



A diamond drill rig belonging to South Africa's Geosearch working at the Twangiza project.

## TWANGIZA READY TO ROLL

In the race (as some might perceive it) to develop the DRC's first modern gold mine, Canada's Banro Corporation looks to be pulling ahead of its main rival, Moto Goldmines (which both Red Back Mining and Randgold Resources are trying to acquire). Banro, which recently raised C\$100 million in a share offering, has taken the decision to implement its Twangiza project and the company's CEO and President, Mike Prinsloo, says construction will definitely start this year with first production probably occurring before the end of 2011. Prinsloo, a 37-year veteran of the South African gold mining industry, says the new mine has the potential to 'unlock' the whole Twangiza-Namoya gold belt in the future and could lead to Banro building up organically to an annual gold production of between 500 000 to 700 000 ounces within the next seven years.

This level of production might seem ambitious, particularly for a junior with no producing assets, but there can be little question that Banro's Congo tenements cover some of the finest gold

ground in Africa. The company's four main projects are strung along the 210 km long north-east to south-west trending Twangiza-Namoya gold belt to the south-east of Bukavu in South Kivu and Maniema provinces in the eastern DRC and intensive exploration over the past several years has resulted in a phenomenal 11.5 million ounces of gold being identified, 6.72 Moz being in the measured and indicated categories. The company's exploration programmes have made extensive use of helicopters and have also included some advanced techniques, including LiDAR surveys for topographical mapping carried out by Southern Mapping Company of Johannesburg.

The main problem of developing any project in the Congo, of course, is the difficulty of raising funding, given the perception that the country is lawless and unstable with the central government unable to control distant provinces such as the Kivus, which lie halfway across Africa from Kinshasa, the DRC's capital. Prinsloo makes the point, however, that the Congo has shown remarkable progress in recent years and that security concerns can often be exaggerated. "There is still sporadic unrest in North Kivu Province but this is more than 300 km to the north of where we are – and, in any event, the situation there is improving," he says. "Certainly, we've never experienced any



Twangiza Chief Geologist Chris Bawah (right) in the coreshed at the Twangiza camp.



The intake site for the Ulindi II hydro-electric project. The site can support a 60 MW generating capacity.



Mike Prinsloo, Banro's CEO, pictured at the Banro offices in Johannesburg (photo: Arthur Tassell).

security problems since starting our current phase of exploration in 2004. Bukavu is now developing into a bustling provincial capital with a strong UN presence and there is a great deal of development underway in South Kivu. Infrastructure is steadily improving and the National Road N2, which traverses our properties, is being upgraded by a Chinese contractor with international funding."

Banro's four projects – Twangiza, Namoya, Lugu-

shwa and Kamituga – are all at different stages of development. Twangiza, which has proven and probable reserves of 4.54 Moz (82,46 Mt at 1.71 g/t Au), is the most advanced but the others are coming up fast behind it, particularly Namoya and Lughushwa, which are respectively at the pre-feasibility and scoping study stages. Twangiza, which ranks as the flagship project, is also the closest to Bukavu, which is just 41 km away. Access to the site from



Bukavu on Lake Kivu, where Banro has its regional office. It was known as Costermansville in the colonial period, when it was an attractive lakeside town. It is much decayed now but said to be enjoying a revival, with business picking up as some stability returns to the eastern DRC. The city now also hosts a large UN contingent.



Drill rig deployed at the Twangiza Main deposit. Twangiza has proven and probable reserves of 4,54 Moz.

Bukavu is either by road, a two-and-a-half to three hour journey, or by helicopter. Banro maintains an exploration and operational office in Bukavu, as well as a sample, preparation laboratory, and also has camps at all the project sites except Kamituga. In all, it employs around 210 people in the DRC, with the in-country operation being run by Dan Bansah, a Ghanaian geologist (ex-Ashanti Goldfields) whose formal title is VP, Exploration.

The results of a feasibility study on Twangiza, carried out by a group of independent international consultants (including SRK and Johannesburg-based SENET, which designed the process plant and compiled the final report), were announced by Banro in January this year. The study outlined an open-pit

project (in combination with a conventional gravity/CIL processing plant) with a 15-year life at an annual average production of 319 962 ounces of gold in the first three years of production at an average total operating cash cost of US\$274 per ounce. The capex was estimated at US\$409,6 million (including a contingency of US\$38,9 million) with a separate stand-alone 30 MW hydro-electric scheme to supply power costing an additional US\$133,8 million. According to the study, the capex would be paid back in 2,53 years from the start of production, yielding an IRR of 20,5 %. The study envisages a plant throughput rate of 5 Mt/a for the oxides or 3,75 Mt/a for the transitional and fresh ore.

Banro has since updated the feasibility study to reflect changing input costs and additional metallurgical work on the refractory portion of the orebody. The results of the updated study were released in early June and indicate that the initial capital costs have decreased by almost 8 % from US\$409,65 million to US\$377,43 million. Over the first three years of the project, annual production will be 312 979 ounces of gold at an average operating cash cost of US\$261 per ounce. The life of mine has been increased from 15,06 years to almost 21 years, with 3,55 Moz of gold being produced over this period compared to the 2,65 Moz over 15 years in the original study. The total payback period is now estimated at 2,39 years with the IRR being 20,1 %.

Comments Prinsloo: "The updated study indicates savings on many of the inputs to the project. For example, the anticipated diesel costs are 16 % lower than those estimated in the original study while steel costs are 25 % lower. We also expect savings on the civils and earthworks costs, which have come down by 22 % and 8,7 % respectively. The international financial crash is not something which anyone welcomes but it has had the side-effect of creating an im-



The Twangiza exploration camp. Twangiza is set in mountainous terrain whereas Banro's other three projects are at a much lower elevation.

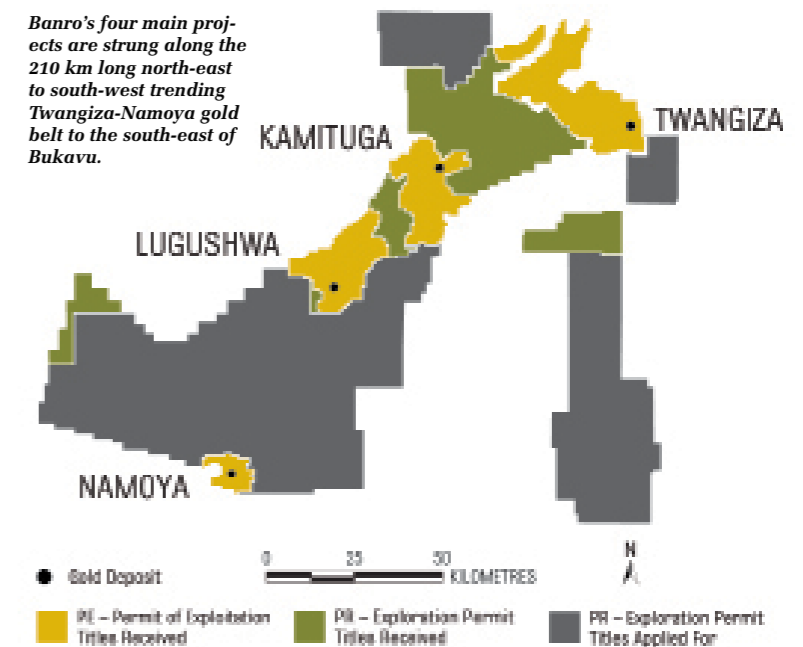
proved environment in which to build a new mine. Skills will be easier to source and the delivery problems that suppliers were experiencing just a year ago have now largely disappeared."

The gold mineralisation at Twangiza is hosted in sediments (mudstones and siltstones) which have been intruded by a series of feldspar porphyry sills along the hinge of a major anticlinal structure. The oxide sediments and porphyry, transitional and fresh rock feldspar porphyry host rock are all non-refractory, while some of the transitional and fresh rock ores are of a refractory nature or contain some refractory material. Apart from the lowering of input costs, the single biggest change reflected in the updated feasibility study is the increase in mineral reserves by 23,7 % (0,87 Moz), largely due to the improved process recoveries of these refractory ore types.

These improved recoveries will be achieved by the addition of a processing facility to treat the refractory ore. It will be based on the Leachox process, a proprietary process owned by Maelgwyn Mineral Services (MMS), a company based in Wales in the UK but with an office and test facilities in Johannesburg. While not offering the high recoveries achievable by roasting or pressure oxidation, Leachox (according to MMS) can achieve gold recoveries that are similar to those obtained with bacterial leaching at competitive capital and operating costs.

The process involves production of sulphide concentrates by flotation followed by fine grinding of the flotation concentrate. The fine milled product is then contacted with oxygen in Aachen reactors (proprietary equipment) to effect partial oxidation of sulphides. This in turn liberates the refractory gold, making it amenable to conventional cyanidation. Testwork using this process has resulted in recoveries increasing from 36,4 % to 64,0 % for transitional refractory ore and from 51,7 % to 72,2 % for fresh

Banro's four main projects are strung along the 210 km long north-east to south-west trending Twangiza-Namoya gold belt to the south-east of Bukavu.



refractory ore. The net effect on the project is to increase overall gold recovery from 72,6 % to 78,0 %.

Prinsloo says Banro is pleased with the results of the updated feasibility study. The big question, however, is where is the US\$377 million to build Twangiza to come from? Responds Prinsloo: "From a balance sheet point of view, we're too small to develop the full Twangiza project on our own - which is why, as we've already announced, we're looking for a strategic partner to co-develop with us. This process is well underway and we're currently in talks with nine potential partners, made up of some funds, mid-tier and major gold companies. Bear in mind that we have a very investor-friendly structure - we own 100 % of our projects and each project is in its own 'vehicle',



Dan Bansah, Banro's VP Exploration, makes a point to colleagues at the Bukavu monthly technical meeting. On his left is Dr Howard Fall, Exploration Manager.



*The N2 running between Bukavu and Twangiza, which has already been upgraded to a good gravel surface (although contractors are still working on the section beyond Twangiza).*

which means that a prospective partner can easily invest at a project level in Twangiza.”

He adds that Twangiza, given its huge reserves, has particular attractions to majors, who are generally only interested in large reserve, long life projects. He also points out that Twangiza has much upside and scope to grow. “The feasibility study and its update only take into account the mining of the two principal deposits, Twangiza Main and Twangiza North. But we should also be able to mine neighbouring Luhwindja, as well as Kaziba, Mufwa and Tshondo, which are all nice size deposits within trucking distance of the planned Twangiza processing plant. We’re still busy with our exploration at all these deposits but there is no doubt that Twangiza has the potential to ultimately be an 8 to 10 Moz mine.”

According to Prinsloo, Banro is currently in talks with a view to raising approximately US\$100 million in debt to match the funds generated by the share offer. “We believe we can raise this amount, particularly now that our equity investors have given such a vote of confidence to Banro and the Twangiza project,” he observes. “This will place us in a position to fund our half of Twangiza, with our strategic partner bringing the balance of the capex.”

If Banro is unable to come to an agreement with a prospective partner, then – says Prinsloo – the company will go it alone on a scaled-down version of the Twangiza project. “We call this the ‘oxide option’ which will reduce the capital cost to around US\$200 million, with annual gold production coming down to between 130 000 and 140 000 ounces,” he explains. “Essentially the project remains the same, the only difference being that we start smaller in terms of milling and leaching with the throughput being 2,0 Mt/a.

The focus will be on the considerable oxide resources at Twangiza Main and Twangiza North, amounting to over 17 Mt at a grade of 2,1 g/t. Strip ratios will be low and recoveries will be over 90 %. The ore is non-refractory so there would be no initial need for the Leachox plant. Since the tonnages would be reduced, we would also be able to get away with a much smaller mining fleet – assuming we go the owner-mining route. Revenues from the operation would eventually fund the upscaling to the full-sized project. Our current planning, in fact, is based on implementing the ‘oxide option’ with the big project only kicking in if we find a suitable partner.”

The ‘oxide option’ could also result in the hydro-power scheme being reduced in size or slightly deferred, which would also, of course, result in capex savings. “The hydroelectric scheme is, however, a key element of the Twangiza project, as it will deliver power to the project at a cost of US\$0,084/kWh compared to US\$0,54/kWh for diesel generators, so any deferral will be temporary,” says Prinsloo. “Feasibility and environmental impact studies have already been completed by the Vancouver office of Knight Pietsold and the site selected is known as Ulindi II, which is 35 km from Twangiza. The run-of-river scheme will utilise a natural 160 to 200 m drop in the river over a distance of 6 km and is perfect for our requirements, as it can easily support a 60 MW generating capacity which is more than sufficient for Twangiza (30 MW) and two of the follow-up projects. We are currently in talks with a Norwegian consortium which would like to partner with us on the hydro scheme – and which would take a 51 % controlling interest in the hydro subsidiary and operate the plant.”

As regards the logistics of constructing a mine in the



*A striking view of core drilling at Twangiza Main.*

Congo, Prinsloo has few concerns. "We all know that building mines in the middle of Africa can be challenging, given the poor infrastructure, but there are certainly no problems that we would consider insurmountable or that can't be managed," he notes. "As part of the feasibility study, SENET and FH Bertling Logistics examined the access routes to the site for plant and equipment as well as for the ongoing needs of the operating mine. They concluded that there are three viable routes to the site, with the preferred option being the route from Mombasa in Kenya to Bukavu in the DRC via Nairobi, Kampala in Uganda and Kigali in Rwanda. The final access from Bukavu to Twangiza would be provided via the N2. Our plan, of course, would be to modularise the processing plant

as far as possible to facilitate its easy shipment to site."

Prinsloo was hired by Banro specifically to take the company through the transition from explorer to gold miner. A graduate mining engineer who qualified at Wits, he has a wealth of experience in gold mining, having variously been Mine Manager at Vaal Reefs and Freegold, CEO of Durban Deep and MD of the Gold Fields flagship, Driefontein. He also served as Head of South African Operations at Gold Fields from 2002 to 2006 before being appointed as CEO of the Gold Fields Business & Leadership Academy. Further depth of experience has been added to Banro more recently with the appointment of another South African, Johan Botha, as Executive VP – Operations. Like Prinsloo, Botha is unquestionably a 'heavyweight' with particular experience of mine development and management in Africa. He spent the first 26 years of his career with AngloGold before joining BHP, where he worked on the Hartley platinum project in Zimbabwe. He then went on to manage the Morila gold mine in Mali (at one time a million ounce a year producer) and the massive Tarkwa gold mine in Ghana. Most recently, he was MD of Gold Fields' Ghana operations.

Comments Prinsloo: "We have an excellent team in place and other key individuals have been identified to take Twangiza into development and production. This is one of the better gold projects in the industry and will serve as the anchor for the development of the entire Twangiza-Namoya gold belt. We could go on at these projects drilling out more ounces for several more years but this would be to no purpose. For Banro to be rerated on the markets – we're currently listed on the TSX and AMEX – we need to become a producer and demand producer ratings. Our board has given us the 'green light' to proceed and the only uncertainties now surround the scale of the project, as I've explained. But we are on the brink of triggering roadworks and construction and I've no doubt that we will have an operating mine at Twangiza by 2011/2012, with Namoya and Lugushwa following not too long afterwards."

*Report by Arthur Tassell, photos (unless otherwise acknowledged) courtesy of Banro*

## Banro forges ties with local communities

Virtually all Western mining and exploration companies operating in Africa trumpet their social and community upliftment programmes, sometimes not very convincingly. In the case of Banro, however, there are real achievements to speak of, with the company having established a registered charity known as the Banro Foundation. Projects undertaken in 2008 included the construction of two new high schools, a water delivery system serving 18 000 villagers and a health clinic, as well as the rehabilitation of over 100 km of roads. In addition, the Foundation has provided support for HIV/AIDS testing and organised the shipment of medical equipment from Canada to seven regional hospitals.

Some of these projects were handed over to the beneficiaries in May this year, with the handover ceremony at Luhwindja being attended by a host of VIPs, including central government ministers and the Governor of South Kivu Province. Says Prinsloo: "We have strong support from all the Congolese authorities and from the communities in and around our properties as was evident at the handover. It was attended by over 1 500 local people, who are

excited by the prospect of a new mine in their area. They cannot wait for us to start building Twangiza, which will ultimately provide for up to 2 500 jobs."



*Members of the Banro Foundation Committee pictured at the Foundation's office at Twangiza.*