



GOLD FIELDS

The best is yet to come

South African mining company Gold Fields owns and operates a number of assets in Australia: its vision is to be the global leader in sustainable gold mining, with its Granny Smith operation leading the way





“TECHNOLOGY ALLOWS US TO
CONTROL A MACHINE A KILOMETRE
UNDERGROUND FROM SURFACE”

– Andrew Bywater, General Manager: Granny Smith Mine





Granny Smith mine near Laverton in Western Australia, had been transferred between a number of owners before it was acquired from Barrick Gold by Gold Fields on 1 October 2013 as part of the purchase of the Yilgarn South operations. The deal included two other gold mines, Darlot and Lawlers. It may not have looked it at the time, given the slump in gold prices, but this has turned out to be a great deal for Gold Fields, which has been able to add significant value to the mine, aided by a gradual recovery in gold prices.

Granny's promises

As part of the Granny Smith deal, Andrew Bywater joined Gold Fields with a brief of turning around the Darlot operation to deliver a profitable operation. Darlot has subsequently been purchased by Red 5 and just under a year ago Bywater became General Manager of the Granny Smith mine, where he has been busy working with fellow leaders and employees.

The main Wallaby deposit was discovered in 1998, with open pit mining commencing in 2001 and Underground mining commencing in 2004, generating over 3.8Moz of recovered gold. Since purchasing the mine, Gold Fields has produced over 1.2M ounces of gold and is spending in the order around \$25m a year on exploration in the area to further extend the life of the mine.

Reserves have grown year-on-year and production efficiency continues to improve. "Granny Smith has gone from strength to strength" says Bywater, speaking about



“WE WANT TO KEEP SUPPORTING
GRANNY SMITH AS A GREAT PLACE
WHERE PEOPLE ENJOY WORKING”

– Andrew Bywater, General Manager: Granny Smith Mine

extensions to the Wallaby ore-body, increased mining physicals and improvements to the processing plant. “A feasibility study has recently been completed with board approval to develop what we call zone 110 - 120. This is our next mining area beneath

current workings at a depth of 1200m, a block of ore covering a 900m by 600m area with an Indicated Resource of 6.2Mt @ 7.3 g/t for 1.46M oz’s. This will provide Granny Smith with a great mine life of close to ten years.” And that’s not all. A pre-feasibility study

will take place this year on further depth extensions to the Wallaby ore-body. There are strong signs that another block of mineralisation at zone 135 can be mined below planned infrastructure he says, adding that the focus this year will be to maximise Wallaby's potential, thereby maintaining Granny Smith as a world-class asset. Seven underground drill rigs, operated by Barmingo Drilling, are working round the clock to achieve this and advance other targets.

The extended Granny Smith tenements also

holds great potential for future ore deposits. This is not just prospective close to the current workings, but also beyond the main ore body at a newly mineralised zone called Blurry BIF. This project is located within 10km of Wallaby and contains significant gold intersections extending over a 1km strike extent. Bringing in more production makes sense as the processing plant has additional capacity available.





Improved Productivity

Meanwhile, productivity improvements to the current mining operations are taking up much of Mine Manager Mark Glazebrook's time. The latest Atlas Copco 65 tonne trucks have increased the payload capacity underground, while future technology opportunities include a staged programme being introduced with the aid of the mining technology specialist Newtrax. Apart from trial technology to gather and store data from mobile equipment, this system will enable other productivity initiatives

such as monitoring the whereabouts of underground personnel in real time. That will be a further safety advance for the operation.

Automation of heavy equipment is perhaps even more exciting from both a productivity and a safety point of view. From a small control room on the surface mining administration building at Wallaby, it is already possible for an operator to remotely control some loaders that take the ore from the face to the underground stockpile. Cameras give the operator an all-round view and



the team is establishing technology that will enable remote operating of two loaders at the same time.

Scheduling is constantly monitored and improved through the application of advanced software solutions, such as Deswik OPS, the mine's latest project planning software. "By catching up with other industries in IoT, AI, analytics and other advanced automation practices, mines will be able to extend operations faster and become safer and more efficient places to work," Bywater insists.

A paste plant is also being installed

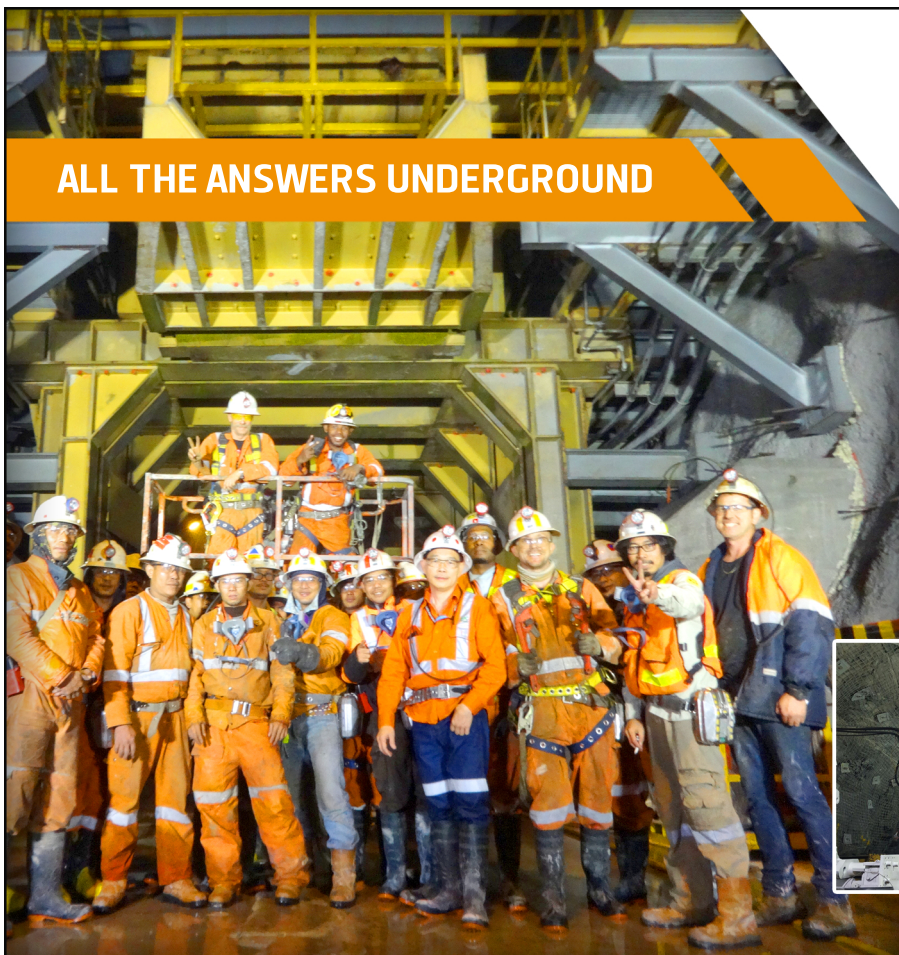
during 2018 which will support back filling of stopes at depth in the mine. Back filling is essential for rock stability and improved extraction rates and is another important enhancement of Granny Smith's capacity, says Bywater.

Looking after Granny's family

Granny Smith is on target to produce 275,000 ounces of gold at an All-in Cost of around A\$1,240/oz in 2018. That said, the goal is to achieve this in a safe and enjoyable workplace for the 720 people who work at the



ALL THE ANSWERS UNDERGROUND



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mine. In previous roles, Bywater has a reputation as a champion of equal opportunity for women and true diversity in mining. Much of this can be achieved via the company values and this includes a respectful workplace for everyone on site. Women make up 10% of the workforce at Granny Smith, which he strongly believes can be improved on. Further work will include advancing the One-Team approach and continually promote Safe-Production. One-Team means breaking down silos across departments and groups and moving away from the old 'us and them' mindset.

In the previous 12 months site has facilitated a traineeship scheme for truck drivers and other roles which has seen a number of local Aboriginal people progress to full time jobs. There is also a cultural partnership with Aubrey Lynch, an elder of the Wongatha, the traditional owners of the mine land, to make employees

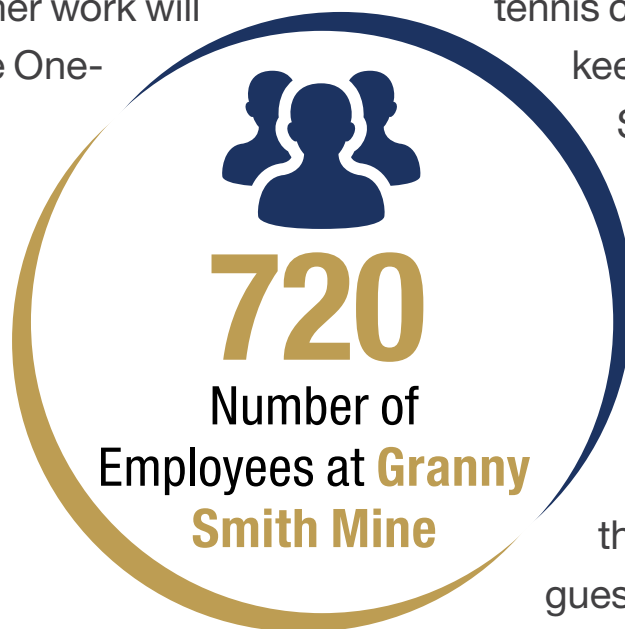
aware of the native flora and fauna, and the Wongatha's relationship to the land, their laws, customs and history.

The mine is a popular place to work, with shift employees typically on an 8 days on 6 days off, 7 nights on 7 days off roster. The camp is continually being upgraded and has a fully equipped gym, squash and

tennis courts. "We want to keep developing Granny Smith as a great place where people enjoy working," Bywater enthuses. On top of the facilities mentioned, there is a social committee that organises guests, comedy acts and open performance

nights for employees, bringing a bit of fun to the outback.

Miners, just like the rest of the population often face family, friendship and financial challenges. "We have increased the accessibility to face to face counselling," Bywater says. "As well as responding to personnel challenges, our Employee Assistance





workplace.
“Employees
are the best
safety advocates
we have at Granny

Smith. Behaviour-based safety programmes and cultural change are the way forward,” Bywater believes. “We encourage and support an independent workforce through the Gold Fields behavioural based safety program. The key behaviours include assessing risk, following procedures, managing fatigue and above all, Speaking Up to improve safety. When these behaviours become ingrained in the business, incident rates can reduce by up to 80%.” Opinion Leaders are nominated by the workforce to drive programs such as bringing in external speakers to share safety-related stories and other

Programme provider is on site regularly to spend time with the workforce in a proactive way. They have established a very good rapport with employees.” By also participating in initiatives such as ‘R U OK day’ the company encourages employees to be aware of the physical and mental wellbeing of their colleagues, to start a conversation if they have any concerns and know when to ask for support.

A Strong Safety Culture

Looking out for each other is central to Gold Fields’ values and one of the best ways to show respect in the



campaigns to help make good safety choices. “This is a very immediate way to personalise our key safety message ‘If we cannot mine safely, we will not mine’,” Bywater states.

Improving safety and employee engagement at Gold Fields includes another important process, Visible Felt Leadership. “This involves supervisors getting into the workplace with employees as they complete tasks, to share conversations about safe work processes and outcomes”

He says. When done right, Visible Felt Leadership makes a difference by reducing recordable injuries and also provides an opportunity for employees to give feedback, share experiences and speak up. A recent safety challenge involved many supervisors completing 100 safety interactions in 100 days. During this time leaders and the workforce stepped up to deliver the mine’s best 100 day safety performance for the year. Bywater doesn’t think that was a coincidence! ■



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