpile of ROM ore will be processed, and the Project will enter a period of decommissioning and closure.

OMAS will develop a conceptual mine reclamation and closure plan which will aim to leave the mine and associated infrastructure area in a condition that minimises adverse impacts on the social and natural environment and with a legacy that makes a positive contribution to sustainable development. The closure plan will be developed to adhere to national regulations and international good practice and is discussed in more detail in the Conceptual Mine Closure Framework (OMAS-ESMS-CP-PLN-001) which is part of the OMAS ESMS (OMAS-ESMS-001).