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Australia's **Paydirt**



Grange in Tasmania

A proven magnetite model

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Grange uses Tasmania as road map for future

The emergence of magnetite projects has been the prevailing story of Australia's iron ore sector in the last decade. However, capital cost blow-outs, fluctuating iron ore prices and inconsistent demand trends means there are many who are still sceptical about the lower-grade product's ability to match the rampant performance of hematite mining.

Iron ore pellets in the furnace of Grange Resources' Savage River operation, Australia's only producing magnetite project

Magnetite is seen as the new kid on the block, a more expensive, more challenging relation to its hematite brother and only capable of being developed in the good times, while its Pilbara counterpart continues to prove the backbone of the Australian iron ore industry.

What is often forgotten however is a little corner of north-west Tasmania where, since 1967, the Savage River mine has been consistently producing 2-2.5 mtpa of iron ore pellets from magnetite ore.

Here is proof that a magnetite operation is achievable and can be made profitable. So, why then, is it not being held up as an example to the industry?

In the first instance it is that most industry watchers forget that it is even there. Savage River has spent much of its 40-year history in private hands and as such has rarely been on the investment community's radar. Secondly, at 2.5 mtpa, it seems little more than a boutique mine when compared to the Pilbara giants of Rio Tinto Ltd and BHP Billiton Ltd. And lastly, tucked away as it is in the north-west of Tasmania it is little more than an afterthought when it comes to mapping the Australian iron ore industry.

Attitudes though, are changing. With the likes of Gindalbie Metals Ltd and CITIC Pacific struggling to keep capital costs from blowing out in their multi-billion dollar magnetite projects in Western Australia, the investment community is starting to ask if magnetite operations are capable of working at all in Australia.

It helps then that Savage River is no longer in private hands and in the shape of its owner, Grange Resources Ltd, it has a company with a vested interest in proving the new generation of magnetite mines can work.

Grange acquired the mine in January 2009 when the company was at its lowest ebb. Essentially a one project company, Grange had taken its Southdown magnetite project near Albany on WA's south coast to BFS but with the ravages of the GFC raining down on it, had decided to go into near-hibernation.

It was a tough time for the company and its newly appointed managing director Russell Clark.

"For me it was a no-brainer and was both a company-maker and a company-saver," Clark told **Paydirt** during a recent visit to Tasmania. "Grange went from being a company with \$10 million in the bank with a really huge project to being a company producing iron ore and cash flow with an off-take locked in.

"When the GFC hit the deal proved to be a company-saver because without Savage River that \$10 million would've disappeared pretty quickly and I think you would've seen Grange eventually fold. Some of our European shareholders who went along with the deal originally were unhappy with the dilution when the market cap was still \$200 million but what they will ultimately see is that it was worthwhile given they may have ended up with nothing."

Under the deal, Grange paid the shareholders of Australian Bulk Minerals (Jiangsu Shagang, Stemcor Pellets Ltd and Pacific In-



Analysts look over the pellet plant stockpile at Port Latta. Grange stockpiles 100-150,000t of pellets at site but also holds concentrate and chips (broken pellets) stockpiles

ternational Co. Pty Ltd) 380 million shares for the company. Grange shareholders retained 26.1% of the merged entity with Shagang – which had bought ABM and Savage River from steel trading house Stemcor in 2007 – becoming Grange's largest shareholder with 46.9%.

Still the company was not on Easy Street and was forced back to the market to ensure it had the financial clout to carry it through the GFC.

"2009-10 was about saving the business, only from March last year did we start looking to the future. We raised \$153 million to get rid of the legacy loans and tidy up the balance sheet."

Debt and fixed payments rearranged, Grange headed into 2010 in much better shape, just at a time when prevailing iron ore prices were on the rise. There is a sense talking to Clark that Grange is through the worst and is ready to start benefitting from those increased prices.



Russell Clark, speaking about Grange's mining strategies



The slip on the east wall of the main pit which has proven a massive distraction for Grange over the past nine months



Mine manager Ben Maynard has been instrumental in instilling a new ethos at Savage River

"In 2010 we saw the iron ore price go to index pricing and from March we started receiving \$120/t. The strategy this year is about building the business and doing all the work we should've done last year but couldn't afford to. There is now \$140 million in cash, debt of \$40 million and we are in a position to do all the work at Savage River and the DFS on Southdown."

A company-saving transaction it may have been for Grange, but the 2008 deal also brought relief to the Savage River operation itself. What Grange has brought to the project is not just a public company attitude but a long-term vision for the project for the first time in a generation. Since the turn of the millennium Savage River has seen a succession of owners intent on getting maximum return out of the asset for minimum investment before quickly moving on.

Indeed, under previous owner Stemcor a closure plan was put in place that would've seen the mine shut in 2010. However with

iron ore prices continuing to prove robust, Shagang chose to continue operations, delaying the start of remedial work on both the mine and concentrator. Now under the control of Grange, it has an organised owner which has implemented plans, systems and controls holding the mine in good stead through to 2023 and perhaps beyond.

At 2-2.5 mtpa Savage River is a small operation when measured against Pilbara standards but as those companies in WA's Mid West continually preach, few comparisons can be drawn between magnetite mines and the hematite deposits that dominate WA's north-west.

While the bulk of Rio Tinto and BHP Billiton's Pilbara operations involve simple crushing and screening before being trucked, railed and shipped off as a 58-63% iron product to steel mill customers, magnetite deposits, because of their lower in-ground grade, require upgrading and concentrating. In the case of Savage River this involves a concentration



Chief operating officer Wayne Bould is confident the skills and experience of the Savage River operation can be transferred to the company's Southdown development

process which upgrades the 27% iron grade magnetite ore to a 67% concentrate through an on-site circuit. The concentrate is then slurried 87km to its facility at Port Latta on Tasmania's north-west coast where Grange converts the concentrate into iron ore pellets (essentially oxidising the material to convert it from magnetite to hematite) grading 65-69% ore.

When the operation was established in the mid-1960s it was considered state-of-the-art for its time and Clark said little had changed in the process flow sheet in the time since. The expansion of mine life was simply a function of both higher iron ore prices and longer term vision.

Grange though, is still battling the legacy of previous ownership. When Stemcor sold the project to Chinese interests in 2007 it did so with a mine plan and schedule for a 2010 closure.

"Stemcor sold Savage River with schedules and plans for closure. It had put in a goodbye cut in the main pit, very steep walls, get in, get out. Shagang decided to close the concentrator for 12 months to allow a cutback to take place on that east wall of the main pit. However, they were probably a little naive in mining practices and saw their commercial opportunity. They looked at the iron ore price and made the decision – probably the right one – to continue mining."

The cut stayed in place until August last year when a major slip saw 500,000t of material fall onto the main ore zone, forcing Grange to move quickly to reschedule mine plans to ensure the concentrator would continue to receive feed.

"The cut was left there and after four years it eventually fell."

Grange's challenge since then has been to remedy the situation in the pit while at the same time finding other sources of feed for the concentrator.

"We have had to go through a rapid period of rescheduling, implementing plans to recover that material which was outside of budget."



Part of the tailings dam at Savage River. The operation was blighted in the past by environmental issues but in JV with the Tasmania Government, Grange has remedied the issues and the local rivers are full of life once more

The problem has still not been entirely rectified. Due to the Tasmanian Mines Department's understandable cautiousness following the criticism it received in the wake of the Beaconsfield incident, Grange has been prohibited from simply moving in and bogging the material out.

"You could just come in and just dig it up but because of the hiding the mines department took after Beaconsfield, it said no one could go in there because it wasn't satisfied that the wall won't come down further. Instead, the plan has been to get it from the top down. In August we conducted some control blasting to mitigate against further slips."

Given the age of the pits at Savage River, there are other areas of concern but Clark said the company had a stringent monitoring system in place.

"These walls are very geotechnically challenging, but we monitor them rigorously with radar and that is why when the failure came, we knew it was coming and nobody got hurt," he said. "There have been no unforeseen failures in the other pits. There are others that will be subject to cutbacks but they are in the mine plan."

The failure has meant a restructuring of the mine plan but mine manager Ben Maynard said it had created some benefits.

"Because the failure was on the main ore zone we had to get other sources and we have been able to get two other places on the books and producing; ROM pit and Sprent. They weren't in our reserves or schedules but have been brought forward because they are small and close to surface and we could get into them quickly," Maynard said.

Clark agreed.

"The good news is these deposits weren't in the reserve so they have added an additional year of mine life, the bad thing is that they are a bit further away and so have required additional gear to haul them to the concentrator. Along with the extra equipment to clear the pit, all of this is currently pushing up costs."

Mining plans rescheduled, Grange expects to be mining from the main pit in the September 2011 quarter.

"This next 6-8 months will see us mining in several orebodies so it will be complex but it will get better as the year progresses when we get back into the main pit," Maynard said.

As a result of the slip, production from the mine was down for the March quarter to 330,000t but Clark was confident annual targets of 2.1mt would be met.

Dealing with the wall failure has led to Grange also adjusting its maintenance schedule elsewhere in the operation. Maynard said the reduced feed for the concentrator had seen the decision taken to bring forward refurbishment plans.

"We've taken that time to invest back into the mill and refurbish it and set it up for the life-of-mine," Maynard said. "We knew we had some cracks developing in the mills so we took the opportunity to address those issues. We replaced the ball mill and have undertaken a full repair on the autogenous mill. We are already seeing higher mill rates than predicted."



The pelletising drum turns at Grange's Port Latta facility

With the refurbishment of the concentrator almost complete, Grange is looking at opportunities to expand Savage River's production. Savage River is surrounded by a host of smaller magnetite prospects that would struggle to prove robust as standalone operations in anything but the most generous of iron ore markets. Clark said Grange had entered into MOUs with the owners of a number of these assets.

"There are chances to push the production rate a bit further. We have got MOUs out with a couple of companies who have smaller deposits around Savage River that are interested in supplying us magnetite. As we have capacity in the pipeline we can leverage off that."

Strong commodity prices offset many problems for smaller operations and in Savage

River's case it has meant an expanding of horizons. However, Clark believes everything could've been very different if the pit failure had occurred while iron ore prices were suppressed and before Grange had been able to put its management and process systems in place.

"All that work we have had to do has pushed up costs but we are fortunate that we have done so while the iron ore price is high. If the slip had occurred any earlier, we would've been in trouble."

After spending most of his career in management roles at major mining companies such as Renison Goldfields and Newmont Mining Corporation, Clark was keen to imbue Grange with a big company culture. Together with chief operating officer Wayne Bould (a former Newmont Asia Pacific colleague),



A conveyor system carries pellets to the ship-loading facilities on Tasmania's north-west coast

Clark has set about changing the management systems in place at Savage River, moving from an operation that was in its final days to one that empowers managers to grow the business.

"Grange has changed the whole management system to rejuvenate the mine," Bould told **Paydirt**.

Maynard agrees.

"Beforehand Savage River had silos operating in each section. Now we are using a single framework. What we have done is taken a business that's been here for 40 years and turned it around in one quarter with a lot of the old management."

Clark said testament to the renewed sense of purpose those working at Savage River had gained was that many of the managers were keen to transfer their skills and knowledge to Southdown when it moved into development.

The comments of pellet plant manager Frank Lovell, who started his career at Port

Latta during the construction stage, are evidence of the way Grange has been able to put its stamp on the mine without alienating the vast experience on hand.

"The top three managers here have 100 years combined experience at Port Latta. It is a process not many people know about but Grange has given us a lot of good systems that have improved the operation," Lovell told **Paydirt**.

Lovell's point is one that becomes more prescient when considering Grange's position in the wider magnetite space. The fledgling industry has taken some severe criticism in recent months as long-promised projects in WA's Mid West and Pilbara continue to suffer delays and further cost blow-outs.

In contrast Grange can apply the knowledge and experience built up over 40 years to the development of Southdown. Clark believes the market is yet to appreciate how much of an advantage this will be for the

company when developing its second, larger project.

"We have a fantastic advantage because we can use Savage River as a base because it is the only operating magnetite mine in Australia. A lot of the management experience will be transferred and applied to Southdown."

Bould said some of Australia's other magnetite developers were envious of Grange's position.

"The CITIC management visited the site and said they would buy it tomorrow given the advantage it would hand them."

Clark is confident the experiences in Tasmania will set Grange up to stick closely to the numbers produced in a PFS which was due for release as **Paydirt** went to print.

"You've seen some of the other magnetite projects suffer from big cost blow-outs but our project team is confident enough to start picking out equipment now. One magnetite developer that visited Savage River was very



Grange has been forced to find other sources of feed while ore in its main pit has been covered by material from the pit slip

keen to see our laboratory because they had spent \$30 million on designing theirs. Ours is a small room with a bench in it.

"We know our team has experienced the problems and identified them before we get to the development stage and construction stage."

Grange completed a BFS for Southdown prior to Clark's appointment but he said the new study would be different.

"That original BFS had a capex of \$1.7 billion for a 7 mtpa operation with pellet plant but the numbers were a bit underdone in my opinion. It was put to sleep during the GFC to preserve the company and we woke it up in March 2010. Since then we have introduced big company processes and we have had experts from Minproc and Shagang have input into the feasibility study."

The 2008 feasibility study for the project – held in JV with Japanese firm Sojitz Corporation which retains 30% – was based on a 7 mtpa operation producing a magnetite concentrate to be slurried and shipped out of Albany, 80km to the west of Southdown and onto a pellet plant to be built in Malaysia.

The updated PFS retains the pellet plant but only after an initial period of concentrate production at a revised rate of 10 mtpa. Clark said a final decision on the longer term look of the project could be some time off.

"The pellet plant was never considered for Albany because there just isn't the power capability or the real estate. Malaysia is not ideal because you would usually place the pellet plant at the end of the mine or at the steel mill but it is relatively close to our Asian markets."

There is a premium of about \$35-50/t attached to pellets but Clark said the increased popularity of concentrate meant there was a consideration to drop the pelletising process altogether.

"The deal for the Malaysian land was signed before the Shagang deal came through. We are staging the project now because it means less capital up front but looking at the market there is a lot of spare pelletising capacity in China and the prices for concentrate and pellets are starting to converge so it may be that we don't even go ahead with the pellet plant. I am being very pragmatic on this one, the feasibility studies will allow us to decide."

Grange has committed \$100 million for the completion of a DFS but JV partner Sojitz is still to make a decision on Southdown. Clark said if the Japanese firm chose not to go ahead, there were sale arrangements in place.

So, with an operating asset over 2 mtpa, unequalled magnetite know-how and a potential 10 mtpa second operation, it would appear Grange is among the best placed of the growing magnetite operators, not so says the market.

"Some of our contemporaries have market caps well in excess of \$1 billion but ours floats around \$800 million," Clark said. "In our modelling Savage River has an NPV of over \$900 million, therefore there is no allowance for Southdown in our market cap, yet we have a producing asset."

For Clark and the Grange team, it may only be in applying that know-how that they can prove to those sceptical of magnetite promises that Southdown can deliver on cost and operating projections.

– Dominic Piper, who visited Savage River

GRANGE RESOURCES LTD (ASX:GRR)

Market cap: \$830 million

12-month price range: 41-92c

Ownership: Jiangsu Shagang 46.9%, free float 33.4%, PML 7.9%, RGL 11.8%

Southdown (70% Grange, 30% Sojitz Corp)

Location: 90km north-east of the Port of Albany, Western Australia

Resource: 650mt magnetite @ 36.5% DTR

Reserve: 388mt @ 35.5% DTR

Production: Targeting 10 mtpa concentrate for premium blast furnace pellets

Mine life: 25 years

Capital cost: to be updated in imminent PFS

Operating cost: \$US55/t (2008 estimate)

Infrastructure: Established port, pipeline route, power easements, Albany waste water and pellet plant site and deepwater port identified in Malaysia



Savage River (100% Grange)

Location: 80km south of Burnie, Tasmania

Resource: 306mt magnetite @ 52.3% DTR

Reserve: 119mt magnetite @ 51.2% DTR

Production: 2 mtpa blast furnace pellets, concentrate and chips, potential for expansion to 2.6 mtpa

Mine life: to 2026

Operating costs: \$91/t pellets (December 2010 quarter)

Infrastructure: Owner-operated open pit mine, 83km slurry pipeline, coastal pellet plant and port at Port Latta, all dedicated infrastructure

