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# MINING TECHNOLOGY



Projects

## Hounde Gold Mine

Houde gold mine is located 250km south-west of Burkina Faso's capital Ouagadougou in West Africa. It is one of the highest quality development projects in the region.

Producer of	Location	Ownership	Mining Method
Gold	Burkina Faso, West Africa	Endeavour Mining (90%) and Government of Burkina Faso (10%)	Open-pit

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The Houndé gold mine is located in Burkina Faso, West Africa. Image: courtesy of Endeavour Mining.



Houndé gold mine is located 250km south-west of Burkina Faso's capital Ouagadougou in West Africa. It is one of the highest quality development projects in the region.

The project is owned by Endeavour Mining (90%) and the Government of Burkina Faso (10%). Endeavour was awarded the mining permit for the project in February 2015.

Houndé will be Endeavour's leading low-cost mine due to the availability of existing infrastructure. The estimated cost of developing the project is \$328m.

Construction of on-site facilities commenced in June 2016, with first production expected in the fourth quarter of 2017. Houndé is expected to have an average annual production of 190,000oz over its ten years of mine life.

## Geology and mineralisation at the West African mine

The Houndé project spans 1,075km<sup>2</sup> of the Birimian belt of Burkina Faso. The majority (88%) of the mine's reserves are located in the Vindaloo deposit, with Bouéré and Dohoun holding the remaining reserves.

Vindaloo is a shear hosted sub-vertical deposit of the Proterozoic-age that trends north-northeast and dips to the

west vertically. The deposit is characterised by intensely sericite and silica-altered mafic intrusions, severely foliated mafic volcanoclastics and other sediments. Gold mineralisation that is weak to moderate pyritic occurs in quartz stockworks.

## Houndé gold mine reserves

Proven and probable reserves at the mine are estimated to be a 31 million tonnes (Mt) grading 2.1g/t Au, containing 2.1 million ounces (Moz) of gold.

Measured and indicated mineral resources are estimated to be a 38Mt grading 2.10g/t Au containing 2.5Moz of gold, whereas inferred mineral resources are estimated to be a 3Mt grading 2.6g/t Au containing 0.3Moz of gold.

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## **Mining and processing of ore at Endeavour's gold mine**

The Houndé mine will be developed using open-pit mining methods, including drilling and blasting.

Produced ore will be trucked to a 3Mt/y process plant consisting of a SABC comminution circuit, gravity concentration circuit, and carbon-in-leach (CIL) circuit for processing.

A single toggle jaw crusher will grind the ore to a coarse product, which will be fed to the SABC comminution circuit consisting of 6MW SAG and ball mills, and a recycle pebble crusher. The SABC comminution circuit will grind the product to a size of 90µm, which will then be transferred to the gravity concentration circuit.

Using continuous centrifugal gravity concentrators and an ultra-fine grind mill, the gravity concentration circuit will recover coarse or heavy particles from the slurry to be reground to a size of 10µm.

The product will be combined with gravity tails to increase the slurry density, and is then sent to the CIL circuit, consisting of six stages of leaching with carbon. The loaded carbon then passes through a split AARL elution circuit, electrowinning and gold smelting to produce doré.

A sulphur dioxide/air cyanide destruction circuit will be used to reduce the cyanide concentration in the tailings to less than 50 parts per million (ppm) to comply with the International Cyanide Management Code.

Tailings from the process plant will be pumped to the tailings storage facility.

## **Houndé project infrastructure facilities**

The project is currently being accessed through a 1.5km unsealed track, which will be upgraded to a sealed 9m-wide road during the mine development. Access to the camp will be provided by a 7m unsealed road.

Power required for the processing plant will be supplied by a 225kV power line running from Cote d'Ivoire to

Ouagadougou. Endeavour has signed a power off-take agreement with the state power entity, Sonabel, to supply power for the project. A dedicated 91/11kV substation and a 38km-long 91kV overhead power line will be constructed to connect with the 225kV power line.

A water harvest dam will be constructed to supply water for the project. A supplement water storage dam will also be developed for storage of water during the wet season.

## Contractors involved with the open-pit gold mine

Lycopodium Minerals was the lead consultant for carrying out the feasibility study for the project. Cube Consulting, Knight Piésold and Orelogy also took part in the feasibility study.

Genivar and Orway Mineral Consultants carried out the environmental and social studies for the project.

In April 2016, Outotec was awarded a €13m (\$18.72m) contract to supply process equipment and services for the project, including a 6MW SAG grinding mill, a 6MW ball mill and a pre-leach thickener.

Komatsu is supplying its mining fleet for the project under a \$38m contract.

### Companies Involved

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