

Progeny of a new South Africa?

Once great. Then faded. Now returning. A three-stage process which applies as much to the Prieska zinc and copper mine in South Africa as it does to the country itself.



Drilling at Prieska in South Africa

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For 20 years, Prieska was a world-class business, but that was in the 1970s and 80s, a time when South Africa was on the verge of dramatic transition.

The history of the mine, like that of the rest of the country, is important because it puts what's happening today into an understandable context, and while books have been written about the politics of South Africa the story of Prieska has been largely overlooked.

That's changing. Prieska is waking and has the potential to be much more than a born-again base metals mine because it is a multi-level South African test-bed for resources exploration and development, foreign investment, and the encouragement of small miners with big ambitions.

Breathing new life into Prieska is the primary function of Orion Minerals, a company listed on both the Johannesburg and Australian stock exchanges.

The starting point for the revival is the old mine from which the last ore was hauled in 1991, but even as that happened there were a number of people who knew that a lot of zinc and copper had been left at the bottom of the 1,000m-deep Hutchings shaft.

Closure back then was largely the result of falling prices for both zinc and copper at a time before the Chinese industrial revolution and booming demand for base metals, plus the problem of retaining the interest of senior management at the mine's then owner, the once-major mining company, Anglovaal.

Prieska had become unattractive to a big business and South Africa, for a variety of reasons, had not encouraged the development of a small-mining sector similar to Canada and Australia where a large, apparently unwanted base metals resource, would have been a honey-pot.

Orion is a rare example of a small company which has found a way to do something significant, a combination of the Prieska resource waiting for a second chance and support from the South African government and business community, including the Johannesburg stock exchange.

Errol Smart, Orion's managing director, wears two hats when it comes to Prieska, one as the man most responsible for making a success of the redevelopment, and another as chairman of the junior and emerging miners forum of the Minerals Council South Africa.

"We have an opportunity to re-develop a significant base metals mine at Prieska, and in doing that we will also demonstrate that South African mining is very much open for business," Smart said.

"The recently released scoping study validates the case for redevelopment with its compelling financial model while the exploration work using the latest technology shows that there is the potential for the discovery of new nearby orebodies."

Located in an area of the Northern Cape Province known as the Areachap Belt, Prieska is 290km south-west of Kimberley.

The orebody is described as a classic volcanogenic massive sulphide (VMS). When in full swing the mine produced three million tonnes of ore a year, yielding over its life 1.01Mt of zinc and 430,000 tonnes of copper in concentrate.

That original campaign means that Prieska today is well served by essential infrastructure, included tarred roads, gravel airstrip 5km from the mine, water from the Orange River which is 60km away, plus access to the national electricity grid and renewable energy sources (wind and solar).

The scoping study released just before Christmas demonstrated a robust business case for the mine, built largely on the results of a heavy-duty, 85,000m, infill drilling program that led to an updated mineral resource statement.

Key geological numbers include an indicated resource of 18.51Mt of ore assaying 3.6% zinc and 1.17% copper, with another 10.11Mt at 4.08% zinc and 1.14% copper - for a total deep sulphide resource of 28.73Mt at 3.77% zinc and 1.16% copper.

When those numbers were tipped into the scoping study, they produced a plan for an initial 10-year mine life based on the extraction of 2.4Mt of ore a year to yield between 70,000t and 80,000t of zinc

and 22,000t of copper at an all-in sustaining cost of US\$1,215t zinc equivalent - roughly \$1,000/t less than the latest zinc price.

Development costs to bring Prieska back into production are estimated to be between \$210 million and \$235 million with capital payback achieved three years after production re-starts with the internal rate of return estimated to be 38%.

Because the ore in Prieska is well understood after 20-years of production, and because what's left is more of the same, the production process will start with conventional crushing and flotation producing a concentrates grading 50% zinc and 24% copper.

Where there could be a difference is in the underground operations with a fully-mechanised mine on the drawing board applying a combination of long-hole stoping with paste fill, and drift-and-fill with paste to follow.

The likely underground mining fleet, which could include electric-drive and automated vehicles, will feed ore to a central underground crusher where the space already exists with rock hauled to the surface via the reconditioned Hutchings shaft.



Orion Minerals managing director Errol Smart: "We will also demonstrate that South African mining is very much open for business"

Before anything starts underground a major dewatering campaign is required with an estimated eight-to-10 million cubic metres of water to be removed and pumped into evaporation ponds.

While a visual inspection and non-destructive testing has shown that most of the main shaft's steel work to be in good order the scoping study assumes 30% of the steelwork will need to be replaced with another refurbishment cost being the need to acquire a Koepe rock winder, probably second hand given their ready availability after a series of South African goldmine closures.

Smart said that with two-thirds of the resource at Prieska now in the indicated category a case could be presented to bankers, and other potential funding partners, for a 10-year mine with the potential for more to come by extending the resource base with underground drilling and by expanding the exploration around the mine for other VMS orebodies.

"The scoping study has revealed solid operating margins, with the peak funding estimates including a 20% contingency," he said.

"The study also identified important opportunities for further financial upside, both from extending the life of the mine, and from optimising the grade of extraction following further underground drilling.

"The current phase one study has examined extracting only 75% of the total mineral resource."

Rebirthing Prieska promises to be a talking point at Cape Town's Mining Indaba conference in February, as well as a topic being discussed at a government level given the history of a mine which once employed 4,000 people.

The wider South African business community is also starting to take an interest in Orion's plan to redevelop the old mine in a way which could prove to be a test case for other small companies keen to pick up where the majors left off.

But, for a potential investor in Orion there is something perhaps more important humming away in the background and that's the prospect of the latest exploration technology finding a Prieska look-alike.

In theory, VMS-style mineral deposits do not occur on their own. They often have relatives close by with the trick being to find them - and that process of discovery might have started in November when Orion reported success at the Ayoba prospect.

It's early days at the new site which is 5.3km south west of the mine but an intersection of a 10.6m zone of copper and zinc in VMS-style mineralisation with 5.2m described as massive sulphides. Assays are pending.

The discovery hole was testing an electro-magnetic plate with a 1.1km strike length and 450m dip extent.

"The discovery of Ayoba clearly demonstrates the potential for large satellite deposits to be discovered close to the Prieska mine," Smart said.

"VMS deposits tend to occur in clusters yet there has been virtually no exploration outside the known deposits at Prieska for several decades.

"In fact, this intersection is the first new VMS discovery in the Areachap Belt for the past 36 years.

"The Ayoba discovery validates our exploration strategy which is aimed at unlocking an historically important and well-endowed mineral province which can only benefit from the application of fresh capital and new mining and exploration technologies."