

## COMING UP

True North Gems has instructed its joint venture partner, Leonhard Nilsen & Sonner Greenland, to allow for equipment to be mobilised and to inaugurate construction at the Aappaluttoq ruby and pink sapphire project, in Greenland

## COMING UP

A feasibility study completed on Allied Nevada Gold's proposed expansion of its Hycroft mine mill, in the US, has increased the cost of the project by \$66-million. The two-phased project, which is expected to lift the operation's milling capacity to 120 000 t/y, will cost \$1.39-billion to implement

# PROJECTS IN PROGRESS

By Sheila Barradas

## AMANDELBULT CHROME PLANT PROJECT



### Name and Location

Amandelbult chrome plant project, Limpopo, South Africa.

### Client

Anglo American Platinum (Amplats).

### Project Description

Amplats plans to establish a new 600 000 t/y chrome retreatment plant at its Amandelbult mine, in Limpopo. The plant's capacity is expected to be included in the company's production from 2017.

### Net Present Value/Internal Rate of Return

Not stated.

### Value

Not stated.

### Duration

Amplats is considering an 18-month development timeline for the plant.

### Latest Developments

The Amandelbult plant is still in the planning stage and final approvals are still needed; however, Amplats is confident that the project will go ahead.

### Key Contracts and Suppliers

None stated.

### On Budget and on Time?

Not stated.

### Contact Details for Project Information

Amplats media and external relations manager **Mpumi Sithole**, tel +27 11 373 6246, fax +27 11 373 5846 or email [Mpumi.sithole@angloamerican.com](mailto:Mpumi.sithole@angloamerican.com). Amplats investor relations, **Emma Chapman**, tel +44 20 7968 8451 or email [emma.chapman@angloamerican.com](mailto:emma.chapman@angloamerican.com).

## BANFORA GOLD PROJECT



### Name and Location

Banfora gold project, Burkina Faso.

### Client

Gryphon Minerals.

### Project Description

Banfora has an ore reserve estimate of 17.4-million tonnes at 1.5 g/t of gold for 826 000 oz of contained gold.

The completed feasibility study (FS) on the Banfora project has demonstrated robust project economics for a conventional two-million-tonne-a-year heap-leach startup operation. The project will be mined by a mining contractor using conventional openpit methods.

Ore will be trucked from the three satellite deposits – Samavogo, Fourkoura and Stinger – to the processing plant at the Nogbele deposit. Gryphon will undertake a competitive tender process for the mining contract as part of the early project implementation works, with the aim to award a contract before the end of the first quarter in 2015.

The majority of the mineable heap-leach ores at Banfora are shallow and within a 50 m depth from the surface, with major exceptions being the Nogbele North and Samavogo main pits, which are just under 100 m. Conventional openpit mining techniques using free dig, plus drill and blast, with material movement by hydraulic excavator and trucks, will be employed.

The project scale suits 120 t class excavators in a backhoe configuration, matched to 90 t class mine haul trucks, and 5 m bench heights.

The Fourkoura, Stinger and Samavogo pits are 6 km, 15 km and 25 km respectively from the process plant. Conventional on-road trucks will be used to move ore mined from these pits to the run-of-mine stockpile. The process design is based on proven, conventional heap-leach technology that can be up-scaled at a later date. The plant design proposes a two-stage crushing circuit initially, which includes a primary jaw crusher and a secondary cone crusher. After crushing, the ore is agglomerated with the addition of cement, then discharged

onto the conveyor system and stacked onto the heap-leach pad. The leach pad area includes full plastic lining, conveyor stacking in 8 m lifts and drip irrigation with dilute cyanide solution.

### Net Present Value/Internal Rate of Return

The project's net present value at a 5% discount is estimated at \$81-million and its internal rate of return after tax is 22% at the \$1 250/oz base case gold price.

### Value

Capital costs are estimated at \$96.8-million and then include contingencies and project working capital.

### Duration

Subject to full funding and final board approvals, the project development timeline expects first gold pour in the first quarter of 2016.

### Latest Developments

Subject to final board approvals, the company plans to take advantage of the upcoming dry season to start site establishment early works, which will include road upgrades, construction-camp preparation work, detail design and warehouse storage and temporary facilities at the project.

### Key Contracts and Suppliers

Kappes Cassiday & Associates Australia (heap-leach FS testwork programme and defining the process flow sheets); SGS Lakefield (heap-leach testwork); Lycopodium Minerals (overall coordination of the study, feasibility engineering and estimated capital and operating costs); Cube Consulting (mine planning and mine designs); Knights Piésold (site geotechnical engineering for heap-leach pads and foundations, water balance and access roads); Gryphon Minerals Intersocial Consulting and Experiences (environmental and social studies).

### On Budget and on Time?

Not stated.

### Contact Details for Project Information

Gryphon Minerals, tel +61 8 9287 4333, fax +61 8 9287 4334 or email [admin@gryphonminerals.com.au](mailto:admin@gryphonminerals.com.au).



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Kappes Cassiday & Associates Australia, tel +61 8 9240 8400.  
SGS Lakefield, tel +226 50 31 50 42/43 or fax +226 50 31 50 41.  
Lycopodium Minerals, tel +61 8 6210 5222 or fax +61 8 6210 5201.  
Cube Consulting, tel +61 8 9442 2111 or fax +61 8 9442 2110.  
Knights Piésold, tel +233 30 702 11 55.  
Intersocial Consulting,  
email info@intersocialconsulting.com.

## NEW LIBERTY GOLD PROJECT



### Name and Location

New Liberty gold project, Liberia.

### Client

Aureus Mining.

### Project Description

New Liberty will be Liberia's first commercial gold mine and Aureus' first mine in its highly prospective 1 470 km<sup>2</sup> Liberian licence portfolio. The gold deposit, which lies within the Bea Mountain mining licence, has a total proven and probable reserve of 8.5-million tonnes, containing 924 000 oz of gold, grading 3.4 g/t. Total resources comprise an estimated 651 000 t, containing 100 000 oz of gold, grading 4.77 g/t in the measured category; 9.15-million tonnes, containing 1 043 000 oz of gold, grading 3.55 g/t in the indicated category; and 5.73-million tonnes, containing 593 000 oz gold, grading 3.2 g/t in the inferred category. The measured and indicated resources are generally located within the first 200 m below surface. The inferred resource remains open at depth.

A bankable feasibility study completed on the project envisioned an openpit mining operation, extracting ore at a nominal rate of 1.1-million tonnes a year. The openpit will comprise two adjacent and interconnecting pits.

The mining schedule expects the operation to produce 8.5-million tonnes of ore, grading 3.4 g/t, with an associated 132-million tonnes of waste, and an average life-of-mine stripping ratio of 15:1 over a mine schedule of 8.5 years.

A steady-state mining rate, with an average material movement of 70 000 t/d providing an annualised plant feed of 1.1-million tonnes of ore, is planned after the initial six-month period of waste

prestripping, which is scheduled to establish the pits and to build an ore stockpile ahead of plant commissioning. Openpit material movement will achieve a steady-state yearly production of 1.1-million tonnes ore and 25.3-million tonnes total material movement by the end of year one. This steady state will continue until halfway through year five. The total movement will decline after year five as the strip ratio declines from about 25:1 to about 10:1 towards the end of mine-life. The waste material will be placed in a dump, which wraps around the openpit, providing protection from the diverted Marvoe Creek, following which the bulk of the waste material will be backfilled into the Larjor pit. An owner-operated mining fleet, leased and maintained by MonuRent, a leading West African-focused fleet rental company will be used for all earthmoving activities and a conventional truck and shovel method will be used for mining operations.

The mining project includes a process plant, offices, workshops, a generator power plant, housing and warehouses, a mining camp, a tailings storage facility, a rock dump, an explosives bay, various ore stockpiles and a stream diversion, referred to as the Marvoe Creek diversion channel.

### Value

The initial capital cost of the project is estimated at \$136-million, which excludes contingency, but includes the design and development of the processing plant, mining establishment and prestrip, general mine infrastructure and power supply, tailings dam construction, creek diversion and general infrastructure.

### Duration

First production is expected in 2015.

### Latest Developments

The International Finance Corporation, the private sector arm of the World Bank Group, recently became a shareholder in Aureus after investing about \$11.1-million in the company. The proceeds will allow the company to continue its exploration activities, in particular, continued drilling and the completion of a preliminary economic assessment at Ndablama, and target generation work across the company's wider licence portfolio in Liberia and Cameroon.

Meanwhile, Aureus has confirmed that there have been no reported or suspected cases of Ebola to date across

its operations or anywhere near where the company operates.

Construction at New Liberty continues and nonessential staff have been granted leave during this time, including the exploration team following the completion of the drilling season. Aureus has established and implemented the appropriate precautionary measures and contingency plans to ensure the company, its employees, contractors and visitors are not placed at unnecessary risk. Precautionary measures include access control to Aureus' operations, temperature screening, education and collaboration with local villages and village elders, detailed and regular communication with employees, contractors and visitors, heightened medical provisions and medical assistance at the New Liberty medical clinic and travel restrictions. Further, Aureus is working closely with the government of Liberia and supporting their proactive actions in minimising the impact of Ebola.

### Key Contracts and Suppliers

DRA (engineering, procurement and construction management contractors); Australian Mining Consultants (National Instrument 43-101 resource classification and openpit and mining optimisation studies); Digby Wells Associates (environmental and social advisers) and MonuRent (mining fleet rental and maintenance partner).

### On Budget and on Time?

New Liberty remains on track to deliver first gold in the first quarter of 2015.

**Contact Details for Project Information**  
Aureus Mining CEO and president **David Reading** or CFO **Paul Thomson**, tel +44 207 1017 690.

Readers of *Mining Weekly* are requested to email details of projects to Sheila Barradas at [sheila@engineeringnews.co.za](mailto:sheila@engineeringnews.co.za)

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