

## Mining Project

# Permitting Designs and Technical Studies for the Mining Activities of Hellas Gold S.A. in Chalkidiki

Northern Greece

### Project

Elaboration of the technical studies and designs for the permitting of the mining activities of Hellas Gold S.A.

### Construction Cost

Total cost: approx. € 216 m.

### Project Schedule

Design: 2011  
Construction: 2012 - 2018

### Project Description

- Main access & haulage Olympias tunnel, length 8,770m and horse-shoe type cross section effective area 37.2m<sup>2</sup>
- Tunnel from the main access tunnel to the underground backfilling facility (branch A – Olympias Mine), length 1,775m and horse-shoe type cross section effective area 37.2m<sup>2</sup>
- Intermediate tunnel for the connection with Olympias mine, length 180m and horse-shoe type cross section effective area 37.2m<sup>2</sup> (branch B – Olympias mine)
- Secondary Olympias mine access tunnel, length 1,043m and horse-shoe type cross section effective area 22.3m<sup>2</sup>
- Kokkinolakkas stream diversion tunnel, length 1,200m and horse-shoe type cross section effective area 9.55m<sup>2</sup>
- Skouries mine main access shaft, length 720m and circular cross section effective diameter 6.0m
- Skouries mine main access spiral ramp, length 5,445m and effective cross section 21m<sup>2</sup>
- Skouries mine main access road, length 6,920m, width 7.5m

### Geology

Amphibolites – amphibolitic gneisses, Biotitic gneisses, Pegmatites, Marbles, Tectonic breccias, Mylonitized zones, Kaolin occurrence zones, groundwater

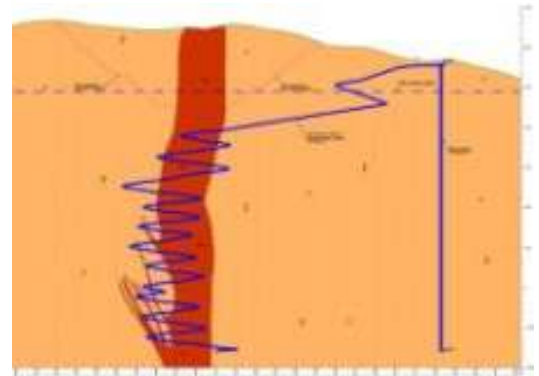
Max. Overburden thickness up to 900m

**Our Services** (according to Articles 4 and 101 of the Greek Mining Regulation for Permitting Mining Projects)

- Final technical design for the construction of the main access and haulage tunnel from Olympias Mine to the new process plant in Madem Lakkos
- Final technical design of a second tunnel from the main access tunnel to the underground backfilling facility (branch A)
- Final technical design of a tunnel for intermediate connection with Olympias Mine, (branch B)
- Final technical design for the construction of the secondary access tunnel of Olympias Mine
- Final technical design for the construction of a hydraulic tunnel for the diversion of Kokkinolakkas Stream
- Final technical design for the construction of the main access works of Skouries Underground Mine (main ramp & shaft)
- Technical study (alignment, geotechnical, structural, hydraulic) for the construction of the main access road for the connection of Skouries Mine with the National Road Network

### Client

HELLAS GOLD S.A. {Subsidiary of ELDORADO GOLD (CA)}



Skouries ramp and shaft



Main tunnel access works



Main access & haulage Olympias tunnel



Kokkinolakkas Stream diversion tunnel & affiliated works

# Mining Project

## Skouries' Underground Mine Spiral Decline and Main Access Shaft

### Skouries, Chalkidiki, Kassandra Mine Project

Northern Greece

#### Project

Design of Skouries' underground mine spiral decline and main access shaft

#### Construction Cost

Total cost: approx. € 80 m.

#### Project Schedule

Design: 2011  
Construction: 2012 – on going

#### Project Description

Length of spiral decline:	5.445 km
Overburden:	800 m
Effective cross section of spiral decline:	37,2m <sup>2</sup>
Length of shaft (vertical):	720m
Effective cross section of shaft:	28m <sup>2</sup>

#### Geology

- Biotitic chloritic schists, porphyry
- Underground water

#### Excavation Method

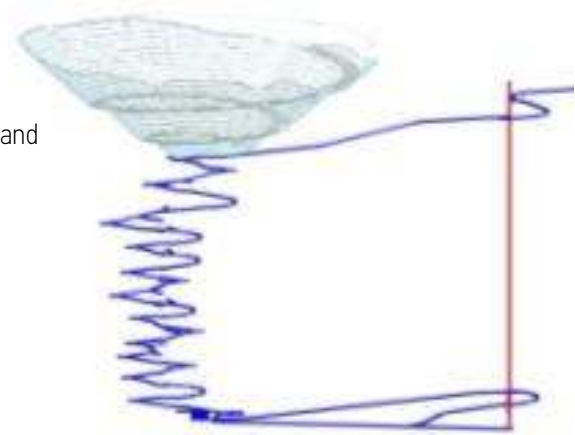
Drill & Blast Conventional Excavation method (NATM)  
Conventional shaft sinking

#### Our Services

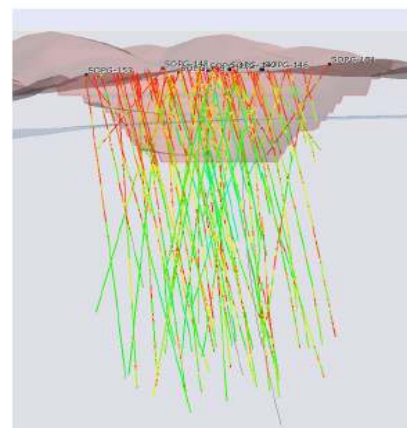
Technical Studies and Detailed Designs for the construction permitting (according to the articles No 4 and 101 of the Greek Mining Regulation), Application Designs, Consultancy Services, construction Follow up (Design) Services, project Management

#### Client

HELLAS GOLD S.A. {Subsidiary of ELDORADO GOLD (CA)}



Spiral decline – Shaft – Open Pit Mining



Drilling for the underground resources

# Mining Project

## Surface Mining of a porphyritic deposit

### Skouries, Chalkidiki

Northern Greece

#### Project

Design of an open pit mine, for the exploitation of a porphyritic copper deposit

#### Construction Cost

Total cost: approx. € 42,5 m.

#### Project Schedule

Design: 2007-2008

Construction: 2012-on going

#### Project Description

Gold & copper mine

Estimated mine depth: approx. 200m – 250m

Estimated surface diameter: approx. 700m

Estimated open pit mine reserve: approx. 65 million tons

#### Geology

- Subalkalic porphyry with the shape of subvertical pipe, within amphibolitic – biotitic schists & gneisses
- Groundwater

#### Our Services

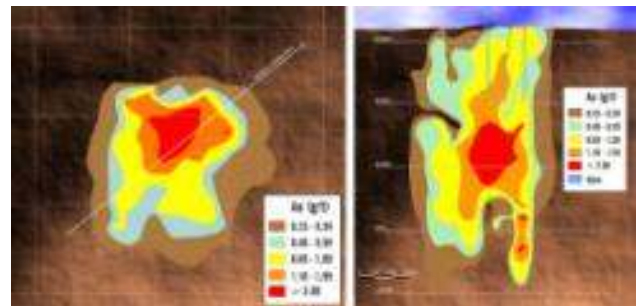
- Determination and assessment of the open pit mining input parameters (Pre-design framework)
- Pre-design of the open pit mine
- Design of the infrastructure road works affiliated to the open pit mine
- Transportation & traffic study for the support of the surface exploitation works

#### Client

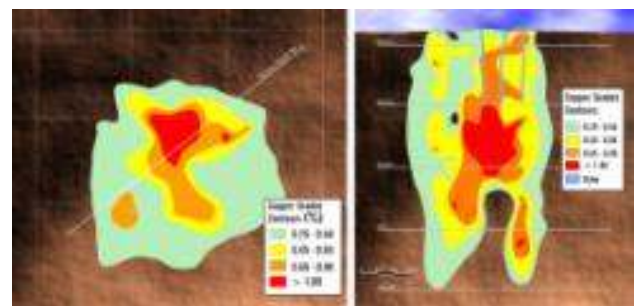
HELLAS GOLD S.A. {Subsidiary of ELDORADO GOLD (CA)}



Skouries area view



Plan View & Cross Section, showing the gold grades



Plan View & Cross Section, showing the copper grades