Mining Weekly Article

R400m reopening of pioneering East Rand gold-from-dumps operation

Picture by: Duane Daws
LLOYD BIRRELL Bought everything but Withok, and now bidding for that as well

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Ergo is on the way back.

The gold-from-dumps pioneering operation that AngloGold Ashanti closed in March 2005 is expected to be producing 200 kg of gold a month in 12 months to 18 months time.

The Australian-listed Mintails and the JSE-listed DRDGold have joined forces, under the name of the Ergo Mining Joint Venture, to resuscitate the operation. Value-adding uranium production and also sulphuric acid production are likely to follow gold production at a later stage.

Infrastructure for this is already in place as the Ergo complex is made up of three sections.

The first section is the gold section, which has two streams with a combined capacity of three-million tons of dump material a month, but that capacity will initially be used up to an extent of 1,25-million tons of material a month; the second section is the uranium section and the third the acid-recovery section.

Refurbishment and modernisation of the carbon-in-leach (CIL) gold plant is already taking place.

This will initially treat slime from DRDGold's East Rand Proprietary Mine's (ERPM's) Elsburg dump.

The companies' boards have approved R400-million for the project, which is being managed by Mintails' highly regarded and internationally experienced Wayne Hatton-Jones.

Acquired are all Ergo's servitudes and pipelines and also its mining authorisation, with the exception of the nearby Withok tailings complex.

'We are investigating the feasibility of including the Withok Brakpan complex as well,' Mintails South Africa director: special projects Lloyd Birrell tells Mining Weekly.

The 171-million-ton Elsburg resource has an average grade of 0,31 g/t and is expected to be recovered at an extraction efficiency of 49%, producing 200 kg of gold a month, DRDGold South Africa regional GM and Ergo Mining director Charles Symons tells Mining Weekly.

One of South Africa's most experienced dump recyclers, Symons has been the long-standing leader at Crown Gold Recoveries, which continues to be a strong generator of cash for the DRDGold South Africa group.

'Crown is currently treating a million tons a month and Ergo will basically double that tonnage,' says Symons.

The recycling of dump material and the deposition of the residual onto a single site, where there is 'proper management' of water-borne pollution and wind-blown dust, have environmental benefits.

'We take away the eyesore, remove the environ- mental problem and sustain jobs by rocovering gold and possibly also uranium and acid thereafter, which makes the Ergo project that much more robust,' says Symons.

ENVIRONMENTAL BENEFIT

It was Skeat Gold Mining that initially bought the auctioned Daggafontein and Ergo plants from AngloGold Ashanti.

Later, Skeat entered into negotiations with Mintails, which had earlier outbid it for 300- million tons of slime at

Mogale, on the West Rand, where Mintails is in the first phase of its dump-recycling operation.

This will involve 800 000 t/m to 1,2-million tons a month being treated in Mintails' CIL plants, which is expected to yield 210 kg of gold a month from material with a grade of 0,42 g/t.

Also on the West Rand, Mintails is constructing a uranium plant that is due for commissioning in the third-quarter of 2008, and which gold majors with uranium assets are expected to use.

Skeat brought its sub- stantial opencast-mining equipment fleet and Nigel gold operation into the merger and Mintails its large West Rand slimes resource as well as access to capital through its Australian listing.

'It's a very good fit,' says Birrell.

DRDGold South Africa then communicated its interest and became part of Ergo's reopening drive, bringing with it the potential of consolidating Central Rand and East Rand's dump recycling activities.

Crown has four dump reclamation operations at Knights, Crown Mines, City Deep and CMR, and three reclamation plants at Crown Mines, City Deep and Knights.

Merged into a single business are ERPM's Elsburg tailings complex in Boksburg, which is providing the reserves, Ergo, which is providing the plant, and Daggafontein, which is providing the deposition site.

AngloGold Ashanti remains the official owner of the Ergo assets until the Department of Minerals and Energy (DME) converts the old- order mining rights to new-order rights.

What have to be converted are the rights for the Ergo plant and tailings and the Daggafontein plant and tailings, which the joint venture will do on AngloGold Ashanti's behalf.

Simultaneously, ERPM will convert its underground workings, the Elsburg complex and the Cason dump into new-order rights.

In addition to Withok, negotiations are also under way to acquire a small 15- million-ton tailings dam in Benoni, which is situated between Elsburg and Ergo.

If acquired, this easy-to-treat, nearby feedstock will enable the project team to become operational more quickly.

Ergo's initial feasibility is based on ten years' life, but veteran Symons has no doubt that it will continue 'a lot longer than that', pointing to Crown beginning as an eight-year feasibility in 1982 ' and still going strong a quarter century later.

PROPERTY DEVELOPMENT

At some stage, Mintails intends developing the land made available once the dumps have been removed.

Current legislation demands that land be rehabilitated on application to the DME for mine closure.

However, there are 54 different pieces of land involved, it would make the granting of partial closure appropriate, as land is rehabilitated.

Meanwhile, DRDGold's Crown is providing all the required services to the Ergo Mining Joint Venture, including payroll and stores, and Mintails is undertaking construction and commissioning, with the construction team destined to become the operating team.

The joint venture will continue to use the exact same techniques, tank capacities and gold-recovery process that AngloGold Ashanti used.

There will thus be no need to go through laboratory testwork and only confirmatory steps need to be taken.

'AngloGold Ashanti did everything superbly. There were no short cuts,' says Birrell.

But the business suffered when the gold price declined and there were no revenue streams from uranium and sulphuric acid.

That led to East Dagga's closure in 2001 and Ergo's closure four years later.

Currently, the economics of resuscitating Ergo grow more positive by the day, sweetened by the uranium renaissance and strong demand for sulphuric acid; the bulk of the R400-million capital will be spent on new feed pipelines, pumpstations and reclamation sites.

'We have gone out on local and international tender for the pipelines and we are busy doing drawings for our reclamation stations,' says Hatton-Jones.

Screening will be upgraded to improve efficiency through better carbon management and oxygen injection will be a feature to reflect advances in CIL technology.

The area where the tragic cyanide accident took place at Ergo is being moved out of the process.

THE HISTORY

Ergo formally came into production in 1978 after Anglo American had obtained the mining rights from gold-mining companies on 54 mining disposal sites, most situated near the East Rand towns of Springs, Brakpan, Boksburg and Benoni.

High levels of operational excellence, coupled to technological advances, enabled Ergo to extract gold efficiently and cost-effectively from tailings dams.

From the outset, shareholders' smiles were broad and the operation developed into a highly profitable business and a major East Rand wealth creator for more than two decades.

All in all, the operation treated 870-million tons of gold-mine tailings material that was water-pumped from old tailings sites through an overland pipeline network 350 km to either the Brakpan plant or the Daggafontein plant, in Springs.

The operation produced 255 000 kg of gold, and an after-tax profit of R2,4-billion.

Company tax of R353-million was contributed to the National Treasury.

But in its last two years, it lost R63-million as a result of low grades and depleting material availability.

Crown came into being four years after Ergo, in 1982, when it began recycling mine dumps in Johannesburg, the then Rand Mines approving a capital expenditure of R50-million to build the first plant, the Crown Plant, in Johannesburg.

Crown later built a second plant and acquired Knights, precipitating active dump recycling around Johannesburg.

The first plant was said to have had an eight-year life all those years ago, but kept on going to the point where today it has at least another eight years' time horizon, all these years later, at a time of high gold and uranium prices. 'It is a very simple model that we've used for managing to keep the costs below the gold price, or the gold price has remained above the costs, so we have remained profitable.

'We are able to treat lower-grade dumps and keep our costs in line, so we're still in business,' says Symons.

A constraint for several years was, however, a lack of deposition capacity ' no place to put residual material.

'It's all very well that the economics of treating the material is positive, but we just haven't had anywhere to put it once it has been treated. Ultimately, we knew that it would be the lack of deposition capacity that would ultimately be our Achilles heel and which would close us down,' says Symons.

That's why Crown has, over the years, held discussions with AngloGold Ashanti and Ergo in an attempt to obtain more deposition capacity, but all of those discussions came to nought, until now, when it has got itself the capacity that it requires.
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