Consultants move swiftly on Ghana project

American mining company Newmont Mining subsidiary Newmont Ghana Gold Limited (NGGL) has identified a new gold-mining pit 10 km north of its existing opencast gold-mining operation, Ahafo, in Ghana.

The Ahafo mine project involves the development of four mine pits to produce and process about seven-million tons of ore a year, over a 15-year period.

The mine's current resources are estimated at 105-million tons of ore, producing 6,8-million ounces of gold.

The initial development in the mine project involves about 2 994 ha for construction and operation of mine components, which include the newly identified Amoma project.

ROADBLOCK
Golder Associates is meeting the challenges faced in developing a 9-km haul road in the middle of the Ghanaian jungle

About 200 people will be on site during the construction phase, which started in November last year and will run through to commissioning at the end of this year.

Engineering and environmental services company Golder Associates head of mining infrastructure and waste division **Chris van Renssen** says that NGGL developed the mine in a five-stage approach, comprising the business case, confirmation of the reserves, the feasibility study, detailed design and construction.

"Golder became involved at stage three, where we assisted with the feasibility study. It was at this stage that we felt we added real value by reviewing the initial concepts and coming up with more efficient ways of setting up the project," he says.

Golder's scope on this project includes all the infrastructure around the mine, including a haul road from Newmont's Ahafo South mine to Amoma; the lined pit-water holding pond; the pit-water pumpstation and the delivery pipeline back to Ahafo; and the sediment control structures.

"The new Amoma pit had no existing infrastructure and the haul road crosses a provincial road that bypasses a village, so public participation was key.

"Newmont managed the process well, and Golder is kept aware of any new issues through a liaison team.

"The detailed design for the project is almost complete and Golder's rigorous drawing and document control system has been used and a collaborative workspace set up on its Goldnet Intranet facility.

"All documents prepared are put on the site and can be accessed by Golder

MINE CONSTRUCTION
About 200 people will be on site during the construction phase

staff everywhere, including directly from the construction site," Van Renssen says.

Golder designed a new outlet pipe structure for the dewatering of the siltation dams, which capture the water and allow the sediment to settle before the water is released into the environment.

"The structure was created with safety in mind, so the structure is easily accessible and operable without any walkways across the water," Van Renssen adds.

"Another interesting part of the project for the teams involved was determining how to marry the pit development with the waste rock dump development. The eventual pit depth will be between 60 m and 80 m and the waste rock dump will be 40 m to 60 m high."

Van Renssen adds that the mining engineers sought to develop the pit in nine stages, which resulted in the company modelling all nine stages.

The model allowed Golder to determine the percentage of the pit which would be ore and which would be waste; which ore would be soft and which ore would be hard; where the ore would be mined and where the ore and waste would go.

"We created a total of 16 models to show material movement and sequencing of the different stages of pit versus waste rock. Engineers will have 16 models outlining exactly which will be mined out, which should simplify and speed up the project."

Golder Associates' geographical information system division will soon be presenting a three-dimensional model where stakeholders can see how the entire Amoma process will start, develop and end.

"The expected lifespan of the mine is two-and-a-half years. Once work begins, it will move quickly. That is why we needed to have a good overview of how materials should be managed and an overall view of the project itself," Van Renssen explains.

Golder Associates, through its offices in Ghana, Pretoria and Midrand, is meeting the challenges associated with the engineering and design of a 9-km haul road in the middle of a jungle, the water management structures that would recycle water back from Amoma to Ahafo South, and all the infrastructure requirements.

"In teaming up with NGGL, we were proactive about geotechnical surveys, assessments and meeting compliance standards in all areas," concludes Van Renssen.

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