



The culture and productivity at Moranbah North have been steadily improving.

Moranbah North culture changes bring rewards

Anglo American's flagship Moranbah North mine in Queensland has had a major overhaul of its culture and systems over the past two years as it strives to be cost competitive in a low coal price environment. After recruiting Glen Britton as head of underground operations from the nearby Xstrata mine Oaky North, Moranbah North's fortunes have gone through an upheaval and its performance is on an upwards trajectory, writes **Lou Caruana**.

Moranbah North's position in Anglo American stable of coal mines and its status as one of the Bowen Basin's leading underground coal mines is well established.

The mine has always been considered an industry innovator and a major metallurgical coal producer.

Moranbah North coal is mined from the Goonyella Middle Seam, about 200m below surface.

The mine currently produces high fluidity premium hard coking coal mainly for export to iron and steel manufacturers in Japan, Korea and Taiwan.

Moranbah North coal is also exported to India, Brazil and Europe. Estimated coal reserves indicate a mine life of more than 20 years. In April 2007, Anglo American and joint venture partners Mitsui and Nippon Steel invested \$200 million in a powered roof support project to improve the mine's productivity at increasing depths.

One hundred and forty-eight new roof supports, each with a capacity of 1750 tonnes, were installed in early 2009.

The project was commissioned in August 2009.

But consecutive drift roof falls that had severely impacted on production levels and a culture that had seemed to lose focus and purpose were beginning to take its toll on the mine's profitability.

What was needed was a game-changer and that is when Britton was identified and recruited.

His reputation as being a tough results-orientated operator that was open to new technology and systems would be needed in his new role at Moranbah North.

Shortly before his arrival, the mine had its third drift fall in three years and had been closed for three months.

"One drift fall yes, two drift falls look out, three drift falls ... that's just not acceptable," Britton said.

A roof collapse in November 2011 is believed to have cost Anglo at least 40,000t in lost production.

Speaking about the incident, an Anglo American spokesman told *International Coal News* the operations at Moranbah had halted at the time "due to a slump of ground in a conveyor drift".

"So clearly the systems and processes in place at that mine were not conducive to good longwall practise," Britton said.

CULTURE

When Britton arrived at Moranbah North he was struck with the culture of the operation and the inability of management to make a difference.

CFMEU district president Stephen Smyth said at the time of Britton's appointment that Anglo American lacked long-term planning to ride out dips in the coal prices without the need for putting off workers and creating skills shortages.

"Farmers plan for bad seasons amid the good, yet mining companies simply sack people at the slightest whiff of a lower coal price without a thought for workers' families," he said.

"Corporate responsibility should not be industry leaders demanding workers be 'flexible' to move where the work is before sacking them when the coal price dips and bugger the mining communities."

Britton said the management of the mine "lacked credibility" when he arrived in 2012.

"In 2012 we had to establish a new direction through strong leadership and effective leadership," he said.

"A poor culture will dominate any process no matter how good the system.

“Moranbah had a tick and flick culture.”

The two way communications between management and employees needed to be overhauled, Britton said

“I expect action from every meeting.”

Safety and productivity go hand in hand, according to Britton.

In order to do maintain high standards it was necessary to appoint people with the right mindsets.

“The first steps are getting the businesses under control and having the right people in the right position,” Britton said.

“Make sure the complete environment is right. Get your meetings structure right. Make sure the actions are implemented.”

“Be anal on your planning. Plan. Plan. Plan.”

Britton does not believe in moulding an employee to suit the job.

If the employee is unable or unwilling to do the job assigned to him or her, then that employee is replaced.

There had to be strong leadership, effective communication, accountability, good forecast and planning at Moranbah North and Britton went about establishing it with an iron fist.

“Unless you do it and do it properly, as a management team you will [lose] credibility; because if they have no faith in the management team doing their job they will try and do it themselves,” he said.

INNOVATION

Britton has hailed a revamp to the company’s communications systems to allow wi-fi underground as a great success.

“Deputies will be walking around with iPhones,” he said.

“We’ve moved forward into the 21st century.”

Advances in shotcreting underground are also paying off for the mine, Britton said.

“We’ve now dropped shotcrete 300m in a shaft in one longwall shift,” he said.

“What used to take a long time, we now do in one shift. There’s nothing but win-win on this one.”

MAINTENANCE

Last year Anglo decided to reduce the number of operating longwalls at Moranbah North from two to one.

When it came to longwall moves, the mine worked with suppliers to ensure that improved communication between key personnel aided the management of the process and an adherence to the schedule.

“The maintenance strategy was totally ineffective until you got your front line people believing in that strategy,” Britton said.

“Simple processes followed through until you get a system that was right. We had two validating mechanisms built so we could satisfy ourselves that the information was

right. All this information is coming at you. We need to validate the whole lot of it and is true and accurate.

“Root cause analysis: Make sure you get to the problem. Don’t keep sticking plasters on things.

“I expect action out of every meeting.

“There’s never an overdue action on this [the mine’s meeting and planning] database.”

Turning to issues such as water, Britton approached it with customary thoroughness and focus.

“Water – the plague of everybody’s life if you’re working underground,” he said.

“Water is only a problem if you don’t manage it.

“Put your pumping mechanisms in and put them into a standard that works.

“It’s not rocket science, but unless management do it you will lack credibility.”

CHANGE MANAGEMENT

Britton said it was essential to get the action database up and running, validate the source, curate plans, and implement the maintenance strategy.

“Rome wasn’t built in a day,” he said

“Get your step changes in to position and then let your managers manage.

“There’s nothing better than getting your system working properly and your longwall operating efficiently and each crew trying to

beat the next crew. So peer-on-peer pressure ... is a good behaviour tool.”

Changing the culture can be a long and arduous process for a mine but the rewards are great, according to Britton.

“Once you do get there, there are some very positive behaviour tools that come to your advantage,” he said.

“It’s not always about the big stick and driving profitability.

“It’s about them aspiring to be the best by giving them the tools.”

Britton also believes that women have a role to play in the mining industry and he is all for encouraging diversity at the mines.

“Don’t forget the females,” he said. “Diversity is a big thing in Australia now.

“Anglo is up to around 18% now. They are capable of doing the work so let’s utilise them.”

Accountability is important for changed behaviour patterns to take place, Britton said.

“Get your swipe mechanism sorted so when they go to the site you know that they are there,” he said.

“That first swipe – even though it is 25 minutes before the shift starts – we know that the plan that man was going to do today is going to happen because he is there.

“There are a lot of advantages of knowing where your workforce and resources are.”

One simple thing he did was rearrange the desks so employees had to look at each other and talk to each other face-to-face instead ▶



Anglo American management taking Moranbah North seriously: head of underground operations Glen Britton, Grosvenor project manager Glenn Tonkin, metallurgical coal CEO Seamus French and Anglo American CEO Mark Cutifani.

of emailing each other. [These are] simple things that work very efficiently," he said.

Britton introduced a system of management wearing blue shirts instead of the standard orange reflective uniforms.

"You didn't know who was who in the zoo," he said of the old uniforms.

"If I had no idea you can guarantee the workforce didn't know who was who.

"No excuses. Take every excuse away."

When Britton came to Moranbah North there was one TV screen in his office.

There are now 69 TV screens on the surface of the mine.

The workforce knows that mine management is monitoring the operations on the screens.

This encourages them to be proactive and anticipate problems before intervention of management is necessitated.

PERFORMANCE

Moranbah North is regaining the mantle of

one of the country's leading longwall mines and is aiming for a yearly production of 10 million tonnes.

By February this year Anglo American CEO Mark Cutifani was effusive in his praise of the turnaround at Moranbah North.

"At our underground metallurgical coal mines, production improved by 30%, with Moranbah North lifting longwall output by 39% on the back of an improvement in cutting hours, an increase in automated cutting rates and reduced unplanned downtime," he said. **ICN**

Improved communications optimise longwall moves

A review of previous longwall relocation projects at a Queensland coal mine indicated that significant benefits could be realised by improving compliance and visibility of operations, according to Mine Site Technologies.

A longwall relocation is a strictly planned and controlled process. Adherence to the plan is critical to complete the move within the shortest possible timeframe. Any deviation from the plan or schedule can delay completion and affect production.

Checking and reporting the location of powered roof supports (PRS) was a manual process performed by a person exclusively allocated for this task.

information for faster, more effective decision-making, directly contributing to improving achieving specific business objectives for the longwall move.

MST's MineDash control room software provided real-time visualisation, reporting and management tools to drive proactive decision making and adherence to plan.

Together with the deployment of MST's MinePhones, communication was transformed, both between personnel underground and between underground and surface personnel. Mobile communications and immediate access to information meant that decisions could be made quickly to reduce delays and maintain productivity.

MST's MineDash control room software provided real-time visualisation, reporting and management tools to drive proactive decision making and adherence to plan.

The control room operator responsible for managing the longwall move recorded PRS movements on paper after the information reached the surface.

Non-conformances were only identified after the fact, resulting in poor utilisation of personnel and assets. Even implementing a dedicated longwall move control room did not improve matters as it still used a manual process.

In reviewing these inefficiencies, the mine was able to identify two critical aspects that could improve the process.

To make proactive decisions they needed to know the real-time location of personnel, PRS, PRS transporters, loaders, tool carriers, forks, baskets and other critical assets. In addition, they needed improved communications to manage deviations from plan to minimise delays and downtime.

The mine deployed MST's MinePhone and Personnel & Asset Tracking system. MST transformed location data into meaningful

MST assisted the mine to fit tracking tags to all PRS and other key assets.

Each of the PRS had a specific route and destination; some going to the new face, others to an underground workshop, and others to the surface. MineDash was used in the control room to monitor real-time progress.

MST and the mine worked together to build business rules for the process. Any exceptions to PRS paths and travel times were quickly identified and signaled by MineDash as non-compliances using visible and audible alerts on the MineDash screen. It also communicated with personnel via rule-based emails and MinePhones. Divergence from the plan could be quickly corrected.

During the first use of the solution, the mine successfully completed the longwall move two days ahead of schedule.

According to the mine, it produces 24,000 tonnes per day at \$114/t, and so the new solution saved \$2.7 million of production and

two days of labour costs by identifying and remedying issues quickly, and ensuring high levels of productivity.

It provided information, which the mine used to plan more effectively in subsequent longwall relocations, which resulted in further time efficiencies.

The investments in tracking and communications technologies provided successful monitoring, reporting and proactive management tools which functioned as core support systems for the longwall move.

This project delivered a performance baseline for planning future longwall moves. The mine now has a documented benchmark for measuring efficiency and maintaining a cycle of continuous operational improvement.



MST's Mine Phone helped transform location data into meaningful information