Nagambie offers coordinates to new path for Victorian gold

Ever since the remarkable Swan zone discovery at the Fosterville gold mine in 2016, the consensus has been that defining a Tier-1 asset was key to cracking the Victorian gold mystery, but Nagambie Resources Ltd and Golden Camel Mining Pty Ltd are finding success using a very different theory.

There is high-grade gold, and plenty of it on the agenda across the JV partners' Central Victorian project area but the two companies have also focused on solving Victoria's biggest puzzle; regardless of tonnes, grade and quality, any project in Victoria must have a clear path through the increasingly trying permitting system.

"Unless you have an existing mining licence, it is becoming increasingly difficult to permit a mine in Victoria," Nagambie chief executive James Earle explained to **Paydirt** during a recent visit to the State. "That is why we knew we had a valuable asset in the licensed mine site at Nagambie and had already worked up ways of monetising that."

Nagambie and the namesake gold project it controls are reflective of the fits and starts with which the Victorian gold scene has spluttered along these last three decades.

The mining licence was originally granted in the 1980s to support a modest heap leach operation which produced gold from 1989 until 1997 when operations were closed due to the prevailing gold price of around $450/oz.

The licence was maintained through subsequent decades, with Nagambie Resources listing on the back of it in 2006.

"It was classic Victorian gold exploration, looking for near-surface oxide gold deposits we could put on the heap leach," Earle said.

The Central Victorian goldfields – with its low-grade, finely disseminated surface deposits – had always been considered the poor cousin of the nuggety high-grade systems in Bendigo and Ballarat and its largest operation, the Fosterville gold mine, was an emblem of its track record.

The mine had been an open pit producer of oxide gold between 1989 and 2001 but had rarely attracted the attention of Australian gold miners thanks to fitful grades and production.

Instead, it was left to TSX-listed junior miners to drag it along. In 2006, Perseverance Mining started underground development of sulphide-hosted refractory gold from 2006, and a series of Canadian miners took the operation deeper over the next decade without ever fuelling much excitement.

However, as occurrences of visible gold in drill intercepts at depth increased through 2015 and 2016, some observers began to take notice and it prompted emerging TSX-listed gold producer Kirkland Lake Gold to pay $C1 billion for the asset in November 2016.

A year later, Kirkland Lake had announced a maiden reserve of 532,000oz @ 58.8 g/t for the newly defined Swan zone, a number which has continued to grow in the last seven years, turning Fosterville into the highest grade gold mine in the world.

The Swan zone discovery turned all Central Victorian gold exploration theories on their head and left explorers such as Nagambie reconsidering their strategies.

At the same time as Swan was up-

The identification of high-grade antimony in stibnite mineralisation has given Nagambie confidence it can define an economic antimony-gold project on its ground

ending received wisdom, a group of former Fosterville geologists were looking for their own opportunities in the Central Victorian goldfields.

Golden Camel Mining Pty Ltd was formed by Rob Sebek and Neb Zurkic, who had been part of the team which had drilled the first deep holes targeting sulphide zones at Fosterville in the 1990s.

While the discovery of Swan had piqued interest in the district, leading to a rush of junior explorers arriving, Zurkic and Sebek – now joined by former Newmont Corp, Barrick Gold Corp and Oxiana general manager Dean Pontin as Golden Camel exploration manager – retained a clear picture of the immediate opportunity.

"These are the geologists who found the deeper gold at Fosterville in the 90s, so they know exactly what they are looking for and, more importantly, how to go about it," Pontin told **Paydirt**. "We believe the Camel deposit [the company's most advanced] is similar to Fosterville and the drilling to date mimics Fosterville and it is still open at depth."

Just like Fosterville, however, the journey to high-grade sulphide gold may not be a simple one.

"Following the discovery at Fosterville there was an assumption that all you had to do was drill a deep hole under the oxides and you would find your own Swan zone, but it is not as simple as that," Pontin said. "We could drill a 2km hole to chase a Swan zone lookalike from surface, but that is a lot of money and comes with no guarantees.

"It took 20 years, including 10 years of underground mining and development, for Swan to be discovered. We believe the way to find the sulphides is by mapping the structures and following the shoot down via mining and using new technology such as downhole geophysics. That is the way it occurred at Fosterville."

Instead of preparing an ambitious exploration strategy to hit deeper mineralisation, Golden Camel has chosen to lower its sights and define a series of oxide open pits which can both generate the funds and open up the orebody for more targeted sulphide exploration at depth.

The tactic of "exploration through mining" also fits with Golden Camel's wider strategy of using management's experience to develop projects of the requisite scale for the circumstances.

"We are developers not explorers and that's why we target brownfields projects with known economic orebodies – mine plan inventory we like to call it," Pontin said.

The approach led Golden Camel to secure six projects across the Central Victorian goldfield. Camel has been identified as the first to be developed, followed by Toolleen and Shiraz, both historical producers.

The plan for each is to mine near-surface oxide mineralisation before developing underground positions to extract sulphide material in the hope of eventually defining high-grade positions like Swan.

The scaled approach may appear modest but could be crucial given the restrictive permitting process in a state with Australia's most stringent environmental and decarbonisation laws.

Searching for a pathway to development, Golden Camel quickly identified that permitting and community scepticism were insurmountable hurdles for many Victorian projects.

"For any discovery in Victoria, it is going to be hard to get permitting for a processing facility," Pontin said. "People don't mind mining activity but there is a general objection to processing and particularly tailings deposition in their communities. Then you have the State Government's requirements around emissions reduction."

It was with those limitations in mind that Golden Camel developed its strategy.

"Our expertise is not only in mining and development but in permitting and rehabilitation, which are exactly the skills needed in Victoria," Pontin said. "Once we identified the potentially economic orebodies, we set about identifying where we could process material and store tailings."

After several stalled negotiations, Golden Camel happened upon

A chance discovery in historical data 12 months ago dramatically shifted the exploration thinking for Nagambie

Nagambie and its namesake project.

"Having been in the State a long time, once we saw Nagambie receive its environmental approvals, we recognised it was the only site in Victoria where we could permit everything we wanted to," Pontin said.

A deal was quickly struck which would see a JV over the construction, commissioning, operation and rehabilitation of a CIL processing facility on the Nagambie mine site.

Under the terms of the agreement, Golden Camel would build a 180,000 tpa CIL plant with all toll treatment revenues, operating costs, rehabilitation costs and sustaining capital shared 50/50. Initial ore would be trucked from Golden Camel's Camel project with room to accept third party ore in the future.

Such an operation may appear modest in an Australian junior gold sector where 100,000 ozpa over 10 years is the standard but both Earle and Pontin are insistent the JV is meeting milestones other Victorian gold plays couldn't.

"The model we have allows us to achieve net-zero and other factors easier," Pontin said. "At this scale, we can implement 100% renewables on site and introduce a 100% electric mining fleet. That demonstrates we are moving towards net zero which is a primary concern of the State Government and it helps with the social licence to operate in the community. A large-scale mine wouldn't be able to rely 100% on renewables and an EV fleet."

Along with emissions, tailings is a major concern to regional communities. Nagambie's licence includes tailings storage and Golden Camel is also pursuing an innovative solution for processing waste, placing material in specially designed geotextile tubes which are then dry-stacked in a tailings storage facility, eliminating the risk of groundwater contamination. The 61m-long geofabric bags are designed so 85% of the water discharged can be reused in the plant.

The combination of permitted plant and tailings site, plus low impact activities,

Nagambie chief executive James Earle and executive chairman Mike Trumbull discuss the latest round of drilling on the company's namesake project

Golden Camel managing director Dean Pontin explains the mining plan at the company's Camel deposit to Earle and Nagambie director Warwick Grigor

While still in the oxides, the Camel deposit is already showing strong similarities to the nearby Fosterville mine with Golden Camel intent on defining the down-plunge extent of the gold mineralisation

make Nagambie a unique proposition in Victorian gold circles, something both Golden Camel and Nagambie are eager to take advantage of.

Nagambie itself also has ambitions to feed the plant.

"From Nagambie's point of view, we are financing, building and operating a plant at no costs and share in the revenue," Earle said. "That is a great deal. We know that having a plant on site will be helpful once we have had exploration success."

Just as Golden Camel's exploration strategy was reoriented by the Swan discovery at Fosterville, Nagambie launched its own re-evaluation following neighbourhood success.

"It has been a progressive learning experience," Earle said. "I joined in 2016 when the company was still focused on exploration for heap leach oxide deposits. The theory was about discovery and transport to the heap leach at Nagambie. It was about then that the Swan zone was discovered at Fosterville which changed everyone's thinking.

"Everyone thought that one deep hole would be enough to find another Swan. So, we started drilling deeper holes. We had varied success but nothing too exciting."

By early 2022, the company was looking for inspiration and found it within its own database.

"It was only when we went back and looked at the existing data that we saw a hole in 2006 had jagged stibnite," Earle said.

Stibnite is the dominant host rock at the nearby Costerfield mine where yet another Canadian group, Mandalay Resources Corp, produced 47,887oz gold and 2,292t antimony in 2022.

"When we looked at the 2006 hole, we not only recognised the stibnite veining but found it was striking north-south, a contrast to the east-west strike of the oxide mineralisation," Earle said. "We turned the rig around and drilled 16 diamond holes over 4,100m, hitting four stibnite veins identified as the C1 vein system."

In July 2022, the company confirmed the Costerfield-style nature of the antimony-gold mineralisation and by November had declared it an official discovery after eight waste-diluted intercepts within the C1 vein system returned average grades of 7.4% antimony and 3 g/t gold, or 20.6 g/t gold equivalent.

"Nagambie started the drilling programme in April and seven months later we have solved the riddle and announced the discovery of the C2 mineralisation, having already tracked it between 50m and 230m vertical depth," Nagambie executive chairman Mike Trumbull said in November.

The quest now is to follow up that initial success with repeated intercepts. When **Paydirt** visited the project in January, Earle was excited to see visual evidence of stibnite in freshly drilled core.

"That is the clearest indication yet that we have intercepted a second vein system," he said. "Our model says there will be several more veins and strike length increases and that'll be the focus. Identify C2, C3, C4 veins and begin to define a mining plan."

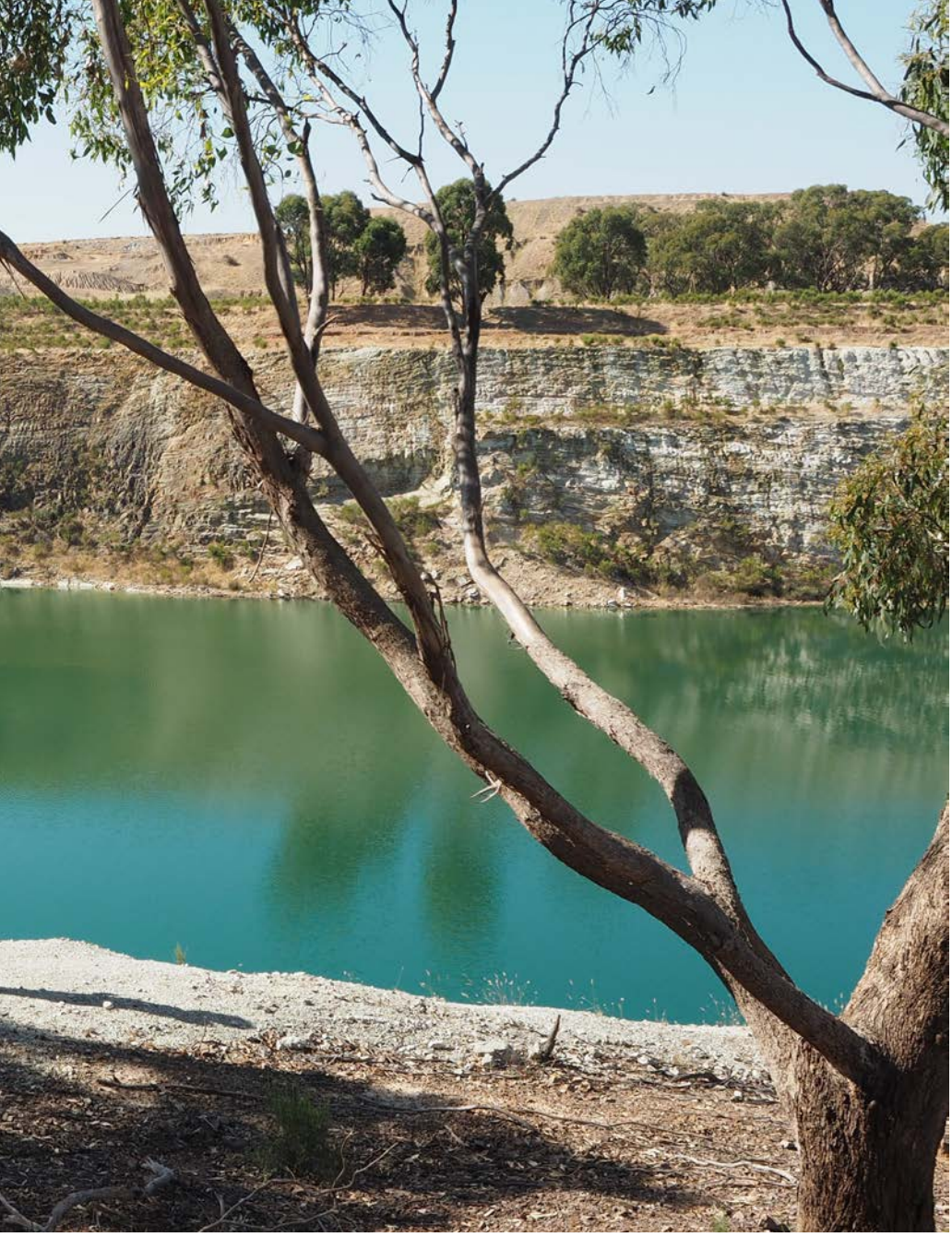
Just as at Fosterville and Costerfield, Nagambie appears likely to assuage a major resource drill out in favour of exploration by mining.

"We could go on and drill forever but because we know so much from Costerfield, our thinking is, 'let's get an exploration decline started and strike driving on the veins'," Earle said.

"I don't think we will go down that traditional path of exploration-resource-PFS-DFS. Once the board is confident that we have multiple veins, we can go out and put in the exploration decline. That is the value of the mining licence, not only for the plant but getting operations going. It allows us to fast-track the exploration decline and begin turning it into an operation. We would prefer to mine as exploration than do the studies, etc."

By the time Nagambie is in a position to consider mining, Golden Camel should be preparing to expand the CIL oxide plant to accept sulphide material as well.

"The plan has always been to start with the shallow oxides, get cashflow and then move onto development of the deeper sulphides," Pontin said. "The plant is designed with expansion in mind so that it will be able to treat multiple ore types. So, treat Golden Camel oxides first, then Golden Camel sulphides, the Nagambie sulphides and eventually third party sulphides."



Nagambie was a small heap leach producer throughout the 1990s with the remnants still evident in two disused open pits on the site

With the presence of stibnite confirmed, Nagambie is now chasing additional vein sets on its namesake project

While it should not complicate treatment in the plant, the presence of high-grade antimony does provide an unusual dimension to the Nagambie proposition.

Used in a variety of military applications as well as solar PV, antimony is on the critical minerals lists of countries such as Australia, the US, Canada, Japan and the EU.

China currently dominates production with Russia, Tajikistan and Myanmar following. Australia is a top 10, albeit minor, producer but given its geopolitical stability is increasingly viewed as a key future source of antimony production.

Earle said Nagambie was already fielding inquiries about the project's potential.

"There are discussions to be had with international downstream processors about everything from offtake to project finance, and we are getting into those conversations now," he said. "They'd take the antimony concentrate we produce at Nagambie and turn into antimony trioxide and other products. Costerfield is doing exactly that at the moment so these groups are eager to see us do the same."

The arrival of Nagambie ore into the plant should marry with Golden Camel's own sulphide ambitions.

While the Camel oxide mineralisation is the immediate priority – the company expects to produce 14-15 months of oxide ore feed once mining starts later this year – it has options to satisfy future sulphide feed.

At Camel, one deeper hole 9m @ 5 g/t in the main sulphide zone while the Shiraz project – formerly the Hird gold mine developed by New Holland Mining and farmed into by Sons of Gwalia – boasts historical sulphide hits of 17m @ 48 g/t from 58m and 43m @ 12.5 g/t from 58m.

Such initial results provide optimism that both companies can exploit multiple deposits through their JV processing facility. And, if their hunch is correct, they could release many more as well.

"Golden Camel has tried lots of different paths to get into production and this is by far the clearest one," Pontin said. "With our experience in permitting, mining and rehab and Nagambie's licence and landholding, we have the skills and the assets to open up any number of stranded assets across Victoria."

For a state where development projects are often lost in regulatory blind alleys, the strategy could prove a roadmap to a new era.

– Dominic Piper