

# THE AUSTRALIAN MINING REVIEW

PP100007123

AUGUST 2018

[australianminingreview.com.au](http://australianminingreview.com.au)

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YEAR

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## IRONS IN THE FIRE

A debt-free, cashed up BCI Minerals is placing bets on salt and sulphate of potash as the next key drivers of its business.

BCI MINERALS p34

Image: BCI Minerals

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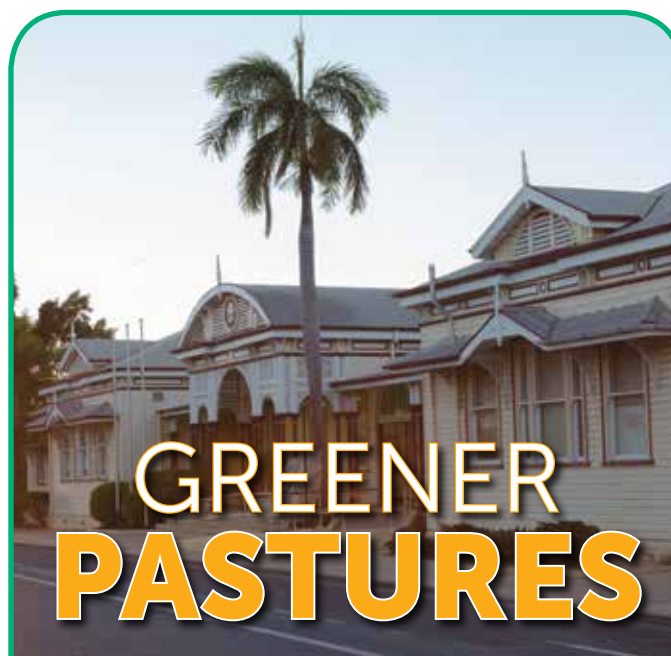
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PUBLISHED BY  
ABN 28 112 572 433



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**Publications &  
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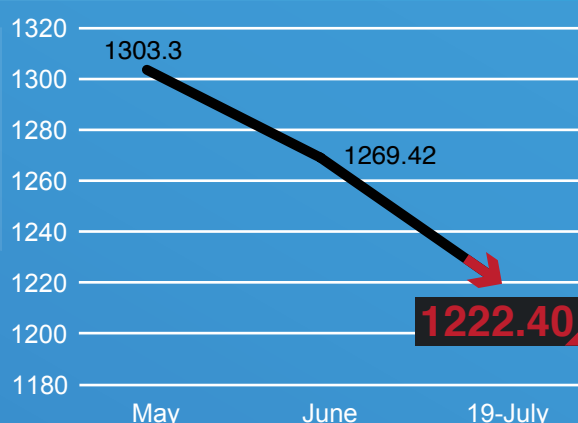
# MAJOR COMMODITIES

## SNAPSHOT

### GOLD

\$US/oz

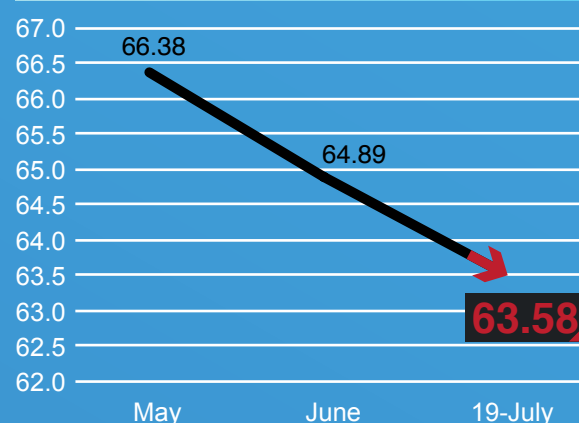
Gold prices fell to a one-year low in July in line with a higher US dollar and US interest rates.



### IRON ORE

\$US/t  
62% Fe CFR China

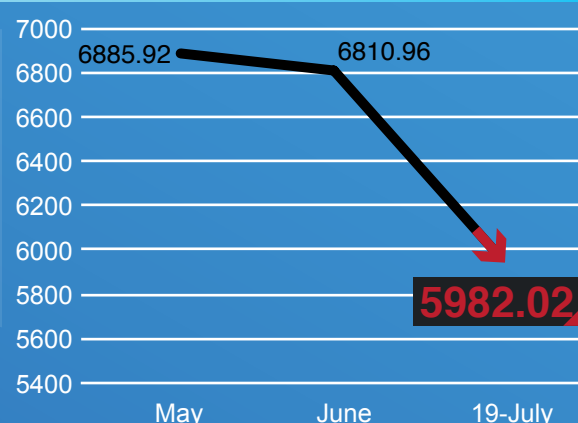
Iron ore prices declined marginally in July, fluctuating between \$US63 and \$US64/t.



### COPPER

\$US/t  
LME Price

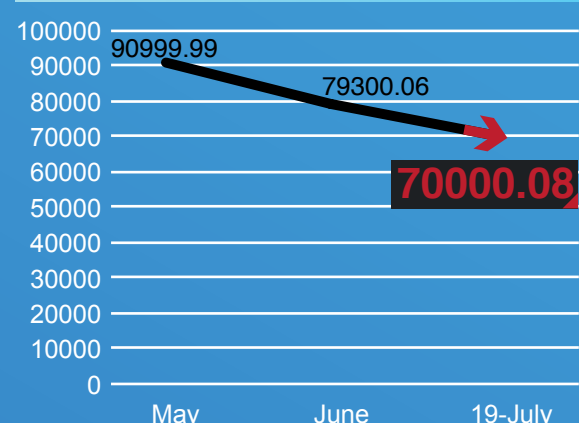
Copper prices continued to spiral downwards in July amid ongoing trade tensions between the US and the world's key consumer, China.



### COBALT

\$US/t  
LME Price

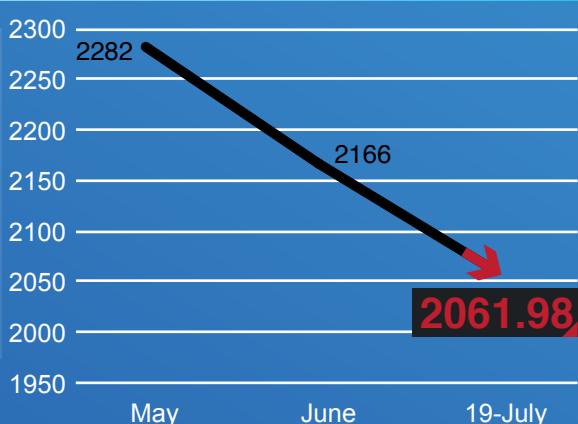
Cobalt spot prices fell to its lowest point since December 2017, amid supply disruptions and concerns over the sourcing of cobalt in the Democratic Republic of Congo.



### ALUMINIUM

\$US/t  
LME Price

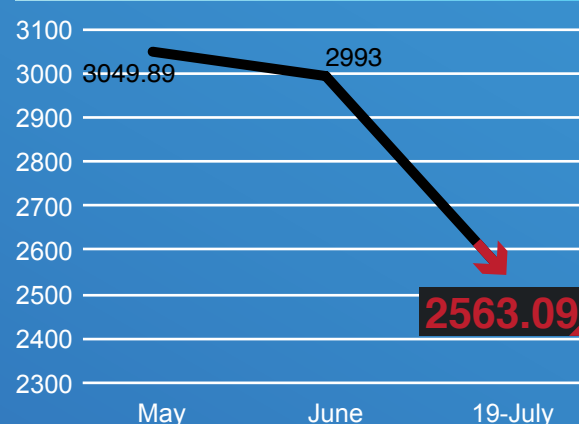
Aluminium prices were under pressure again in July as the fallout of Donald Trump's decision to impose tariffs on aluminium imports coming into the US continued.



### ZINC

\$US/t  
LME Price

Zinc prices continued to fall, hitting a 13-month lows in July as expectations of rising supplies and a narrowing deficit triggered a sell-off.



### LEAD

\$US/t  
LME Price

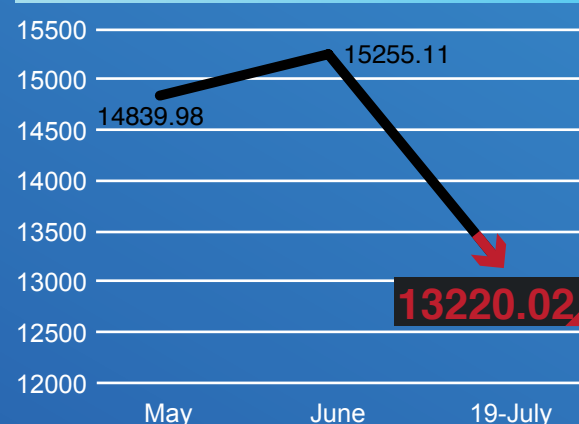
Lead is another base metal in negative territory, worn down by a stronger US dollar and trade war tensions.



### NICKEL

\$US/t  
LME Price

After a promising couple of months, nickel prices lowered in July due to weakened demand from alloy-makers in the spot market.



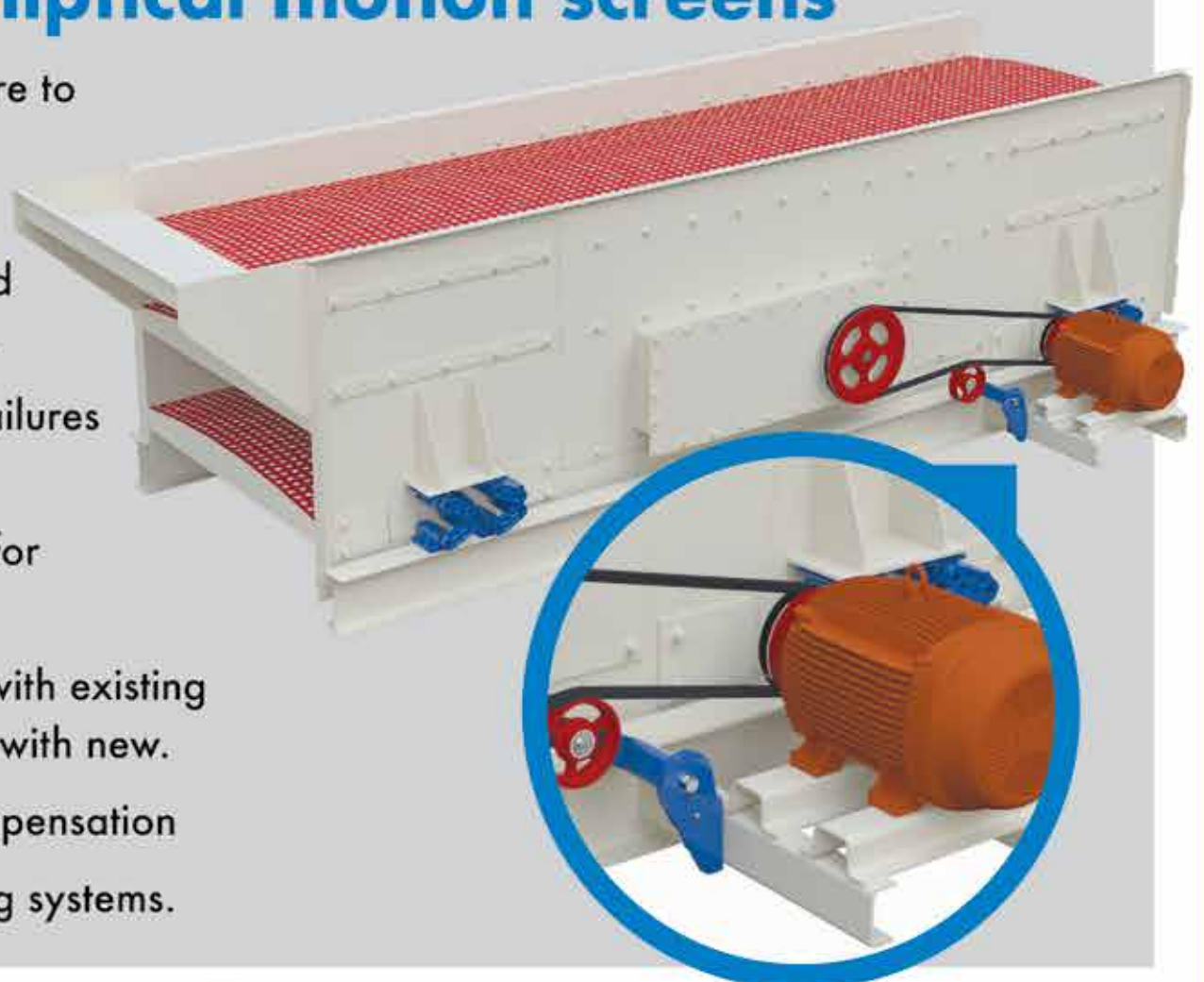


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# ROSTA





## IN BRIEF

### Rio spends \$US39m on stacker project

WA

RIO Tinto will spend almost \$US39 million to replace the original stackers at its 46-year old Paraburdoo mine in the WA Pilbara.

The project will be led by technology provider Tenova TAKRAF.

Rio Tinto said the design of the stackers was now underway, with fabrication to begin later this year, and installation and commissioning in 2020.

"This project is an important part of our sustaining capital program for 2018 and we're pleased to be supporting local businesses with this significant body of work," the company stated.

### Denham closes first mining fund

NATIONAL

PRIVATE equity firm Denham Capital has raised \$US558 million to expand its mining portfolio in Australia, Canada, South America and Asia.

The capital raising marks the close of its first mining fund, which will target projects in base metals, metallurgical coal and specialty minerals.

The firm's mining investments in Australia to date include ASX-listed Pembroke Resources and Auctus Minerals.

"It's an attractive market where we see in many jurisdictions the opportunity to secure projects that meet our investment criteria," Denham stated.

### Hellyer to begin tailings reprocessing

TASMANIA

NQ Minerals subsidiary Hellyer Gold Mines will soon begin processing tailings at its namesake project in Tasmania.

The mine, acquired in 2017, has been in care and maintenance for six years, and will be reopened to process up to \$1.5 billion in gold and \$1 billion in zinc from the tailings dams on site.

Tasmanian Resources minister Guy Barnett said production was scheduled to begin in September/October this year, once the processing plant had been refurbished.

# Dundas revives Avebury



Image: Sahlan Hayes.

Tasmanian Premier Will Hodgman, Dundas Mining chief executive Geoff Summers, Prime Minister Malcolm Turnbull and Liberal Braddon candidate Brett Whiteley at Avebury.

ELIZABETH FABRI  
TASMANIA

DUNDAS Mining will reopen its mothballed Avebury nickel mine with production to resume in January 2019.

The mine, purchased last year from MMG for \$25 million, has been on care and maintenance since 2009 amid a downturn in the nickel market.

Resurgent prices over the last 12 months encouraged Dundas to bring the mine back to life.

"When we signed up to buy this place it

(the nickel price) was \$US7000 a tonne. It's now \$US15,000 a tonne," Dundas Mining chief executive Geoff Summers told *The Advocate*.

Tasmanian Premier Will Hodgman said a recruitment process had begun, with more than 200 jobs to be made available across mining, processing, and administration.

He said the State Government was also supporting the reopening by providing a support package that will deliver up to \$3.5 million of payroll tax relief.

"This builds upon our previous support for mining on the West Coast, including \$9.5 million for essential works at the Mt Lyell copper mine, and \$2 million in the 2018-19

Budget for a new Exploration Drilling Grant Initiative to develop new opportunities," Mr Hodgman said.

"The Tasmanian Government will continue to strongly support our mining sector, as a key part of our plan to generate further economic activity and support local jobs in our regional communities."

Prime Minister Malcolm Turnbull said in the last year Tasmania's exports had grown by 26 per cent, and the two biggest goods exported were zinc and aluminium.

"This is a great mining State and this (Avebury) will add nickel to the list of great exports once again from Tasmania," Mr Turnbull said.

# Savannah restart fully funded

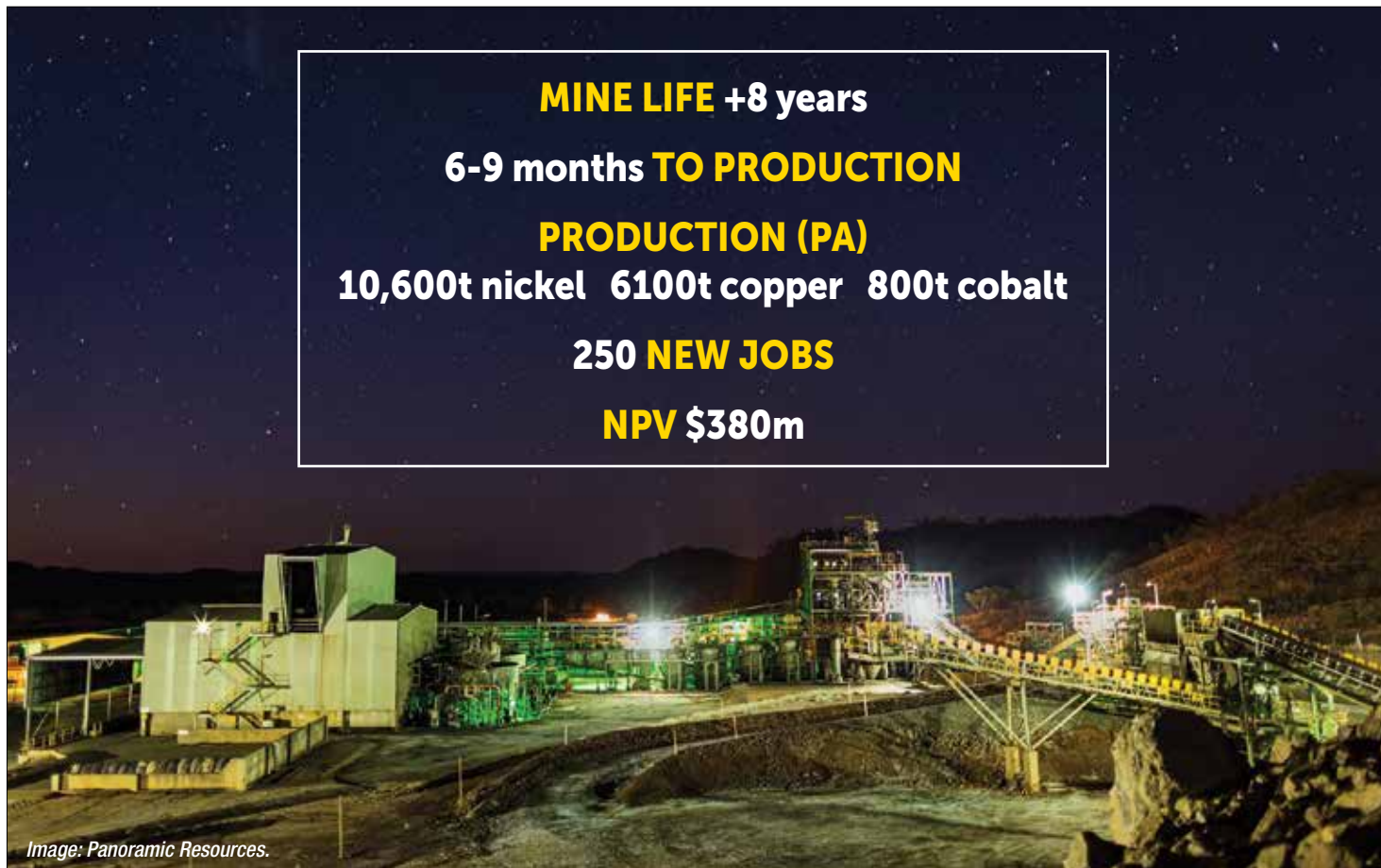


Image: Panoramic Resources.

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**PRODUCTION (PA)**

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**NPV \$380m**

REUBEN ADAMS/JESSICA CUMMINS  
WA

THE Savannah nickel-copper-cobalt project restart is locked in after Panoramic Resources executed a loan with Macquarie Bank for up to \$40m.

The combination of the Macquarie loan and the \$21m raised in February means the Savannah restart is fully funded.

The company has commenced Phase Two

of pre-production activities and is targeting first export of Savannah nickel concentrate to China in early March quarter next year.

Once commissioned, the project will ramp up to full production over 15 months to average annual production of 10,800t nickel, 6100t copper and 800t cobalt metal contained in concentrate.

Panoramic successfully commissioned the \$65m Savannah project in late 2004, and in 2005 purchased and restarted the Lafranchi nickel project near Kambalda, WA.

In FY2014, the company recorded a record 22,256t contained nickel and produced 19,301t contained nickel in 2015.

The projects were placed in care and maintenance in November 2015 (Lafranchi) and May 2016 (Savannah) due to low nickel prices.

In early July Panoramic signed a new four-year concentrate sales agreement with Sino Nickel, which covers 100 per cent of concentrate produced from Savannah.



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- POTASH
- RARE EARTH
- URANIUM
- VANADIUM
- INDUSTRIAL MINERALS



# BOOM DAYS

**Momentum is building in Australia's metallurgical coal sector. Prices are up and producers are taking note, with plans to fast-track a number of new projects – particularly in QLD. But will supply disruptions in the State hurt long-term exports?**

Image: BHP.

## ELIZABETH FABRI

AFTER a turbulent couple of years, metallurgical (coking) coal is back in the black.

This year prices floated around the \$US200 per tonne mark; positive times when compared to 2015 lows of \$US90/t.

The rally is largely attributed to strong demand in China, India and Japan for steel, of which coking coal is a key, non-substitutable ingredient.

India alone, relies on about 50 million tonnes of coking coal imports per annum, predominately from Australia, and analysts predict this will grow to more than 90mtpa in coming years.

Positive chatter around coking coal has encouraged miners and investors across the country to pour capital into new projects or revive closed operations.

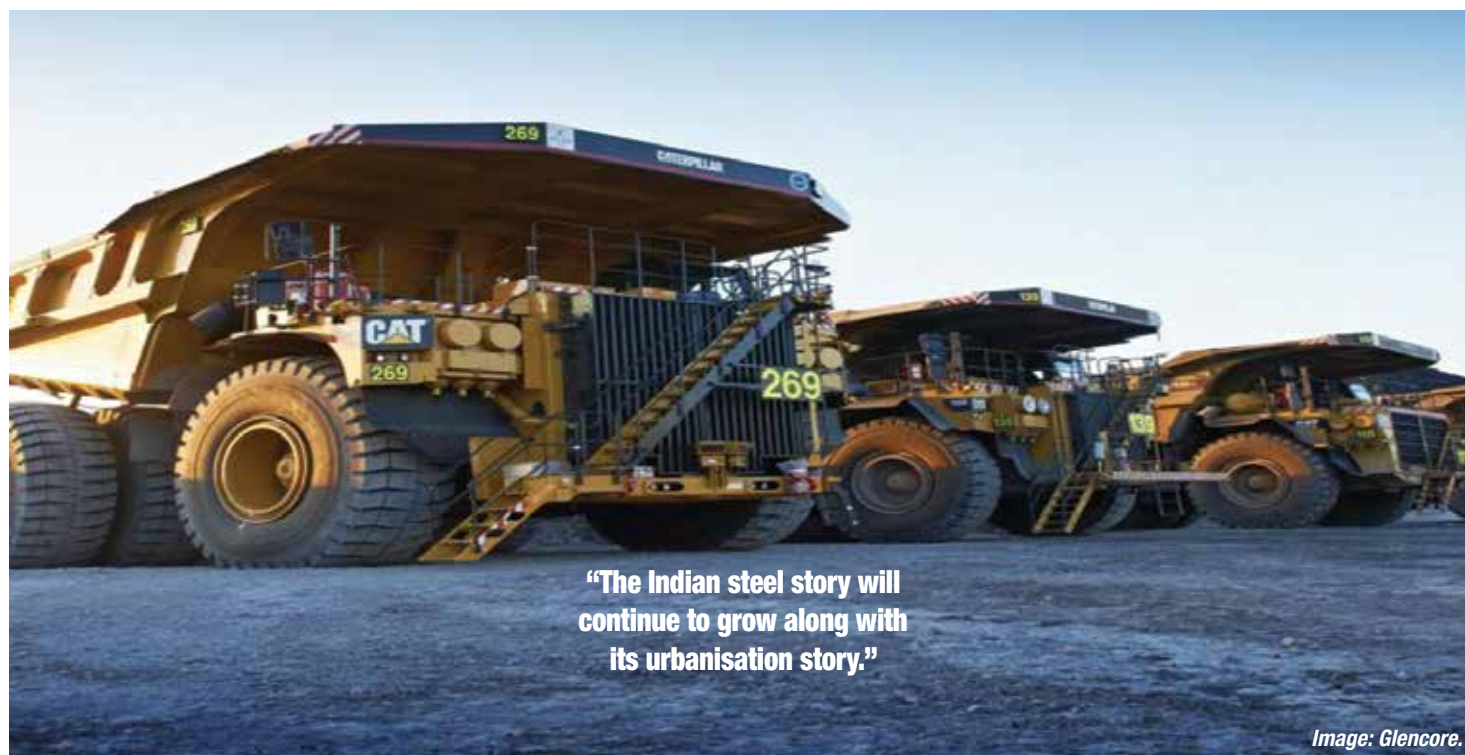
According to the Department of Industry's Office of the Chief Economist, in 2017-18 Australian coal exports (both coking and thermal) were expected to earn \$60.2 billion in revenue, the highest-ever annual level.

And in 2018-19 coal is forecast to be Australia's largest export earner at \$58.1 billion, overtaking iron ore.

Judging by the majors' FY18 success, the Chief Scientist's findings were not surprising.

In FY18, BHP's metallurgical coal production was 7 per cent higher at a record 43 million tonnes thanks to high production at its Peak Downs, Saraji, Caval Ridge, South Walker Creek and Poitrel operations.

Chinese-owned Yancoal's metallurgical sales also rose 31 per cent year-on-year after strong performance across its mines, while South32 had beaten its metallurgical coal output guidance with better than expected



**"The Indian steel story will continue to grow along with its urbanisation story."**

Image: Glencore.

production at its Illawarra mine, NSW.

Anglo American had success too, increasing production by 33 per cent in the June quarter to 5.3mt due to strong performance at the Moranbah and Grosvenor mines in QLD.

## Market Fundamentals

The Chief Scientist's June *Resources and Energy Quarterly* stated that Chinese demand, which was long expected to ease, had not fallen as "swiftly or as sharply as expected", however prices were likely to drop over the next two years.

"The metallurgical coal spot price is forecast to decline from an average of \$US193 a tonne in 2018 to \$US148 a tonne

in 2020, with the impacts of improved supply combined with weakening demand from China expected to outweigh growing demand from India," acting chief economist David Turvey said.

Mr Turvey said Australian export volumes were forecast to grow from 173 million tonnes in 2017 to 201 million tonnes in 2020, reflecting a steady recovery after Cyclone Debbie in 2017, and modest production growth from new capacity.

"Australia's metallurgical coal export earnings are estimated to have reached a record \$38 billion in 2017-18," Mr Turvey said.

"Earnings [metallurgical coal] are forecast to decline to \$32 billion in 2019-20, as lower prices offset rising export volumes."

EMR Capital, which picked up Rio Tinto's Kestrel mine in the Bowen Basin this year for \$US2.5 billion, had a more optimistic outlook.

"We believe coking coal has a bright future because if you look at the GDP growth of all the emerging economies that's really a proxy for steel, which then is a proxy for coking coal," EMR Capital chief executive Jason Cheng told *The Australian* earlier this year.

"The reality is the capital markets cannot simply walk away from hard coking coal, which is needed to create steel, which is needed to support GDP growth and rising incomes and rising lifestyles, so that can't change overnight.

"There is no replacement for coking coal. We see demand increasing."



Companies Making Moves

While many of the big players – like Rio Tinto – made the decision to exit coal in recent years, an emerging group of producers was building momentum.

QLD, which produces about 50 per cent of the world’s seaborne coking coal, is where many new production sources would come online.

Near term developments included QCoal’s 10mtpa Byerwen mine; BHP’s Blackwater and Caval Ridge Southern Circuit infrastructure projects; Sojitz’ Gregory Crinum reopening; South32’s Eagle Downs project; and Pembroke Resources’ Olive Downs project due to open in 2020.

Byerwen and Eagle Downs alone would add an additional 14mtpa of combined output to State exports.

Then came news Peabody would extend its North Goonyella coking coal mine life until 2026.

Queensland Resources Council (QRC) chief executive Ian Macfarlane said the new mining area of North Goonyella South would secure more than 230 jobs for the region.

“It again demonstrates the strong demand for Queensland coal especially metallurgical coal,” Mr Macfarlane said.

“Peabody has longstanding relationships with Indian steelmakers and a recent report from the Office of the Chief Economist highlighted the growth in metallurgical coal exports to India – increasing by 22 per cent over the last 12 months and forecast to overtake China as the world’s largest importer of metallurgical coal by 2020.

“The Indian steel story will continue to grow along with its urbanisation story.”

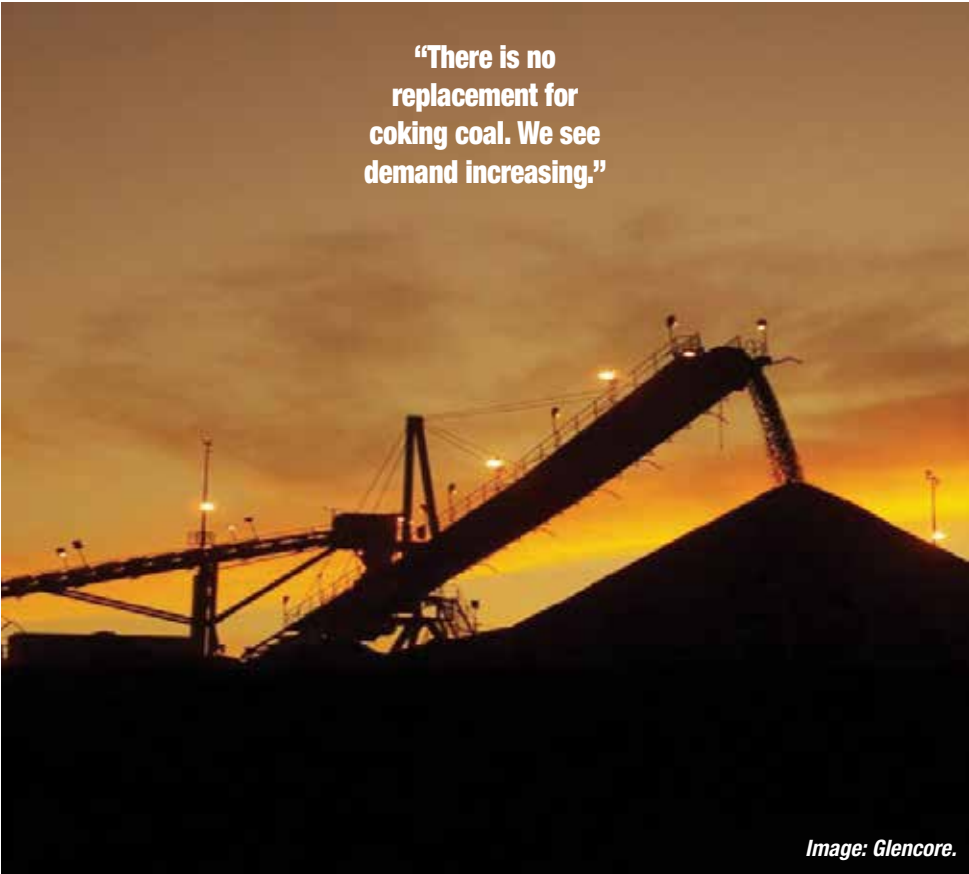


Image: Glencore.

Anglo American also plans to increase production at its Grosvenor mine, extend life at Capcoal by bringing its Aquila longwall out of care and maintenance, and has a near term opportunity for Moranbah South.

Juniors, such as Vitrinite and coking coal pure play Bounty Mining were picking up pace too.

In March, Vitrinite signed an agreement with Japanese company Itochu to accelerate the development of its Karin coking coal deposit, and in June Bounty Mining relisted on the ASX after an \$18

million IPO that gave it a \$120m market value.

Earlier this year, the State Government had also granted a mining lease for Bengal Coal’s planned 1.9mtpa Dysart East mine in central QLD, where 200 operations jobs will need to be filled.

Derailing Growth

However, positive news has been dimmed by concerns over the reliability of QLD’s coal haulage network amid a conflict between the State’s biggest rail operator

Aurizon and the QLD Competition Authority (QCA).

The stoush, stems back to QCA’s release of its 2017 Draft Access Undertaking (UT5) in December capping Aurizon’s revenue for the next four years at \$3.9 billion; \$1 billion shy of what Aurizon said it needed.

Aurizon would also receive a \$100 million reduction in allowances to operate and maintain the network, despite the increase in forecast tonnages and the asset base.

As a result, Aurizon made the controversial decision to alter its maintenance program to reduce costs, which is estimated to impact the movement of at least 20 million tonnes of coal per annum, and leave a \$2 billion hole in the State budget (about \$500 million in QLD Government royalties each year over the next four years).

Mr Macfarlane said the Aurizon threat would “have a bigger impact on coal exports than Tropical Cyclone Debbie”.

Many miners have expressed concerns over the matter.

Several months back, BHP, Glencore, Rio Tinto, Anglo American, Peabody, Yancoal, Idemitsu and Jellinbah joined forces, penning a letter to Aurizon’s chairman, urging him to revert back to the company’s original maintenance plan, as changes had already created “significant disruption and uncertainty” for customers.

In BHP’s June quarterly report it said it continued “to engage with stakeholders and encourage Aurizon to ensure infrastructure productivity is maximised while they await the Queensland Competition Authority’s final decision in respect of Access Undertaking 5 (UT5)”.



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# ASX: Recent Floats & Listings

Koppar Resources' exploration ground in Norway includes a number of historic mines.

REUBEN ADAMS  
NATIONAL

## Koppar Resources (KRX)

NORWAY-focussed junior explorer Koppar Resources (KRX) has performed strongly since its IPO in late May, when it raised \$4.5 million at \$0.20 per share.

KRX has a conditional right to acquire a number of high value copper-zinc projects in the Trøndelag region of Norway – Løkken, Tverrfjellet, Grimsdal, Illingdal, and Storwartz – through the acquisition of company Koppar Resources Europe.

The KRX ground includes a number of historical mines, some going back to the 1600s, with a combined recorded historical production of 85 million tonnes grading between 1 per cent and 2 per cent copper.

The company is compiling historical

data to generate targets for a drilling campaign in Q3 2018.

## Bounty Mining (B2Y)

MET coal miner and developer Bounty Mining (B2Y) was admitted to the ASX on Friday 15 June, raising \$18m at an issue price of \$0.35 per share.

The listing represents a massive turnaround for the company, which entered voluntary administration during the dark days of 2015, before emerging thanks to a \$300,000 investment from Garrison Capital.

B2Y now owns Cook Colliery and North Cook project in the Bowen Basin, and the Minyango and Wongai development projects in central and far north QLD.

Since acquiring Cook in late 2017, B2Y has been actively ramping up production toward 2.2 million tonnes per annum (mtpa).

Cook, a premium met coal mine, has benefitted from about \$1.3 billion worth of

investment from a previous owner between 2011 and 2017.

The \$18m raising will be used towards fleet upgrades at Cook; continued prefeasibility studies at Cook North and Minyango; and a BFS at Wongai.

## Primero Group (PGX)

PRIMERO (PGX), an engineering group specialising in battery metals, was admitted to the ASX on 6 July, raising \$25m at an issue price of \$0.40 per share.

Founded in 2011, Primero has delivered more than \$230m worth of projects since inception.

Its strong market position in WA servicing the mining, energy and infrastructure sectors is augmented by its battery materials expertise, with current and repeat clients including Tawana Resources, Galaxy Resources and Pilbara Minerals.

The company has forecast FY18 revenue of about \$80m; up from \$52m the previous year.

## Civmec (CVL)

DUAL listed, Australian-based Civmec (CVL) officially launched on ASX on 22 June “to strengthen its position in Australia’s fast-growing engineering and construction sector”.

“The ASX listing provides Civmec with an additional platform to broaden its shareholder and capital base, while also building on the excellent support Civmec has received from investors in Singapore, since listing on the Singapore Exchange in April 2012,” Civmec chief executive John Tallon said.

“With our past and current projects predominately delivered by our Australian workforce on Australian soil and our growth prospects mainly focused on the Australian market, we see the ASX listing as a natural move to reinforce our home identity.”

# “Lithium Valley” a step closer

ELIZABETH FABRI  
WA

WA's Lithium Valley plans are advancing with industry and the State Government coming together at the recent Lithium and Energy Materials Industry Consortium.

WA Mines minister Bill Johnston said the McGowan Government was fulfilling its commitment to encourage the development of battery technologies and downstream processing.

“The battery materials industry has the potential to transform the State, creating jobs and diversifying the local economy,” he said.

Association of Mining and Exploration Companies (AMEC) chief executive Warren Pearce said to take advantage of this opportunity the Government needed “to take a lead role in attracting investment”.

“Industry needs Government to identify and prepare land for development, and facilitate a speedy approvals process,” Mr Pearce said.

The WA Lithium and Energy Materials Industry Strategy is due within six months.

# Austar stands down workers

ELIZABETH FABRI  
NSW

YANCOAL has stood down almost 200 workers at its century-old Austar project in NSW as legal proceedings continue following two coal bursts at the mine earlier this year.

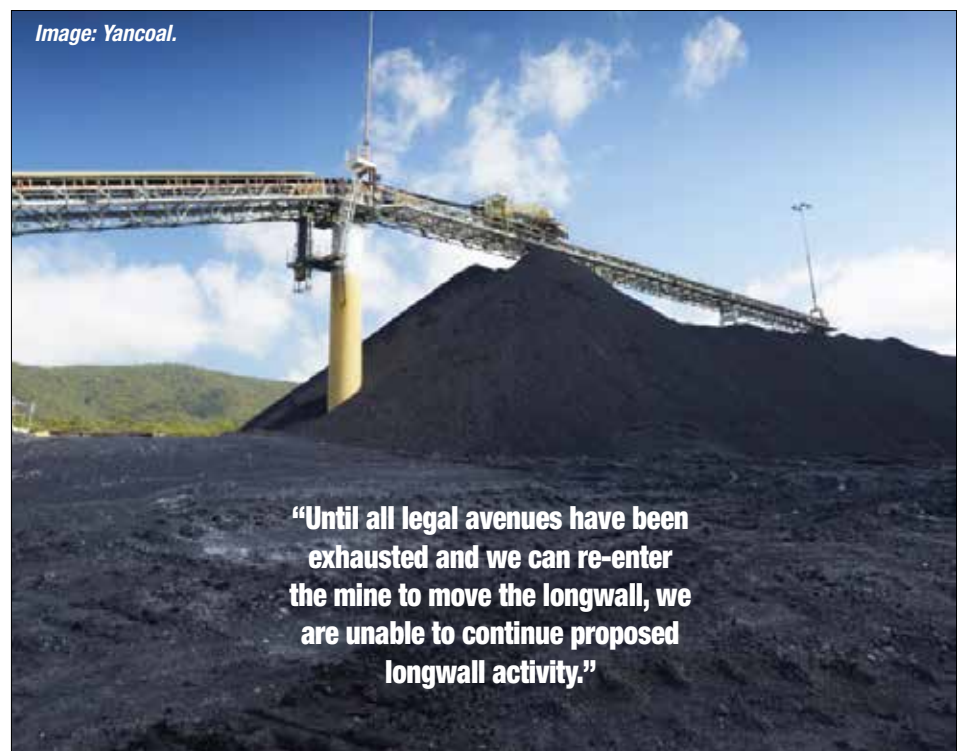
In late May, the NSW Resources Regulator stopped all underground longwall production activities when a second burst saw an estimated 60 tonnes of coal ejected from the longwall face.

Yancoal – which currently is seeking a dual listing on the Hong Kong Exchange – is awaiting the outcome of an external merits review to the Industrial Relations Commission, which will determine whether the mine can return to production.

Yancoal Australia chief executive Reinhold Schmidt said it would send workers to its other underground operations, where possible, and retain skeleton crews to maintain the operation in accordance with compliance requirements.

“We have worked to redeploy the majority of the Austar workforce to the Ashton, Abel and Moolarben underground mines in the interests of providing continued employment for our people,” Mr Schmidt said.

“Until all legal avenues have been



“Until all legal avenues have been exhausted and we can re-enter the mine to move the longwall, we are unable to continue proposed longwall activity.”

exhausted and we can re-enter the mine to move the longwall, we are unable to continue proposed longwall activity.”

Yancoal said it “unfortunately” did not have an estimated date for a return to production.

The closure was not expected to have a

significant impact on annual production.

In 2017, the mine produced 1.9 million tonnes of saleable coking coal production out of group production of 31.45mt.

However, the mine was still of value to Yancoal, being one of its few projects producing high value coking coal.





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# PROK



## IN BRIEF

### Pybar set to develop Far West mine

#### QLD

PYBAR Mining Services has won a contract to develop and operate Red Rivers' underground Far West mine in Northern QLD.

Far West is the second deposit to be mined as part of Red River's Thalanga Operation.

With first ore production expected in early 2019, Pybar will oversee the operation for an initial period of seven years.

### SWICK receives two contract renewals

#### WA/TAS

A CONTRACT renewal at Northern Star's Jundee mine in WA and nomination as preferred contractor at Renison tin mine in Tasmania is set to grow Swick's order book to \$160m.

Swick will deploy up to 18 rigs across the two projects, worth a combined \$80m.

In July, company subsidiary Oreplore Australia secured its first commercial agreement for its innovative Oreplore mineral scanning technology with Saturn Metals.

The milestone agreement will see core from Saturn's Apollo Hill gold project scanned by Oreplore's GeoCore X10 core scanning machine and technology.

### Thiess nabs \$112m OZ contract

#### SOUTH AUSTRALIA

THIESS has secured a new \$112 million contract at OZ Minerals' Prominent Hill mine in South Australia.

The five year contract includes run of mine management, crusher feed and ore handling services for the mine. Works are set to begin in August 2018.

Thiess has provided services to the mine since 2006.

# NRW lands South Flank work



Image: NRW Holdings.

NRW's order book was now worth about \$2 billion.

#### ELIZABETH FABRI WA

NRW Holdings has nabbed a \$176 million contract at South Flank for bulk earthworks and concrete for the overland conveyors and primary crushers, as well as ancillary works related to non-process infrastructure.

NRW said the 15 month contract would begin in September, with more than 350 workers required at peak.

"The award of this contract is particularly pleasing given the long standing association of NRW and BHP on resource projects and

recognises NRW's experience and capability in delivering projects in the Pilbara," NRW managing director and chief executive Jules Pemberton said.

"The contract will also provide opportunities for employment and procurement for the areas Traditional Owners and local businesses."

NRW Civil and Mining business executive general manager Ric Buratto said the core project team was in place and key equipment was being made ready for early deployment to the project.

Confirmed contractors for South Flank

to date included CIMIC subsidiary CPB Contractors which will undertake bulk earthworks, concrete and underground services; Monadelphous to undertake enabling works; Fluor to complete project and construction management services; Decmil to complete village construction; and Clough to complete engineering, procurement and construction (EPC) work; and SIMPEC which will complete the iron ore handling plant area.

NRW has provided services to BHP since 2002 when it completed the first of many rail sidings at Mt Whaleback iron ore mine in Newman.

# Fenner Dunlop wins Rio contract

#### JESSICA CUMMINS WA

FENNER Dunlop has won a permanent contract to provide conveyor maintenance services at Rio Tinto's Cape Lambert and Dampier ports in WA.

Fenner Dunlop said it will open a new branch in Karratha with more than 40 full-time jobs to be filled.

Fenner Dunlop chief operating officer Steve Abbott said the contract was directly attributed to the company's focus on conveyor performance, leadership and training programs and its team in WA.

"Rio Tinto and Fenner Dunlop see this as a longstanding partnership," Mr Abbott said.

Fenner Dunlop, now part of the Michelin Group of Companies, has manufacturing plants in Melbourne, Sydney and Perth and 16 branches nationally.



Image: Rio Tinto.

Rio Tinto operations at Cape Lambert.





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[www.bluespec.net.au](http://www.bluespec.net.au) Email: [murray@bluespec.net.au](mailto:murray@bluespec.net.au)



## IN BRIEF

### Eloise JV drilling expanded

#### COPPER/QLD

MINOTAUR Exploration and OZ Minerals have extended a drilling program at their Eloise JV project, near Cloncurry, QLD.

After completing 5000m drilling this year, an additional 2500m will now be undertaken across seven holes along the Jericho J1 and J2 areas.

The JV is hopeful the Jericho system has potential to host copper mineralisation similar to lodes within the Eloise mine.

### Newcrest extends exploration partnership

#### GOLD/WA

NEWCREST Mining and Encounter Resources have extended a project generation alliance for a further 12 months.

The partnership, formed in July 2017, has resulted in the creation of five separate unincorporated joint ventures (Selby, Watts, Lewis, Phillipson and Aileron), covering the Tanami gold province and West Arunta in WA.

The companies extended the agreement to build on the ventures already established.

### High-grade hits at Finniss

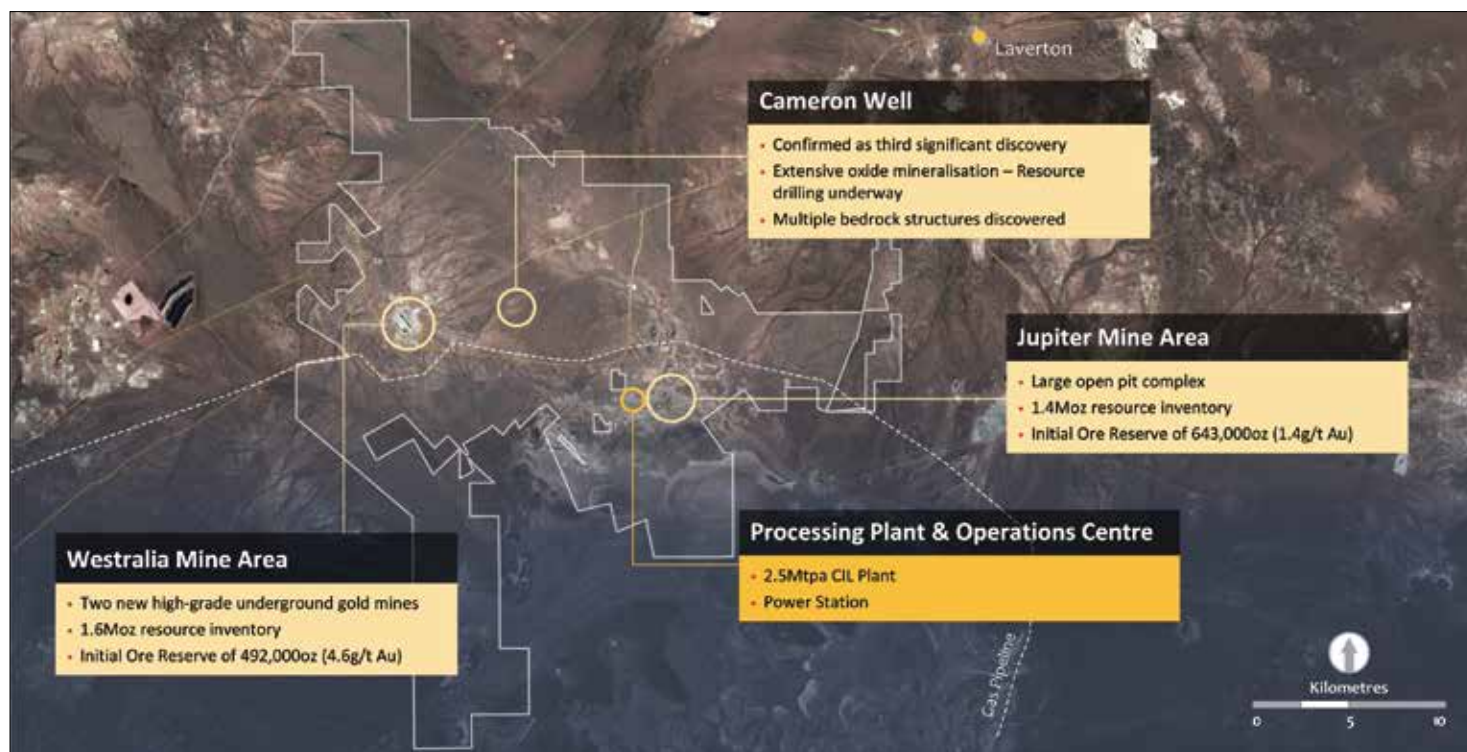
#### LITHIUM/NT

CORE Exploration has announced new high-grade assay results outside the existing defined resource at its Grants deposit, part of the Finniss project, in the Northern Territory.

The results are a big win for the company, signalling potential to increase the size of the Grants resource and its mine life.

A Definitive Feasibility Study is currently underway, which will be completed later this year.

# Dacian's exploration surge



Mt Morgans gold operation.

Image: Dacian Gold Limited.

#### JESSICA CUMMINS WA

A SUCCESSFUL \$40m equity raising leaves Dacian Gold fully funded to accelerate exploration and extinguish a Jupiter life of mine royalty obligation.

Dacian executive chairman and chief executive Rohan Williams said the funds allowed the company to fast-track discovery of new mineral resources, and potentially new mines and higher production levels at

its Mt Morgans operation.

The \$12m cancellation of the Jupiter life-of-mine royalty would also allow Dacian to retain more of the cash generated by Mt Morgans.

The company said \$25 million would be used to bring forward asset value by an estimated 24 months through aggressive exploration, targeting higher production rates and longer mine life at Westralia, and potentially unlocking Cameron Well as a third mining hub at Mt Morgans.

“We have substantially improved the exploration optionality at Mt Morgans with a new interpretation of the high grade zones at Westralia trending into areas of BIF never previously drill tested, and the new drill results at Cameron Well, which including 97m @ 3.1 g/t gold speak for themselves,” Dacian chief executive Rohan Williams said.

Mt Morgans produced 34,155 ounces in the June quarter – within original guidance of 30,000-40,000 ounces – and remains on track to deliver between 180,000oz and 210,000oz in FY2019.

## Big expectations at Paterson North

#### JESSICA CUMMINS WA

SIPA Resources has kicked off a major, multi-pronged exploration program at its Paterson North copper-gold project, 120km north of the world-class Telfer gold project.

The 6000m Aircore/RC drilling program will focus on 5 high priority regional copper-gold targets – Aranea, Asselli, Obelisk, Andromeda and Jordanus.

Assay results should start being received mid to late August, the company said.

Sipa managing director Lynda Burnett said the 2018 exploration field season would be an important one.

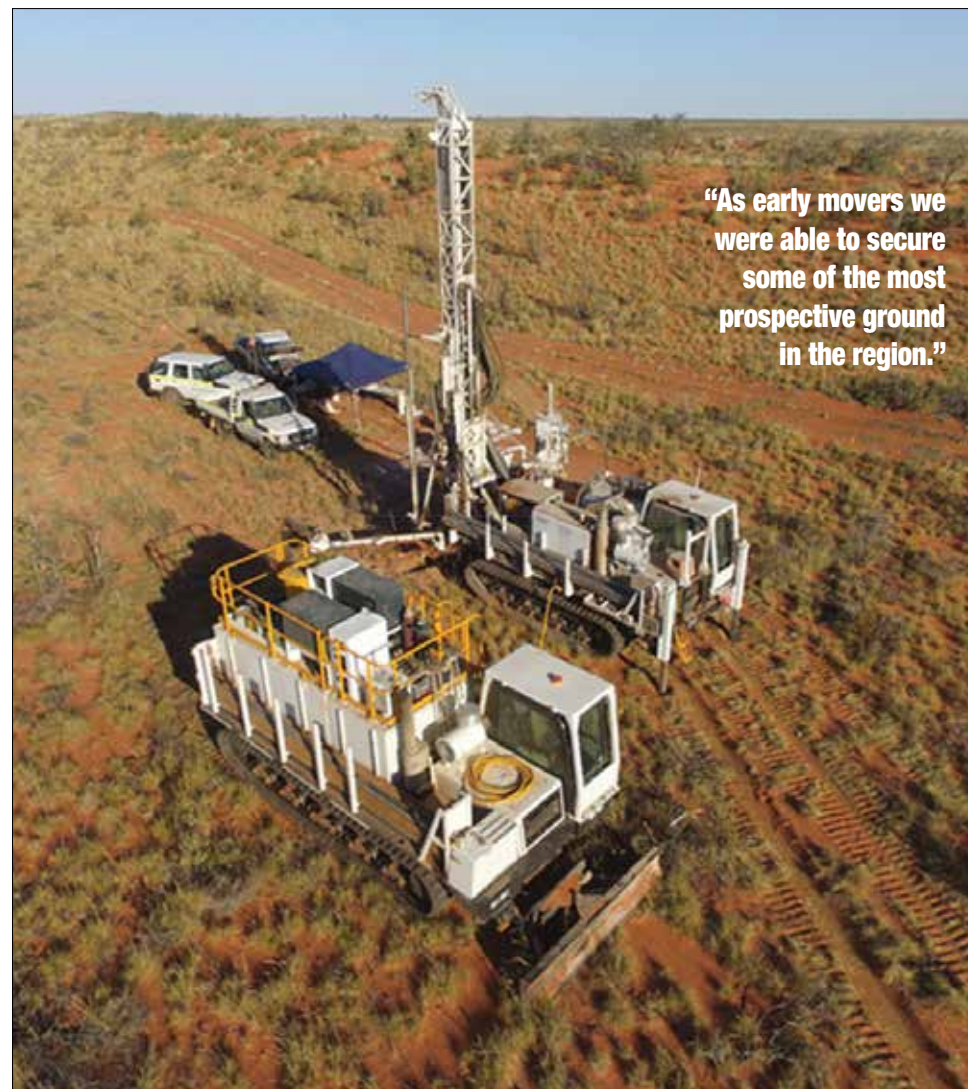
“As early movers we were able to secure some of the most prospective ground in the region,” she said.

“We return armed with a large body of knowledge and work completed during the wet season, and against the backdrop of growing industry-wide exploration momentum amongst our peers and some of the larger companies operating in the district.”

At Obelisk, Sipa has already outlined a large polymetallic mineral system with many similarities to other major discoveries in the region.

“We have a new targeting model at Obelisk which we will put to the test in our drilling, including an untested target zone some 250m north-west of last year’s drilling,” Ms Burnett said.

“The work we completed during the wet season, including remodelling of



Drilling at Paterson North Project.

Image: SIPA Resources.

the IP data, shows that the highest concentration of metal (metal factor) is in this area – which also coincides with the peak of the magnetic model and IP

features, and strongly anomalous Aircore results.

“This is a compelling target which will be tested by a 500m diamond hole.”





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# METS sector gets boost

ELIZABETH FABRI  
QLD

THE QLD Government will contribute \$1.8 million this financial year to support start-up and early-stage mining equipment, technology and services (METS) companies across the State.

QLD State Development, Manufacturing, Infrastructure and Planning minister Cameron Dick said the funding would deliver 11 State-based industry support activities, in partnership with METS Ignited, to enable companies to take their innovations to national and international market.

“A Scale-Up and Take Off program is being developed to assist METS businesses who are expanding to meet the challenges that come with growth,” Mr Dick said.

“Funding will also support industry collaboration, assisting the growth of established METS clusters and developing new clusters.

“Through this activity, METS companies, resource companies and researchers will come together around common outcomes and share capabilities to make the most of commercial opportunities.”

Other initiatives included a program to improve digital capabilities; a series of mini accelerators to reach companies in regional QLD; funding for the Coalition for Energy Efficient Comminution (CEEC) to identify and promote opportunities for companies to develop and supply energy efficient and commercially valuable solutions to the resources industry; and continued support for the Test Facilities Research Project to determine gaps in existing test facility availability in Australia.

# AutoHaul reaches another milestone

JESSICA CUMMINS  
WA

THE first fully autonomous rail journey, consisting of three locomotives carrying around 28,000 tonnes of iron ore, has been successfully completed at Rio Tinto's mining operations in the Pilbara.

The train travelled over 280km from Tom Price to Cape Lambert and was monitored remotely by operators at Rio Tinto's operations in Perth.

The inaugural journey is a significant milestone for Rio Tinto's AutoHaul programme and follows regulatory approval in May.

The \$940 million AutoHaul programme is focused on automating trains transporting iron ore to Rio Tinto's port facilities in the Pilbara region of WA, where it operates about 200 locomotives on more than 1700km of track.

# Analyser slashes processing costs

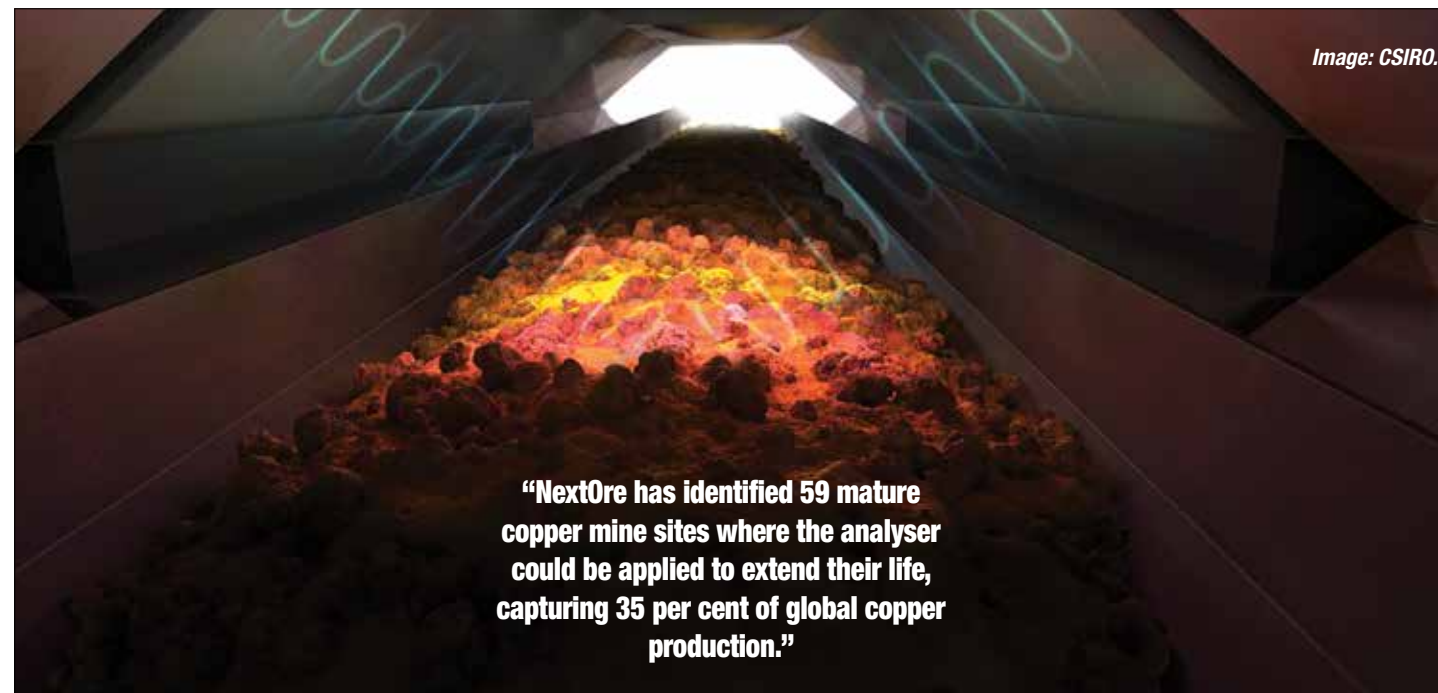


Image: CSIRO.

Ore moves through the analyser, which uses magnetic resonance radio waves to rapidly identify high quality ore from waste.

ELIZABETH FABRI  
INTERNATIONAL

A CSIRO-developed copper ore sorting analyser identifies waste before it enters the plant, minimising the significant costs associated with processing waste rock from low grade ore.

Using magnetic resonance technology to penetrate through copper, gold and iron bearing ore – much like a medical MRI – the analyser rejects large volumes of waste rock earlier in the process.

This results in up to a 20 per cent reduction in costs, including a reduction in energy and water required for processing.

CSIRO said the technology will be available to the international copper market through NextOre, a company it has established with RFC Ambrian and Advisan Digital.

In the next 12 months, NextOre will engage primarily with the South American and Canadian markets, with contracts already secured with two top-tier producers.

CSIRO research director Nick

Cutmore said bringing the analyser to market through NextOre “opened up the opportunity to transform the global copper industry and reduce its environmental footprint”.

“NextOre has identified 59 mature copper mine sites where the analyser could be applied to extend their life, capturing 35 per cent of global copper production,” Mr Cutmore said.

“The solution could also enable undeveloped, low grade mines to be brought into production, so the economic benefits are huge.”

# Lithium Australia's “war on waste”

ELIZABETH FABRI  
NATIONAL

LITHIUM Australia will commence testing lithium mica to determine if the material has potential to become base feedstock for its proposed large-scale pilot plant (LSPP) in WA.

Lithium mica, long considered a waste material by the mining industry, will be sourced from one of two sites in the Eastern Goldfields, and tested at ANSTO Minerals’ (a division of the Australian Nuclear Science and Technology Organisation) Lucas Heights laboratories in Sydney.

Lithium Australia managing director Adrian Griffin said WA's lithium fields hosted abundant pegmatites, many of which contained lithium micas.

He said the company had already undertaken substantial bench-scale test work on lithium micas sourced from its 80 per cent owned Lepidolite Hill deposit in the eastern Goldfields, however, far less test work has been carried out on a second lithium mica-style Goldfields deposit, designated Waste2.

“Early laboratory tests show that concentrates produced from Waste2 have metallurgical characteristics that vary from other micas tested,” Mr Griffin said.

“This is because the Waste2 concentrates



Image: Lithium Australia.

Lithium mica concentrates will be tested in a SiLeach pilot plant.

are a mixture of muscovite (a common, low-lithium-content mica) and lepidolite (a common lithium mica).

“To help complete the final design parameters for the LSPP, a bulk concentrate from Waste2 has therefore been produced via froth flotation and will undergo testing at the newly constructed facility at Lucas Heights, which is based on Lithium Australia's proprietary SiLeach processing technology.”

Lithium Australia will send the lithium chemical produced to its VSPC Brisbane plant for processing into battery cathode material.

“The cathode powder will then be tested at VSPC's in-house battery testing facility,” he said.

“We hope to report on its performance with respect to battery applications in coming months.”



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# Chile METS eye Australian markets



ProChile's Giancarlo Tosti-Croce (left) said Chilean METS was positioned to provide products and services ideally suited to Australian conditions.

## REUBEN ADAMS CHILE

THE surging Chilean Mining, Equipment, Technology and Services (METS) sector has identified Australia as one of four key international growth markets.

The Trade Commission of Chile – ProChile – has been on the promotional trail, bringing a delegation of seven Chilean mining supply companies to the Queensland Mining & Engineering Exhibition (QME) 2018 in Mackay last month.



“ProChile's Program of International Promotion of Mining Suppliers is about leveraging these strong links to Australia to develop the Chilean METS export sector.”

In 2016, global Chilean METS exports reached \$US471 million (\$US429m in goods, and \$US42m in services); a 7 per cent jump on the prior year.

While Chilean exports of mining goods and services to Australia in 2016 represented a small proportion at just \$US7.5 million, it was still a 2.7 per cent increase on 2015.

ProChile business development manager – Mining Giancarlo Tosti-Croce said there were currently more than 6000 Chilean METS providers supplying global companies, including Australian mining and

METS giants.

He said Chile's state-owned Codelco, the world's largest copper producer, had developed open pit and underground mining technology and expertise that had been exported around the world, including to some Australian companies.

“Codelco has provided expertise in bulk underground mining techniques to some of Australia's biggest mining companies,” he said.

“So Chilean companies already enjoy strong relationships with Australia's mining

and METS sector and they are used to operating in similar conditions to those found in Australia.

“This puts Chilean mining services companies in a perfect position to provide products and services ideally suited to Australian conditions.

“ProChile's Program of International Promotion of Mining Suppliers is about leveraging these strong links to Australia to develop the Chilean METS export sector.”

Other strategic markets ProChile is targeting include Canada, Mexico, and Peru.

## PolarX with more drilling success

### JESSICA CUMMINS ALASKA

HIGH-FLYING ASX junior PolarX continues to announce strong drilling results at the Zackly deposit; part of its exciting, high grade Alaska Range copper-gold project.

July drilling results hit visible mineralisation 850m along strike from the Zackly resource and 100m below it, with the deposit remaining open along strike and at depth.

The current Zackly inferred resource stands at 41,000t of copper, 213,000oz of gold and 1.5Moz silver from surface over a strike length of 1km.

Alaska Range also includes the Caribou Dome deposit, which has a JORC resource of 85,500t copper.

PolarX aims to rapidly define a high-grade copper-gold resource inventory between Zackly and Caribou Dome, sufficient enough to underpin feasibility studies on combined or standalone operations.

## Rio nears Grasberg exit deal



Image: Freeport McMoRan.

### ELIZABETH FABRI INDONESIA

RIO Tinto is a step closer to offloading its interest in the troubled Grasberg copper-gold operations after entering a non-binding Heads of Agreement to sell its stake for \$US3.5 billion.

For more than two decades, Rio Tinto has had a right to 40 per cent production at the Freeport McMoRan (90.64 per cent) and the Indonesian Government's (9.36 per cent) owned mine above a pre agreed level.

However lower production in recent years has meant Rio has received little to no income at the project.

In 2017, Grasberg mine produced 468,000 tonnes with Rio's share amounting

to a meagre 5700t.

In a statement to the ASX, Rio Tinto said the agreement between itself, Freeport McMoRan and potential buyer Indonesian State-owned PT Indonesia Asahan Aluminium (Persero) (Inalum), involved the sale of its interest, as well as a separate proposed transaction in which Inalum would pay Freeport \$350,000 for an additional stake.

“All parties have committed to work towards agreeing and signing binding agreements before the end of the second half of 2018,” Rio Tinto stated.

“Any final agreements will be subject to approval by the necessary government regulators and authorities.”

Freeport president and chief executive Richard C. Adkerson said the agreement

marked a significant milestone toward establishing a new long-term partnership with the Republic of Indonesia.

“Through this transaction, the Government will achieve its ownership objectives in a manner that preserves the long-term value for FCX shareholders and the people of Indonesia through 2041,” Mr Adkerson said.

“We thank Rio Tinto for their support over our more than 20-year successful partnership.

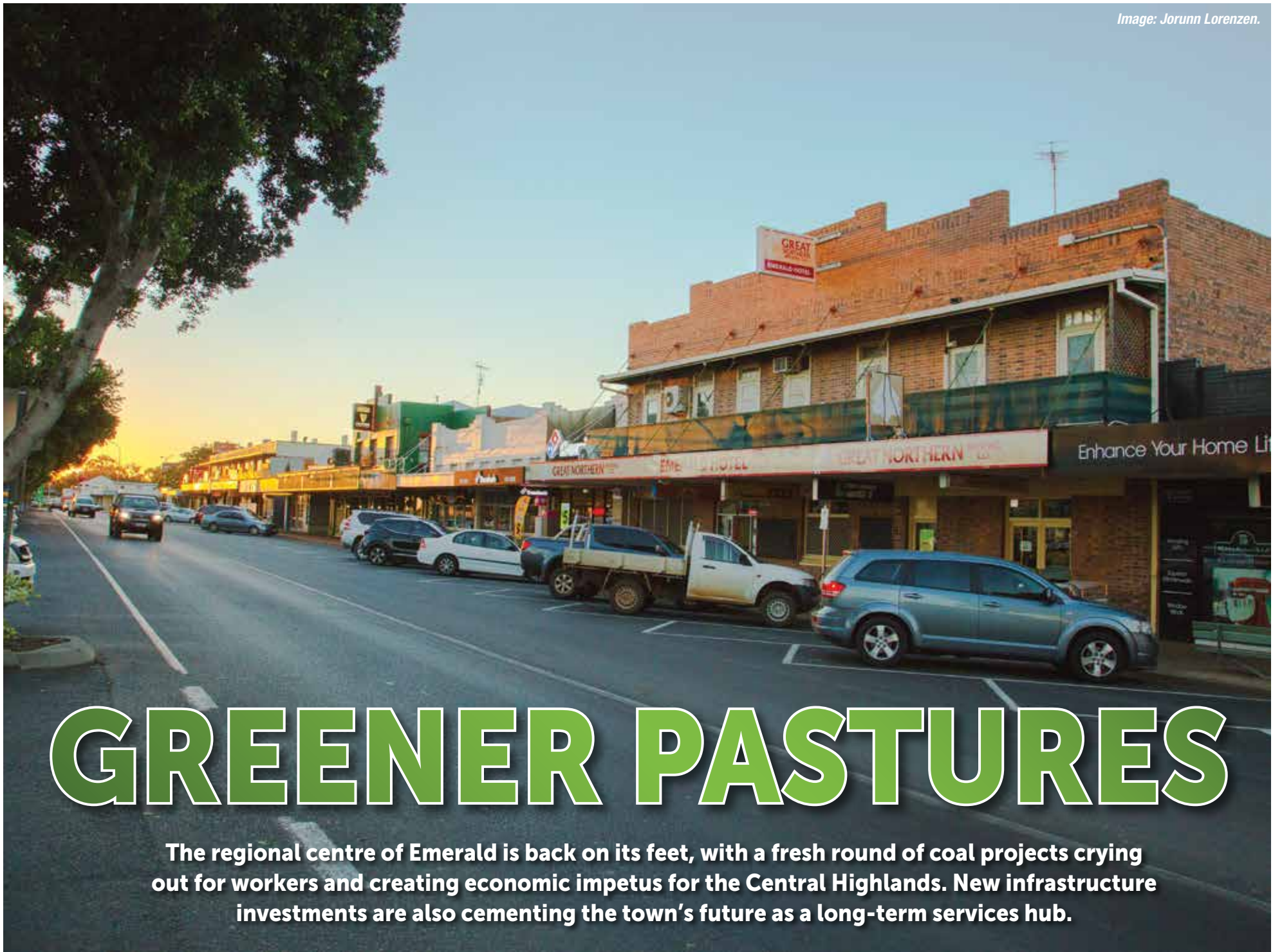
“We look forward to a mutually positive and beneficial partnership with Inalum that will continue to provide substantial benefits to the people of Papua; the Republic of Indonesia; and to our local employees, suppliers and contractors while generating attractive returns for our shareholders.”



# SPECIAL FEATURE

## EMERALD: GEM OF THE BOWEN

Image: Jorunn Lorenzen.



# GREENER PASTURES

The regional centre of Emerald is back on its feet, with a fresh round of coal projects crying out for workers and creating economic impetus for the Central Highlands. New infrastructure investments are also cementing the town's future as a long-term services hub.



Image: Sojitz.

Excavation at a trial pit at Wilton-Fairhill.

### ELIZABETH FABRI

JAPANESE-owned Sojitz Corporation has been instrumental in Emerald's revival as a mining services town.

Sojitz, which has operated Minerva coal mine since 2010, began first production at its Meteor Downs project (jointly owned with U&D Mining) earlier this year, which required an additional 40 employees.

Then in June Sojitz made the big announcement it would purchase BHP Billiton Mitsubishi Alliance's (BMA) shuttered Gregory Crinum metallurgical coal mine for \$100 million, with the intention of reopening it as soon as possible.

Gregory Crinum, 60km north of Emerald, had been out of action since January 2016, and on and off the market since 2013.

Until recently BMA struggled to secure a buyer, but the time was now ripe for Sojitz as it looked to rebalance its coal assets which were currently weighted towards thermal coal.

"Our company was very keen on trying to move more into metallurgical coal (steel generation more so than thermal coal)," Sojitz managing director and chief executive Cameron Vorias told *The Australian Mining Review*.

"We also wanted to establish another mining operation in and around Emerald. It was where our existing workforce is

based right now."

But Sojitz had even bigger plans for the Gregory Crinum site.

The miner was currently planning to build a large solar farm (up to 100MW) that would power processing operations, and also be utilised by other mining projects and the wider community.

Sojitz was also currently engaged in talks with Futura Resources to combine its Wilton-Fairhill open cut mine, 10km away, with Gregory Crinum.

The idea will be to feed Wilton-Fairhill coal into the Gregory Crinum plant next year; a win-win for both companies.

**"Our problem is that we have really low unemployment; which is a great problem to have but a problem nonetheless."**

"We have Heads of Agreements in place, but we are still talking about final agreements of mining of that resource to come into Gregory Crinum," Mr Vorias said.

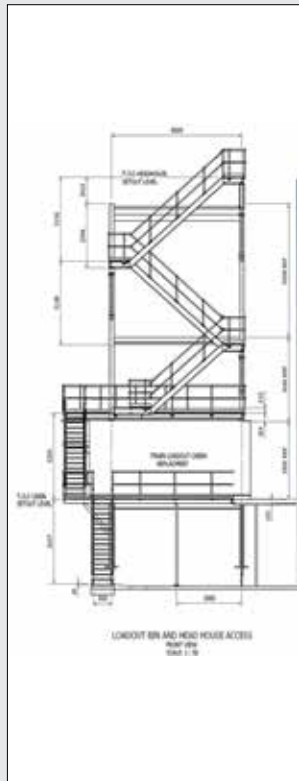
"We're using Gregory Crinum as an infrastructure hub."

A reopening will benefit Emerald; on the jobs front, more than 300 positions will need to be filled at Gregory Crinum, and more than 100 at Wilton-Fairhill.

(CONTINUED ON PAGE 21)



# Engineering design professionals



More information can be found at: [www.hde.com.au](http://www.hde.com.au).

## QLD

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- Process Systems
- Material Handling Systems

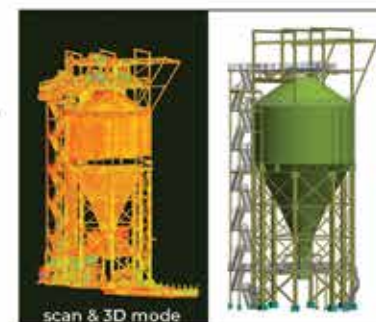
### • PROJECT MANAGEMENT, COST ESTIMATING AND REPORTING

### • DESIGN AND CONSTRUCT FULL TURN-KEY SOLUTIONS

### • 3D MODELLING AND 2D DRAFTING

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(CONTINUED FROM PAGE 19)

Mr Vorias said the Gregory Crinum acquisition was expected to close by December, with work to begin on site immediately once the green light is given.

The goal is to mine about 3 million tonnes per annum across a 20 year mine life, with first coal expected in February or March next year.

Workers at Minerva and Meteor Downs would be given priority employment, as would Emerald locals, Mr Vorias said.

“We would prefer a residential workforce to rebuild Emerald to where it was,” he said.

“Emerald went through a fairly bad period when Gregory Crinum first shut down during the downturn, so it will be a very good thing for the Emerald township to have the two mines restart back up.

“There will be some people that will come out of the rest of the industry and there’s bound to be some clean skins (people without any skills) that we will bring into the organisation as well.

“But the emphasis will be on our own people and those based out of Emerald.”

Central Highlands Development Commission (CHDC) regional development officer Cat Spalding said the three projects delivered a wave of good news for Emerald, with sheer visibility of Meteor Downs alone causing a buzz.

(CONTINUED ON PAGE 23)



# The Lunar difference



The Lunar Mining team.

## QLD

LUNAR Mining’s core focus since inception has been as a specialist provider of underground contracting services.

The proactive industry leader specialises in delivering value and sustainability through safe, professional and productive services.

Lunar Mining has grown considerably in its brief history and now offers an extensive range of services that are integral to the underground mining sector.

“We have strived to create a positive

culture that sees a strong focus on maximising production output as well as continuing to promote safety first behaviours,” Lunar Mining director Glenn Dickson said.

“It is our goal to establish long term relationships with our clients, and with a united approach see through the successful execution of all our operations.”

Lunar’s charter values are the fundamentals on which its successful and sustainable business model is based – these include Safety First, Integrity Always, Performance and Sustainability, and Innovation and Change.

The company works under an integrated Health and Safety, Quality and Environmental Quality (HSEQ) management system.

The HSEQ management plan ensures Lunar Mining complies with relevant legislative and client requirements, while maintaining its own values and principles.

“We have a proven track record in sourcing quality labour for our stand-alone projects and labour hire contracts for our clients,” Mr Dickson said.

“We pride ourselves on delivering a high-end workforce even during a competitive market.

“Our record strongly demonstrates our ability to attract and retain highly qualified personnel to our projects and perform to the high level that is expected.”

Lunar Mining’s extensive team has the knowledge and experience required in providing technical expertise and execution for ventilation services, secondary support, labour hire, project management, development drivage, longwall relocation and overhaul, pre-driven recovery roads, conveyor install and maintenance and equipment hire.

More information on its services can be found at: [www.lunarmining.com.au](http://www.lunarmining.com.au).



# LUNAR MINING

## UNDERGROUND MINING SERVICES DELIVERING ABOVE EXPECTATIONS



Based in Emerald, Lunar Mining has provided specialist underground contracting services to the Bowen Basin since 2013.

We are a proactive industry leader in all aspects of our operations and specialize in delivering value and sustainability through safe, professional and productive services.

Our team have a proven track record in sourcing quality labour for our stand alone projects, and contracts for clients, with a commitment for above industry safety standards.

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- Labour Hire
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**We are always on the lookout for quality experienced personnel to join Lunar Mining**



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*"Locals Supporting Locals"*





Fairbairn Dam, Emerald.

“Its positioned down Rolleston near the highway, so people can see those developments, and hear that talk,” Ms Spalding said.

“Sentiment is definitely up, there’s a lot of optimism going on in the community.”

The QLD’s Government’s newly introduced FIFO laws also provided surety for locals.

“It certainly was a win for us,” Ms

Spalding said.

“As Council said back when the laws passed, we respect the right for workers to choose where they want to live and where they want to work, however FIFO does impact social communities, and the vibrancy of regional communities.

“We think our regions are really great places to live; we want people to work here, the career opportunities are strong,

the liveability is fantastic, so we strongly encourage permanent residencies.

“Moreover, we know our workers are skilled, we know our workers have the experience, so mining companies benefit.”

Further ahead, Emerald was also set to benefit from the opening of Shenhua International Group’s Taraborah Coal project, a possible development of Glencore’s (formerly Rio Tinto) newly

acquired Valeria project, and Adani’s proposed Carmichael project, currently obtaining finance.

**Advancing Emerald**

With coal mining firmly back on the radar for Emerald, the Council and industry had been busy advancing infrastructure and amenities.

**(CONTINUED OVER)**

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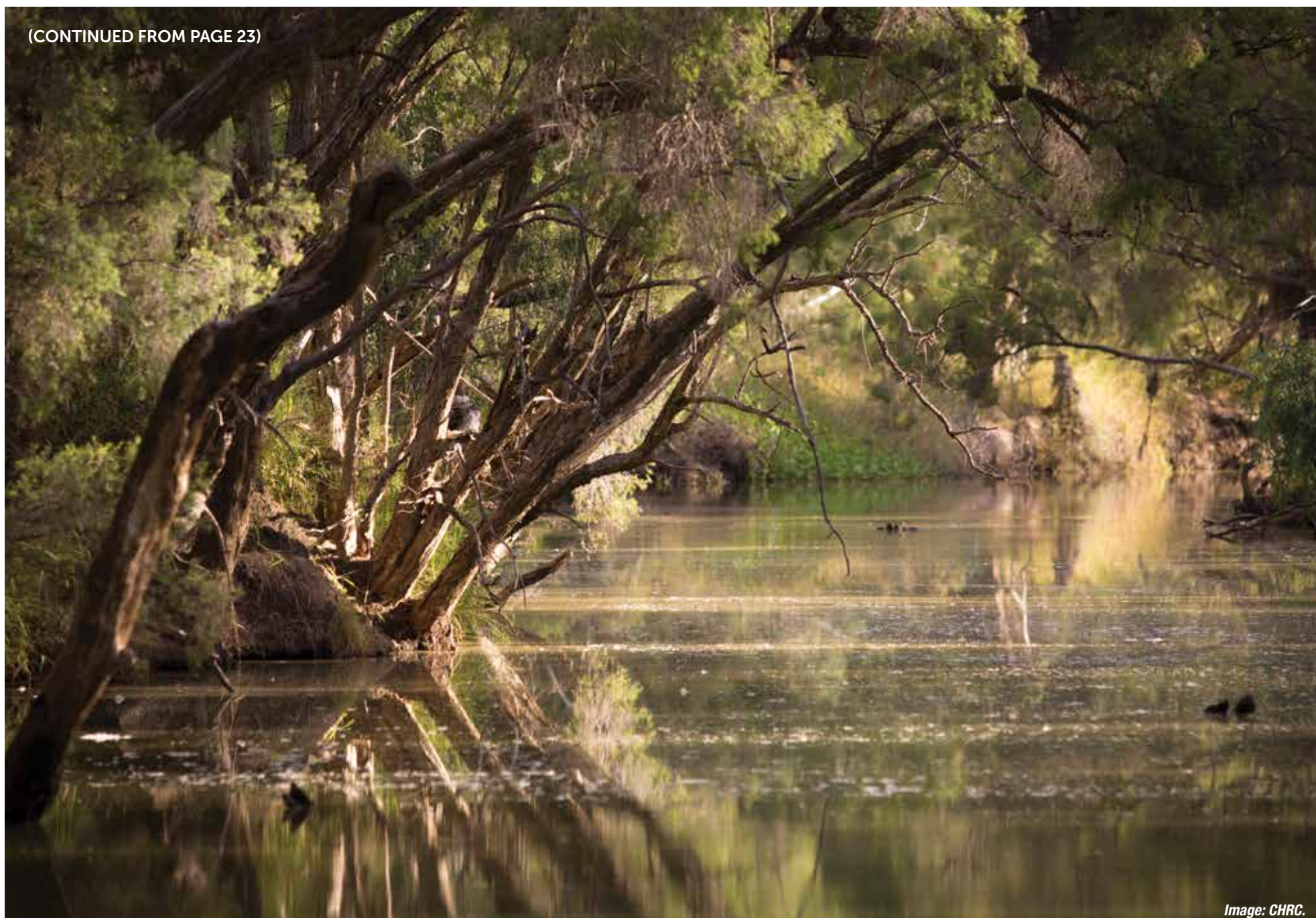


Image: CHRC.



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In the wider Central Highlands region, more than \$7 billion of investment was happening across the resources industry, community infrastructure, industrial developments and residential construction.

One of the biggest enablers was the Central Queensland Intermodal Terminal and Industrial Access Road in the Yamala Enterprise Area, 25km from Emerald.

The new infrastructure will allow exports to be containerised regionally, rather than being transhipped elsewhere for containerisation.

Ms Spalding said the inland corridor project was going to be "absolutely transformational" for the region, connecting all of its industries, including mining and agriculture.

The Emerald airport will also benefit from Federal funding, with \$1.4 million announced towards upgrades, including widening the airstrip.

"We've also got some regeneration work down at the Fairbairn Dam and water is absolutely critical for our region across all of our industries," Ms Spalding said.

Despite improvements, challenges were still ahead for Emerald.

"Our problem is that we have really low unemployment; which is a great problem to have but a problem nonetheless," Ms Spalding said.

"We know that businesses are having trouble getting in skilled tradespeople, we know they're having difficulty attracting admin staff (those highly coveted roles that are critical for growth and enabling in the region) so that's something we're trying to address to bring in those types of people into the region."

Mr Vorias agreed and said access to skilled labour would be "an ongoing

challenge".

"Having lost about 15,000 people during the mining downturn, [the industry] is struggling to get people back again now," Mr Vorias said.

"I think the opportunities to train new people into the industry, we need to do a lot more about that going forward.

"All of the other companies are doing a great job in that as well, but that will be our challenge getting those people into Emerald, and giving people living in Emerald right now, the opportunity to train up as an unskilled person in mining but we can do that at either Minerva, Gregory, Wilton-Fairhill or Meteor Downs."

Ms Spalding said access to accommodation was also flagged, with many projects in the wider region returning to production at the same time.

"You've got mining communities out in Blackwater that have almost no access to accommodation, the mining camps are completely full so they are spilling over into Emerald which is a 45 minute drive," she said.

**"At our Meteor Downs mine, we built it on the basis it would survive during a worse time in the industry than what we had three or four years ago."**

#### **Surviving the Next Downturn**

Mr Vorias said the cyclical nature of the industry meant coal prices would eventually come down again, but Emerald was ready.

"I've seen so many of these [downturns] in my career," he said.

"The things you have always got to be mindful of (and I say this to all of the managers that sit in the business) is always make your decision based on the fact the market could drop again over the course of the next couple of years.

"Let's hope it goes longer than that."

Mr Vorias said it was imperative to not "spend extra money on things that are not sustainable" should prices drop.

"For example at our Meteor Downs mine, we built it on the basis it would survive during a worse time in the industry than what we had three or four years ago," he said.

"We try to recession-proof our operations."

Ms Spalding said Emerald was a diverse region, with a number of core industries, and was confident it would manage through the next downturn.

"We're not a one trick pony here in Emerald or the Central Highlands," she said.

"Mining is obviously incredibly important to us but we've got tourism, we've got the agricultural sector, we've got small business, and we've got construction.

"So when these downturns happen it's not so much for us a downturn but our businesses can pivot and shift quite quickly to service the other industries."

But for now, the town was ready to service Gregory Crinum and the next generation of coal mines.

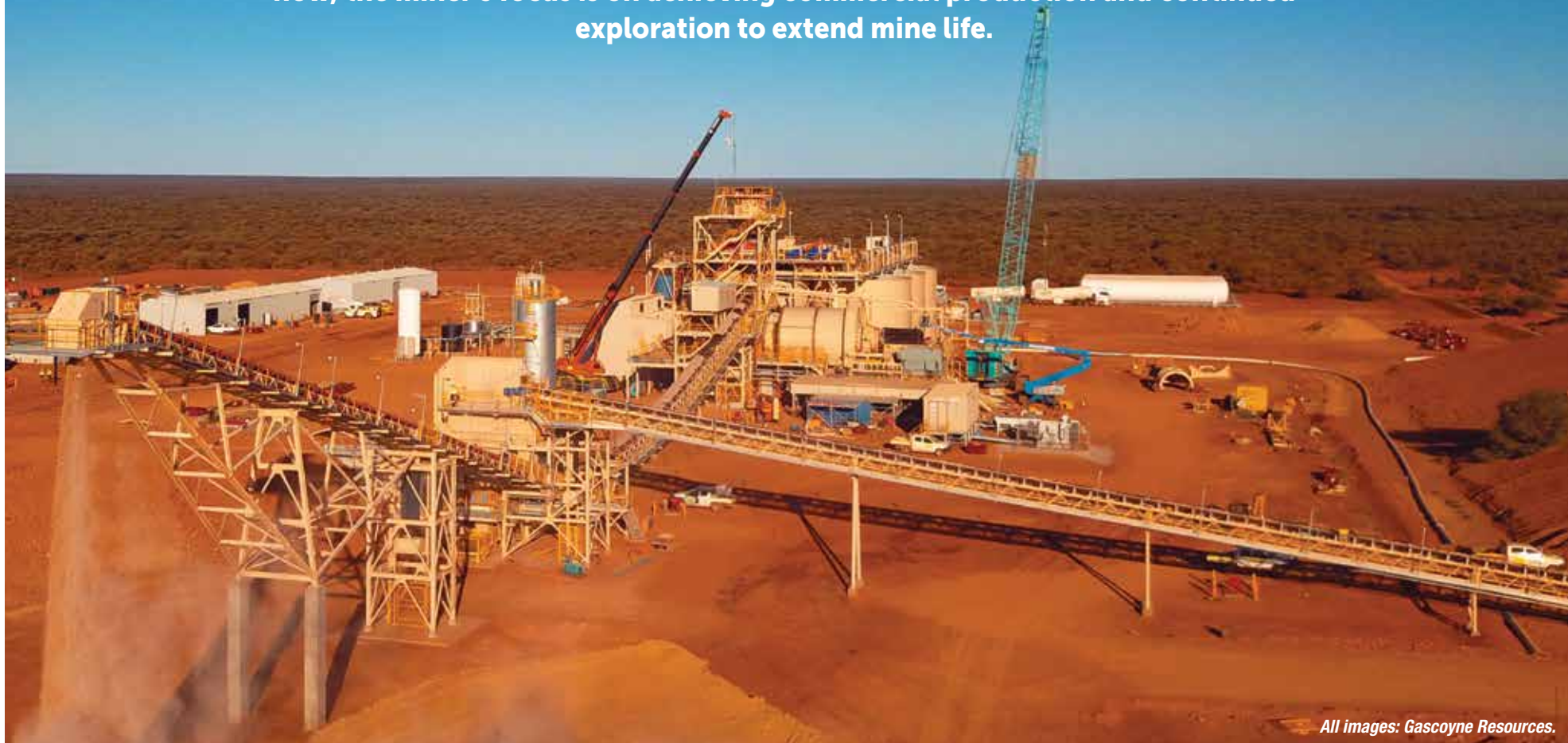
"It's a really exciting time," Ms Spalding said.

"Our businesses are really well positioned for those big projects, we've been doing this for a long time; they're ready to go and more skilled, and more sustainable and capable than ever."



# RAMPING UP

The lights turned on at Gascoyne Resources' Dalgaranga project earlier this year; now, the miner's focus is on achieving commercial production and continued exploration to extend mine life.



All images: Gascoyne Resources.

## ELIZABETH FABRI

IT'S been two months since first gold was poured at Gascoyne Resources' \$100 million Dalgaranga project in the Murchinson region of WA.

Bringing any new project into production is a milestone, but for Gascoyne Resources, this represented something bigger.

First gold marked the beginning of the company's transition from explorer to a producer among the ranks of ASX-listed gold miners.

Gascoyne Resources managing director Mike Dunbar said to say that he was pleased "would be a massive understatement".

"The company has managed to put together a fantastic team which has grown the global resource base from under 200,000oz on listing, to now having two gold projects [Dalgaranga and Glenburgh] which each contain more than 1 million ounces," Mr Dunbar said.

"We have built a 100 per cent owned new gold processing facility and associated infrastructure under budget and ahead of schedule."

With Dalgaranga production in full swing, the miner's next goal was to ramp up performance at the processing plant.

### Operational Update

On 25 July, Gascoyne announced Dalgaranga's process plant performance test had been completed, and a design mill throughput rate of 2.5 million tonnes per annum (mtpa) had been consistently achieved.

"The test confirmed that all aspects of the processing plant are running at least at nameplate capacity and in many cases



Gascoyne Resources poured first gold at Dalgaranga in late May.

better than expected," Mr Dunbar said.

Results from the performance test included crusher throughputs up to 450 tonnes per hour (t/hr); milling rates of up to 365t/hr; gold recovery of 94 per cent; and plant availability of 99 per cent during the test.

Mr Dunbar said to date more than 7400 ounces of gold had been recovered from the plant.

"The mining ramp up is continuing, with total monthly movement rates for June of around 1.4 million BCM achieved, with the rates expected to increase to around 1.9 million BCM per month from late in the current quarter," he said.

"The mining rates have been lower

than projected to date, largely due to site establishment taking longer than expected and lower than planned machine availability in the early stages of mining, along with delays due to rain in June and some unplanned additional blasting required for near surface hardpan material."

Mr Dunbar said once the mining rate had increased, commercial production would then be declared.

"This is likely to be either late in the current quarter or early next quarter," he said.

Gascoyne Resources had also begun selling gold into its existing hedge program (176,000oz at an average forward price of \$1716/oz).

### Increasing Mine Life

In addition to ramp up activities, the Gascoyne Resources team were continuing exploration at the project.

The 1.3 million ounce (and growing) resource will currently produce 100,000 ounces of gold per annum for an initial six years.

Mr Dunbar said Gascoyne remained focused on its aggressive exploration effort to increase the mine life to between eight and 10 years across its Sly Fox, Gilbeys, and Golden Wings deposits.

Newly discovered Plymouth was also marked as a significant prospect at Dalgaranga.

In June the company said it had encountered 6.2 grams per tonne at Plymouth, which was conveniently 150m north-west of the current Sly Fox open pit.

Results from a further 40 RC drill holes were still to be announced.

Gascoyne's newly acquired Greencock tenements – 7.5km from the Dalgaranga processing plant – also looked promising.

Greencock, purchased from a private prospector in December, is considered to be highly prospective for gold and base metal mineralisation, with strong synergies with the existing Dalgaranga tenements.

Earlier this year, Gascoyne said Greencock contained historic prospects that had not been drilled in more than 17 years.

"The prospect remains open at depth and along strike, some of the better intersections from historical drilling at the prospect include; 15m at 1.5g/t gold, 19m at 1.6g/t gold, 15m at 1.1g/t gold and 10m at 1.1g/t gold," the company stated.

(CONTINUED OVER)



# Precision surveying solutions



Culhig Surveying specialises in site investigation, feature and topographical surveys, feasibility and design, engineering, mineral exploration and more.

## WA

CULHIG Surveying was involved in the early stage of Gascoyne Resources' Dalgaranga gold project in WA, beginning work in March 2017.

The team supported GNT (a Gascoyne

Resources owned subsidiary), and multiple clients across various aspects of the mine start up and construction phases.

"As a result, we were able to contribute significantly to the progress of the project," Culhig Surveying operations manager Alan Cullinan said.

"We now continue to provide quarterly aerial surveying and volume conciliation services on the site."

Mr Cullinan said the company's involvement in the project was a good testimony of its track record and demonstrated how it has been able to build lasting working relationships

with clients.

"To date, we have executed all projects incident free, on time and on budget," he said.

More information about Culhig Surveying can be found at: [www.culhigsurveying.net.au](http://www.culhigsurveying.net.au).

(CONTINUED FROM PAGE 25)



Dalgaranga is 65km north west of Mt Magnet in WA.

## Developing Glenburgh

Beyond Dalgaranga, Gascoyne would continue to advance its other 1 million ounce gold project, Glenburgh.

The 100,000ozpa project, within the company's namesake Gascoyne region, was actually its initial first choice to bring into production before Dalgaranga was acquired.

A preliminary feasibility study was completed back in 2013, and a granted mining lease with native title agreement was in place, with no environmental issues

identified.

Now with Dalgaranga up and running, the company was free to pour capital into this second production stream.

A 30,000 metre drilling program will be undertaken this year to confirm and extend the known resources, and test regional targets, which will be incorporated into an updated preliminary feasibility study.

All going well, Gascoyne said it hoped to begin production in late 2020, which would enable it to double annual production to 200,000ozpa.



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# GRES supports Dalgaranga

WA

GR Engineering Services Limited (GRES) is an ASX-listed process design and engineering company providing fixed price EPC and EPCM project delivery services internationally to the mineral processing industry.

At the conclusion of a competitive tender process, GRES was engaged to design and construct the Dalgaranga gold project (Dalgaranga) for Gascoyne Resources Limited (Gascoyne).

GRES delivered the 2.5 million tonne per annum (mtpa) processing plant and associated infrastructure at Dalgaranga under a lump sum turn-key contract, ahead of schedule and under budget, in Q2 of 2018.

GRES is proud to have assisted Gascoyne in the transition from explorer to producer through the development of Dalgaranga.

GRES has an established track record in the provision of high-quality design and construction services for a broad range of clients.

The innovative engineering solutions developed by GRES enable its clients to secure project funding and move confidently into development, which has been recently demonstrated for Dalgaranga.

GRES has successfully completed feasibility studies, process and engineering designs and construction for projects of various scale, covering a diverse range of



More information can be found at: [www.gres.com.au](http://www.gres.com.au).

mineral commodities.

The company has delivered processing facilities and infrastructure for precious metals, base metals, mineral sands, industrial minerals, tin, tungsten and iron ore projects for a range of clients in Australia and internationally.

GRES provides operational readiness services and asset management systems which support the ramp up to full production and reduce operating costs for its clients.

GRES also has a presence in the hydrocarbons industry via its wholly

owned subsidiary, Upstream Production Solutions (Upstream).

Upstream is a leading provider of operations, maintenance and well management services to the oil and gas industry in Australia and South East Asia.



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# TRANSFORMATIVE

**Former nickel mid-tier Mincor is back in the game, pouring first gold at its 71,700oz – and growing – Widgiemooltha Gold Project in late July. The low-capex operation will help bankroll the rapid development of the miner's world-class Kambalda nickel portfolio, with a major exploration push currently underway. The Australian Mining Review speaks with Mincor chief executive Peter Muccilli.**



Exploration at the high grade Cassini project in February this year.

## REUBEN ADAMS

**You've experienced nickel's incredible highs and the subsequent, challenging lows as part of the Mincor team. How has this rollercoaster ride helped shape the current Mincor strategy?**

The sharp falls in the Australian nickel price, which hit decade lows in March 2016, resulted in Mincor staging down its operation from July 2015 and ultimately placing the mines on care and maintenance in February 2016.

At the time the combination of declining reserve grades at our Kambalda operations and historically low nickel prices meant we simply could not generate sustainable cash-flows.

It's important to remember that a number of high-grade Australian nickel sulphide mines were still generating healthy cash flows at the bottom of the price cycle – i.e. the Long and Flying Fox mines.

While Mincor historically had enjoyed reserve grades of over 3.5 per cent nickel for long periods of time, our reserve grades were steadily declining leading up to February 2016.

In light of these challenging conditions, the company had already reset its cost base and devised a plan to re-establish sustainable nickel sulphide production once the price cycle turned. This plan was based on building quality Ore Reserves to ride through the future highs and lows of the market.

It is worth pointing out that Kambalda is a world-class high grade nickel sulphide

district which historically produced 1.6 million tonnes of contained nickel in ore over a 50 year period.

One consequence of the breakup and sale of WMC nickel mines to various parties, which sparked the resurgence of nickel mining in Kambalda in the early 2000's, was that there has been very little greenfields nickel exploration in the region for over a decade.

All the new players, including Mincor, focused their exploration expenditure on near-mine targets, so they could extend the reserves and mine life of their newly-purchased operations.

In the longer run, this has led to the near-total depletion of quality reserves in the district and, despite the district's enormous potential, a dearth of new discoveries.

Since 2000, Mincor has targeted and successfully consolidated nearly all of the prospective ground in Kambalda for shallow nickel sulphide mineralisation, as well as acquiring some handy gold assets.

We now believe that we have an exceptional opportunity to leverage off our existing nickel Resource and Reserve inventory and to build a high-quality nickel Ore Reserve.

We are committed to exploring targets as one of the important pillars in achieving our plan of delivering sustainable nickel production for the future.

The recent Cassini resource drill-out, where we followed up on a discovery that had been made back in 2015 but never pursued, is a great example of this strategy in action.

In February 2016, Mincor was always confident the nickel prices would one day recover, but the scale and rate of that

recovery was predicted by most nickel commentators to be modest and likely to unfold over many years.

At the time LME stockpiles were at historical highs and stainless-steel supply was continuing to grow from ferro-nickel producers treating nickel ores from Indonesia and the Philippines.

Although the company always felt it had a significant nickel option, the backdrop of a potential prolonged low nickel price enabled us to progress a counter-cyclical low CAPEX opportunity by developing the Widgiemooltha Gold Project.

Gold prices have been on a sustained price upturn and this has re-rated the value of our gold assets.

The project is on track to generate cash flows this quarter by mining a series of shallow pits, supported by a toll processing agreement.

**Can you provide a short history on the Widgiemooltha discoveries? How does it feel to see the nickel/gold growth strategy you put in place in 2016 begin to pay dividends?**

An analysis of historical regional exploration expenditure at Widgiemooltha shows that levels of greenfields exploration activity since the 1960's were intermittent and linked to the commodity price peaks.

Yet when there were sustained periods of regional exploration, the area has yielded significant discoveries.

The Anaconda/ CRA JV discovered the Widgiemooltha Redross, Wannaway and Widgie 3 Mines in 1967 – 1971. WMC found the Miitel and Mariners Mines in the

1990's.

As mentioned earlier, since Mincor has been at Widgiemooltha we had also allocated more than 90 per cent of our drilling budgets to extensional exploration at our existing mines.

The ground package containing the Cassini prospect was the last package we acquired. The Cassini discovery in early 2015 was made during a period of sharp and sustained nickel price falls.

The discovery attracted little interest at the time, when it was becoming clear our mines were under strain and investment sentiment towards nickel was extremely negative.

As a result, all discretionary exploration – which included Cassini – was "temporarily suspended" in July 2015 as the company turned its efforts to managing its mines.

Fast track to 2018.

The hard work by our employees and contractors to advance the Widgiemooltha Gold Project is now paying off.

A few years ago, the Widgiemooltha Gold Project was a regional gold asset with little value assigned to it; now it is an active mining operation which is poised to generate cash flows.

The Widgiemooltha Gold Project will contribute near-term cash flow towards the broader development of Mincor's Kambalda gold and nickel assets.

With the return of a positive nickel price outlook, the company has active nickel programs underway to progress the exploration and development of its nickel assets to take advantage of the forecast growth in the nickel market over the next few years.





Mincor chief executive Peter Muccilli.

**Is there opportunity to substantially increase WGP production life beyond the initial 2.5 years?**

The Company believes that through exploration, there is clear potential to expand Reserves and extend mine life at Widgiemooltha, as well as excellent prospects for establishing gold Mineral Resources at North Kambalda.

At the WGP there are numerous shallow high-quality intersections yet to be captured in the Mineral Resource inventory and the mineralisation remains open along a highly prospective 5.5km long shear corridor.

The WGP and North Kambalda are unique as the ground remains lightly explored for gold as it has been held by nickel-focused companies since the 1960's.

We have only just scratched the surface of its potential.

Further consideration is now being given to how best to realise the full underlying value of the company's gold assets for the benefit of our shareholders.

**The company has stated that the 2016 BFS' at Durkin North and Miitel provided a clear path back to production once nickel prices recovered – which they have. What other boxes need to be ticked ahead of Mincor's return to nickel production?**

In March 2016 the company completed Feasibility Studies showing 28,000 nickel tonnes in Reserves.

The FS also identified several opportunities to enhance the start-up economics of the project. We believe there is plenty of upside at Durkin North to improve the grade and project economics with further mining studies, which we intend to do.

Just as important is the opportunity to extend these studies to include the available Mineral Resources located at Ken/McMahon as part of a greater Kambalda mining study where Resources are located close to existing capital development.

Mincor is committed to carrying out extensional drilling at Ken/ McMahon in the coming months.

In February 2019 our very workable processing contract with BHP Nickel ends, so we've got some decisions to make in respect of securing a processing route before mining can commence.

However, we believe there are multiple

attractive opportunities in this regard and, with the enhancement studies and extensional exploration well underway, we see the potential for a lot more nickel to be mined both at North Kambalda and the Widgiemooltha Dome.

**You accelerated your return exploration with a \$10m placement and SPP capital raising to fund nickel drilling on your portfolio. What prompted you to green light this drilling campaign?**

With the sharp upturn in the nickel price in the last 12 months and positive market fundamentals, the company undertook a successful capital raise to underpin a major new exploration push at Kambalda.

Exploration drilling and geophysical programs commenced in late February 2018 and we have already successfully tested a number of targets in our portfolio – including Cassini, Southern Widgiemooltha Dome and Bluebush.

**How significant were the most recent drill results at Cassini? Is it a potential company-maker?**

The quality of intersections achieved at Cassini within the CS2 channel says a lot about the potential quality of this emerging high-grade asset.

Well-developed profiles of massive sulphides are the key value drivers to Kambalda mines. So far, the CS2 channel has been drilled over a plunge length of just 600m plunge and to a 400m vertical depth.

We are now working on establishing a Maiden Resource for the project this quarter. The channel is completely open down-plunge.

The geological setting of Kambalda nickel deposits is well understood and resides within long-lived lava channel structures.

The Cassini CS2 channel is no exception. In nearly all cases, the true value and scale of the mineralised channel within the major Kambalda nickel mines was not realised for many years – and the starting Ore Reserve was often only a fraction of what was ultimately mined.

Once a Maiden Resource is established for the Cassini project, Mincor will begin a scoping study of the project to assess the technical and economic viability of mining and to optimise the ongoing step-out extensional exploration and resource definition work.



More information can be found at: [www.groundmasters.com.au](http://www.groundmasters.com.au)

# Experts in Earth

## WA


AFTER 14 years of experience in providing clearing and rehab services throughout Western Australia's richest and remote mineral belts, Ground Masters are experts in earth; particularly of the red kind.

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actively embraces a diverse scope of works in some of the most remote locations in the country.

It is proud of its ability to deliver reliability and high production rates under challenging circumstances.

The current liveliness in the exploration industry has Ground Masters looking forward to establishing new associations, whilst valuing existing ones with clients such as Cassini, IGO, KCGM and Mincor.



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# UNDER THE MICROSCOPE

**How can mining companies better plan for mine rehabilitation and restoration? It's the million dollar question that has prompted a Federal Government inquiry into the matter.**

*Image: Glencore.*

## ELIZABETH FABRI

MINE site rehabilitation practices across Australia are under more scrutiny than ever before.

In February 2017, the Federal Government launched an inquiry into the rehabilitation of resources projects.

Once published, it will put a spotlight on current policies, safeguards – and of course – ways the industry can collaborate to improve what has become a contentious issue.

More than 90 submissions have been received to date from mining companies, industry groups, associations, and State and Territory Governments.

Many were of the view that current practices were not sufficient, with more clarity and direction needed to prevent the number of abandoned legacy mines – now a State liability – from growing further.

Society for Ecological Restoration Australasia (SERA) chair and Australian Research Council Centre for Mine Site Restoration director Professor Kingsley Dixon was one industry leader of this view.

“The industry has demonstrated that it lacks the ability to successfully and confidently restore post-mined landscapes,” Professor Dixon told *The Australian Mining Review*.

“More mines open than close leading to a growing cumulative impact and legacy for future governments to address.

“The ability to restore has not substantively improved for the bulk of the mining footprint in Australia.

“However there are industry who have strategically invested in R&D and are now achieving outcomes.

“Investment in R&D, either within the company or externally, is critical to climate-proof restoration in the future.”

Issues such as the cost of outstanding



*Image: Glencore.*

Clermont rehabilitation.

rehabilitation obligations, effectiveness of current Australian practices in safeguarding human health and the environment, and adequacy of financial mechanisms (State bonds and funds) were weighing heavily on industry and would be addressed in the inquiry.

A number of rehabilitation-focused industry bodies and organisations were also working towards strategies, including SERA; the Centre for Mined Land Rehabilitation; Minerals Council of Australia; and the Tom Farrell Institute, an environmental research and teaching arm at The University of Newcastle, which holds the annual Best Practice Ecological Rehabilitation of Mined Lands Conference in NSW.

## Industry Feedback

Ahead of the inquiry's close in October this year, the industry has sent lengthy submissions for consideration.

## Financial mechanisms

The effectiveness of current financial mechanisms across States and Territories was a highlighted issue.

The Tasmanian Government said security deposits were reviewed regularly, with tenement holders providing a description of the rehabilitation practices they intended to use to help set an appropriate sum.

“The security deposit is only released when the minister administering the MRDA is satisfied that rehabilitation criteria have been met,” it stated.

Launched in 2006, the Northern Territory's financial security requirement was designed to cover 100 per cent of the estimated costs of remediation.

However, the Territory faces potential issues with mines established before 2005.

“The Northern Territory has a number of legacy mine sites which, if unmanaged, pose long-term risk to the natural environment, as well as to public safety,” the Territory stated in its submission.

“Most legacy sites were created before 2005, and thus pre-dated the NT Government policy of requiring mining operators to lodge adequate financial security.

“As a result such mines have either inadequate or non-existent securities.”

SERA's Mr Dixon said from his understanding the Australian bond system was “inadequate to meet a meet a minimum level of rehabilitation, let alone restoration”.

“Achieving the level of restoration aspired to in the National Standards will require substantially greater investment by industry that, in many cases will exceed their bonds by orders of magnitude,” he said.

Minerals Council Australia (MCA) chief executive Tania Constable said the Council's submission advocated a continued primary role by State and Territory Governments in the regulation of mine rehabilitation, closure and financial assurance.

“Each jurisdiction already has in place a mature regulatory framework for managing these matters,” Ms Constable said.

“Adding a further layer of regulation would result in additional complexity and potential duplication of effort for the industry, and is unlikely to deliver enhanced rehabilitation outcomes.”

Ms Constable said the Australian Government could contribute to improved rehabilitation and policy outcomes nationally through a variety of alternative approaches, including facilitation of dialogue between jurisdictions and industry to share knowledge, and the promotion of leading practice through the publication of relevant guidance.

(CONTINUED ON PAGE 32)



# Planning for a sustainable future



More information can be found at: [www.umwelt.com.au](http://www.umwelt.com.au).



## NATIONAL

THIS year Umwelt Environmental and Social Consultants celebrated 25 years of national consultancy.

With professionals located across NSW, ACT, WA and QLD, the company supported projects and operation in the mining sector through strong project management and technical advice.

Umwelt proudly works with businesses, Government organisations and the

community to improve environmental planning and performance.

At Umwelt, employees identify and apply sustainable solutions that meet the needs of the project and related communities.

It sources the best technical expertise in environmental impact assessment, planning, ecology, heritage, noise, water, social and community engagement.

Umwelts team have extensive experience in closure and rehabilitation activities, from the preparation of corporate standards

for closure planning and rehabilitation monitoring, (being applied nationally and internationally) through to detailed planning for the implementation of closure and rehabilitation plans.

Its experience includes a range of regulatory and environmental contexts across Australia.

Examples of its successful mine rehabilitation and closure planning experience includes Glencore Coal's New Wallsend Colliery and Yancoal's Tasman mine site.

If a community is affected by a closure project, the company helps clients identify potential impacts, prepare stakeholder engagement strategies, facilitate meetings and organise informational displays.

Relevant approval requirements and policy documents are covered as well as post-closure rehabilitation care and maintenance programs.

With knowledge and experience Umwelt seeks to facilitate a seamless transition throughout the closure and decommissioning phases of your project.



The experience and expertise to deliver.



### Our specialist skills in rehabilitation and mine closure include:

- Preparation of detailed mine closure and rehabilitation plans
- Development of rehabilitation objectives and completion criteria
- Future land use planning assessments
- Final landform design and water management design
- Post-closure groundwater management strategies
- Preparation of rehabilitation standards and site procedures
- Completion of mine closure and rehabilitation costs estimates and third party reviews of these estimates
- Operational support and management supervision during closure activities





(CONTINUED FROM PAGE 30)

**“Mine altered landscapes and voids can have value and generate different land use opportunities.”**

*Image: Newmont.*

Woodcutters Borrow pit (future wetland).

MCA’s Ms Constable said financial assurance and provisioning was important, but a security bond did not remove a company’s obligation to rehabilitate land.

“Mine rehabilitation is highly regulated, better implemented and more accountable than ever before,” Ms Constable said.

“Each jurisdiction has in place regulatory safeguards – subject to periodic review – designed to mitigate the risk of operators avoiding their rehabilitation obligations.”

### *Effective Restoration*

The Centre for Mine Site Restoration said there was also a problem of definition, with the term ‘restoration’ often incorrectly interchanged with ‘rehabilitation’.

The restoration process assists the recovery of an ecosystem that has been degraded, damaged or destroyed.

Rehabilitation reinstates a level of ecosystem functionality on degraded sites – without necessarily reverting to an ecosystem’s pre-mining biodiversity.

The Centre said the technical capacity and science to achieve restoration for many Australian mine sites was “limited” which was a key constraint in achieving proven, cost-effective and scalable solutions.

“Although there are a handful of notable exceptions, it is clear that in Australia the majority of mining restoration projects are failing to deliver on the return of functional, representative, biodiverse and resilient ecosystems that are based on a suitable ‘reference community’,” the Centre said.

Reasons for this included inadequate biodiversity surveys; insufficient, inconsistent, and uncoordinated supply of high-quality genetically appropriate seed; lack of biological knowledge to maximise seedling; limited understanding of the physiology of plant establishment; and “critical shortage” of restoration researchers trained to overcome challenges in the resources sector.

“Currently, the costs of restoration are not being adequately determined prior to regulatory approval being granted,” the centre added.

“A full and complete understanding of the costs of restoration, which will vary markedly between landforms, operations and regions, must be determined and presented during initial mine planning and be included transparently as part of the approvals process.”



*Image: Glencore.*

Westside Rehabilitation.

### *Native Title*

Dr Rebecca Lawrence from the Macquarie University Department of Geography and Planning argued that Aboriginal Australians had more to lose from inadequate rehabilitation and closure practices than any other segment of the population.

“The majority of mining in Australia takes place on the Aboriginal estate and Traditional Owners, unlike many others involved in mining, do not leave when mines close,” Dr Lawrence said.

“They and their homelands will bear, in some cases for many generations, the costs of any failures in mine closure policy and regulation.”

Dr Lawrence also pointed to “troubling trends” documented in other submissions to the Inquiry, including asset transfers and mines being held indefinitely in “care and maintenance” as a way to avoid rehabilitation.

She recommended the Commonwealth lead a “complete overhaul” of State policy and legislation to ensure native title interests are fully recognised and protected, and support native title holders and claimants

in negotiating native title agreements that deal comprehensively with mine closure, rehabilitation, and post-closure.

### *The Road Ahead*

MCA’s Ms Constable said research innovation was key to improving rehabilitation outcomes.

“The Australian Coal Research Program (ACARP) is an example of collective industry effort to improve rehabilitation performance through innovative research,” Ms Constable said.

“Between 2007 and 2016 ACARP spent around \$10 million on rehabilitation related research.

“The research program, while funded by the industry, is undertaken by independent researchers from government (CSIRO), universities (e.g. the University of Queensland, Central Queensland University) and private sector specialists.”

Mr Dixon said there was also some exciting new technologies in the pilot stages including creating synthetic topsoils; accelerating plant growth competency in post mined materials through use of the soil micro biome; seed pelleting and

coating technologies; metabarcoding for rapid biodiversity assessment of pre and post-mined sites; and seed farming of native species, which was in its early stages.

Mr Dixon said seed farming of native species promises to deliver a social (Indigenous businesses), environmental (sourcing seed from sustainable managed sources) and reliable outcomes (through a supply of high quality seed to industry).

The use of remote sensing and drone technology was also facilitating new mapping and monitoring techniques, and rehabilitation practices such as turning open pit voids into pumped hydro practices were in the works.

“The role of pumped hydro as a post-mining land use needs to be determined on a case-by-case basis,” Ms Constable said.

“Mine altered landscapes and voids can have value and generate different land use opportunities.

“A pit or a pit lake may have future uses, including social (e.g. recreation), conservation (e.g. wetlands) or environmental and economic (e.g. Woodlawn bioreactor near New South Wales, and the pumped hydro energy park in Queensland).”



# CASE STUDY: Latrobe Valley

Three open cut coal mines – Yallourn, Loy Yang and Hazelwood – in the Latrobe Valley are nearing, or are at, the end of their lives. Elizabeth Fabri spoke with newly appointed Latrobe Valley Mine Rehabilitation Commissioner Rae Mackay about the regional rehabilitation strategy currently in the works.



A community forum recently hosted in the Latrobe Valley to discuss rehabilitation issues.



AFTER 50 years of production, Victoria's Hazelwood mine and adjoining power plant shut its doors in March 2017.

Hazelwood is one of three Latrobe Valley coal mines being examined as part of the Victorian Government's \$12.6 million Latrobe Valley Regional Rehabilitation Strategy (LVRRS).

The LVRRS is expected to be in full force by June 2020, with a preliminary submission due later this year.

Yallourn and Loy Yang – which can be mined until 2032 and 2048 respectively – are the other mines that make up the study, which will address some of the key knowledge gaps and the potential impacts of filling – either partially or fully—the mines voids with water to create pit lakes.

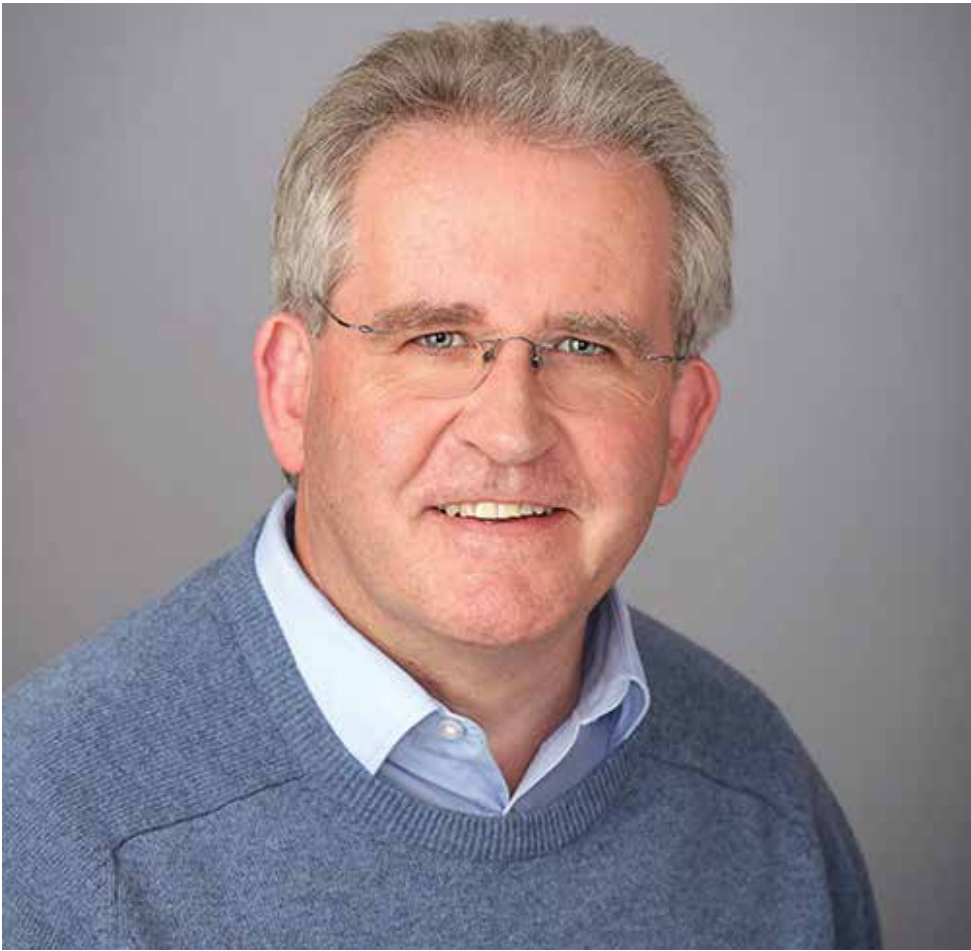
The strategy will be led by the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) in partnership with Department of Environment, Land, Water and Planning (DELWP).

Latrobe Valley Mine Rehabilitation Commissioner Rae Mackay will provide independent advice directly to the Government, in consultation with local communities.

One year into from his appointment as Commissioner, and Mr Mackay had already attended about 150 meetings with local community groups, members, and Government officials.

"The challenge for the future is to ensure not only that the mines are safe, stable and sustainable for the long-term but that appropriate plans are in place for the rehabilitated land forms to be productive, attractive and add value to the region," Mr Mackay said.

"For the year ahead, I will be working with my team on monitoring and evaluating the work of the LVRRS project




Latrobe Valley mine Rehabilitation Commissioner Rae Mackay.


team as they commence the extensive work of calculating the benefits and impacts of different rehabilitation scenarios; the planning activities of the three mines and in particular the work at Hazelwood mine, which is progressing detailed design work alongside its planning activities; the research program of the Integrated Mines Research Group; and, also the policy and programs of the various public sector organisations that will impact future mine rehabilitation."

Mr Mackay said the role of Commissioner was valuable; one that could be "beneficially adopted on a wider basis" in other regions.

"I have found that the role offers stakeholders and the community tangible benefits by providing an appropriate sounding board for the outcomes of the work that is underway, and providing independent advice and support on areas of concern and possible contention," he said.



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# A NEW DIRECTION

**WA-based BCI Minerals – formerly BC Iron – has a new name, a new focus, and a suite of high-quality projects in the Pilbara that will be hitting key development milestones over the coming year. BCI Minerals managing director Alwyn Vorster sheds light on the miner's recent diversification strategy beyond iron ore to salt and sulphate of potash (SOP).**



All images: BCI Minerals.

ELIZABETH FABRI



BCI Minerals  
managing  
director  
Alwyn Vorster.



**"We now consider ourselves a salt and SOP focused business supported by current and potential future iron ore earnings."**

Mardie Mudflats.

**Q. The company changed its name last November. Was diversification the key driver of the rebrand?**

The decision to diversify beyond just iron ore was a very deliberate one.

BC Iron had just emerged from a fight for survival due to operating a single, higher cost iron ore mine (Nullagine) at a time when the iron ore prices were declining rapidly.

While Nullagine was very profitable at times, we didn't want another near death experience for the company and viewed diversification as means to smoothing out the commodity price bumps.

**Q. Has it been difficult to make the transition from iron ore to a more diversified approach? What challenges have you encountered?**

BCI's diversification strategy had two elements.

The first was to progress and add value to the non-iron ore assets that were already in the portfolio, and the second element was to

target new assets in other commodities.

We have been very successful in advancing our existing assets and took the Mardie Project from a series of tenements with an idea, through to a completed Scoping Study and then pre-feasibility study on a major salt and sulphate of potash development opportunity within 18 months.

On the second element, we secured a joint venture interest in a SOP project with Kalium Lakes, which has now progressed through the Scoping Study phase.

However, we did face challenges in our aim to invest in more advanced stage non iron-ore projects.

We attribute this to several factors, including BCI discipline in considering opportunities, the competitiveness in the gold space in particular, and the fact that favourable capital markets provide preferred funding options (rather than joint ventures).

Overall, we consider our diversification strategy to have been a success.

In fact, we now consider ourselves a salt and SOP focused business supported by current and potential future iron ore earnings.

**Q. Industry peers have also followed with their own diversification strategies. Do you think this is necessary given volatility in the iron ore market at the moment?**

I think that diversification is a smart business decision generally, but it is interesting to note that other iron ore companies such as Fortescue and Atlas have also made efforts to diversify.

Like BCI, Atlas and to a lesser extent Fortescue also endured challenging times during the iron ore price decline, and perhaps see diversification as a longer term solution for mitigating this risk.

Not everyone agrees with this strategy, and particularly when you are a junior there is scepticism whether the company has the resources and focus required to make it a success.

**Q. How important was securing Kumina last year for the development of your Buckland Iron Ore project?**

The acquisition of Kumina was undoubtedly an important milestone for BCI, but not

without risk given essentially no exploration has been conducted on the tenements for decades.

However, we did the required conceptual due diligence work and were confident of its potential.

Ultimately we have been proven right, given we have proven up resources on three deposits so far and there is excellent potential for more than 200mt of good quality iron ore to be discovered.

The success at Kumina is very important for BCI as it provides options.

It has enhanced the prospects of Buckland being developed as an integrated operation but also means Kumina can be considered as a potential lower cost, higher grade standalone development.

We expect that type of development will appeal to a number of third parties, and we are currently in discussions with numerous parties.

**Q. Are you any closer to formalising the non-binding MOU you entered with Sinosteel earlier this year?**

(CONTINUED ON PAGE 36)



# Why not turn your salt into gold?



**Talk to us. We will show you how.**

**Salt Partners**

*Turning salt into gold*

**We are proud to have contributed our HYDROSAL® salt purification technology to the BCI Minerals' Pilbara project.**



(CONTINUED FROM PAGE 34)

We are continuing discussions with Sinosteel on the Buckland Project, and in particular on Kumina.

We have a strong working relationship and Sinosteel is showing genuine interest in the project. The potential for Sinosteel to become of joint venture partner in some or all of the Buckland assets is one of the options being discussed, and definitely a possibility.

The aim with the Buckland Project assets is to secure transactions that will create value and/or future earnings to support the development of our Mardie Salt & SOP Project.

We are therefore discussing the project with a number of interested parties.

**Q. What is your current timeline for both Mardie and Buckland?**

The Mardie feasibility study is planned to be completed and key approvals secured by the end of 2019, which could lead to construction during 2020.

In the meantime, we are planning to construct pilot ponds which will mimic the salt operations at Mardie.

We are aiming to have a transaction secured for Buckland within the next few months.

The nature of that transaction will then dictate the timeline for development of Kumina and potentially other Buckland assets.

**Q. At the recent AMEC convention you said BCI was looking into development options for Mardie, including a JV or spinout. Can you elaborate on these two options?**



BCI Minerals' proposed 20 million tonne per annum (mtpa) Cape Preston East port facility.

The base case assumption is that BCI will complete the feasibility study outright.

However, if an attractive funding or partnership opportunity arises, particularly if it is an existing large salt industry player, we will consider it seriously.

**Q. What's next for the Carnegie JV (BCI/Kalium Lakes) potash exploration project?**

The Carnegie scoping study has now been completed and confirmed the potential for a technically and financially viable project.

The scoping study benefited substantially from the experience Kalium has gained in

advancing its primary project, Beyondie.

BCI and Kalium have agreed to proceed to a staged pre-feasibility study for Carnegie, with the initial focus on securing tenure and access to all required tenements. This will enable the PFS to be undertaken on a much larger proportion of the Carnegie lake system.

**Q. You mentioned BCI Minerals now considers itself a salt and SOP focused business. What is your outlook for these markets?**

We view the markets for both salt and SOP as having strong medium to longer term fundamentals.

The market for high purity salt supplied into Asia is expected to become particularly tight over the next decade and we see the potential for a supply gap equal to approximately seven Mardie-sized projects to emerge by 2027.

The strong outlook for SOP as a high quality fertiliser is well documented against an underlying themes of an increasing global population, expanding middle class, and reduction in land available for food production.

Ultimately, BCI aims to become a serious player in the salt and SOP industries, through its involvement in Mardie, Carnegie, and potentially through other synergistic acquisitions.

# HYDROSAL-XP® is turning salt into gold

**SALT PARTNERS PRESIDENT  
VLADIMIR M. SEDIVY  
SWITZERLAND**

ON a beautiful sunny Saturday on 10 June 2017, I picked up BCI Minerals' Mardie project manager Laurie Huck at the Eden au Lac hotel in Zurich.

We drove along the lake to Salt Partners offices in Erlenbach.

We spent the afternoon on the terrace overlooking the lake, speaking about salt crystallisation, harvesting, purification and membrane chloralkali technology.

During the dinner on the lake side we enjoyed the fish, the view and the sunset.

Back at the Eden au Lac, we said good bye.

Then, on 5 February 2018 after exchanging some 60 emails and various drafts, we signed a contract to supply the Salt Partners proprietary HYDROSAL-XP® salt purification technology and provide project execution services to BCI Minerals.

## HYDROSAL-XP® capability

The main aim of the Mardie solar salt project is to supply 3 – 3.5 million tonnes of high purity salt to the chloralkali industry in the Asia-Pacific region.

Today, the chloralkali industry employs membrane cells for production of caustic soda and chlorine by electrolysis of sodium chloride solution.

In this process, impurities can severely damage the ion exchange membranes.

Images: Salt Partners.



The 700 t/h HYDROSAL-XP® Solar Salt Purification Plant and Schematic Flowsheet of HYDROSAL-XP® Salt Purification Process.

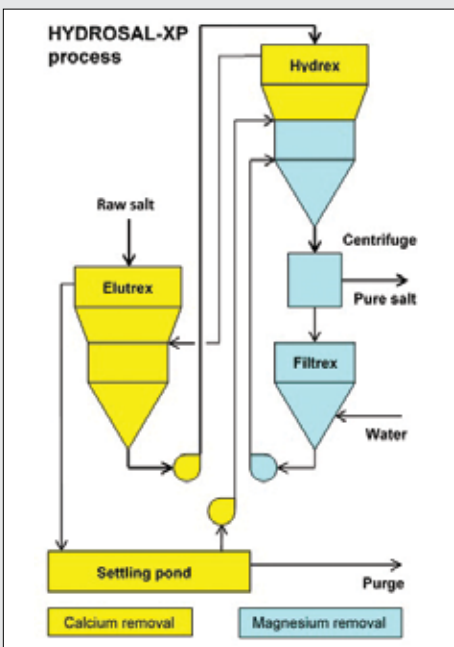
Calcium, magnesium and the ratio of calcium to magnesium in the salt are critical.

The HYDROSAL-XP® process has the unique capability of selectively removing calcium and magnesium from the salt, thus favourably adjusting the calcium to magnesium ratio.

## How HYDROSAL-XP® works

Conventional salt washing processes discharge the washing brine to waste.

In the HYDROSAL-XP® process, the



purified salt and brine are separated in a centrifuge.

The brine from the centrifuge, the filtrate, is not sent to waste but collected in a filtrate vessel called Filtrex.

The filtrate contains fine salt particles.

Adding water to the filtrate vessel and maintaining the mixture agitated sufficiently long, the salt fines are dissolved, creating pure saturated brine.

This brine is returned to the vessel from which the salt flows to the centrifuge.

In this vessel, called Hydrex or Hydroextractor, the brine flows upwards,

in counter-current flow against the downwards moving salt.

In this counter-current process, called hydroextraction, all impurities that are more soluble than sodium chloride, i.e. magnesium chloride, magnesium sulphate, potassium chloride, sodium bromide, etc., are dissolved.

The sodium chloride is displaced from the saturated brine by common ion effect and crystallises on the salt.

Thus, an exceptionally efficient salt purification effect of 95 – 99 per cent is achieved and the processing losses are kept at a record minimum of 2 – 3 per cent.

On the schematic flowsheet, this section of the process is coloured blue.

Less soluble calcium sulphate is removed also in counter-current flow, but at higher velocities, with circulating brine by hydroclassification and elutriation.

This section of the process is coloured yellow.

By adjusting the brine velocities, the calcium to magnesium ratio is adjusted.

*Salt Partners Ltd are independent consultants and engineering contractors, active in the field of salt production, processing and hypersaline biotechnology.*

*Salt Partners worldwide reputation is based on more than 45 years of experience gained in projects successfully implemented worldwide.*

*More information can be found at [www.salt-partners.com](http://www.salt-partners.com).*



All images: South32.

# FRESH DEVELOPMENT

**As South32 enjoys strong margins for all of its key commodities in 2018, the global miner is making good on promises to invest capital into savvy brownfields and greenfields opportunities.**

## REUBEN ADAMS

THE June quarter was a good one for South32, which has finished FY18 on a strong note.

In Australia, the miner reported record production from its manganese operations, as the world's number one producer of the steel ingredient lifted output to take advantage of better prices.

Progressing through a higher grade stope sequence at the world-beating Cannington silver-lead mine in QLD in the quarter saw payable silver, lead and zinc production increase by 37 per cent, 33 per cent, and 45 per cent respectively.

Production at Worsley Alumina jumped 7 per cent in the quarter due to an uplift in calciner availability and a drawdown of hydrate stocks.

And Illawarra metallurgical coal production exceeded the revised FY18 guidance, as the miner hit an annualised mining rate of 6 million tonnes per annum (mtpa) through the month of June.

Still, production was down 40 per cent to 4.2mtpa for FY18 as the troubled Appin Colliery recovered from an extended outage in the first half of the year.

Internationally, South32 began managing South African Coal as standalone business in the June quarter, with associated restructuring costs to be recorded in FY18 accounts.

"We are actively reshaping our portfolio and are now managing South Africa Energy coal as a standalone business, allowing to simplify the Group, lower overhead costs and fundamentally change the way we work," South32 chief executive Graham Kerr said.

The company invested \$US41.3m in exploration programs during FY18,



South32 chief executive Graham Kerr.

**"This high quality metallurgical coal project benefits from prior investment which has the potential to support its accelerated development and deliver significant value to both South32 and [JV partner] Aquila."**

including \$US21.3m to expand its exploration and progress 18 early stage greenfields partnerships.

Then there are the big June quarter deals that add two near-term growth projects to the South32 portfolio – Eagle Downs and Arizona Mining.

## Eagle Downs

On 29 May South32 signed a conditional agreement to acquire 50 per cent and operator status in the Eagle Downs metallurgical coal project in the Bowen Basin, QLD.

This included an upfront payment of about \$US106m, a deferred payment of \$US27m due three years after completion, and a coal price linked production royalty capped at \$US80m.

Mr Kerr said the acquisition represented an attractive development option within its growing operational footprint.

"This high-quality metallurgical coal project benefits from prior investment which has the potential to support its accelerated development and deliver significant value to both South32 and [JV partner] Aquila," he said.

Eagle Downs is a large, high-quality and fully permitted development project about 25km south-east of the town of Moranbah, and immediately adjacent to and down dip of BHP Billiton Mitsubishi Alliance's Peak Downs mine.

In late 2015 the project was placed under care and maintenance, but not before it benefitted from initial site infrastructure investment, including water supply and high voltage systems, office buildings and water and sediment dams.

Dual 2km drifts were also about 40 per cent complete.

Aquila had previously reported a resource of 1122mt of which 750mt is measured, 139mt is indicated, and 233mt is inferred.

South32 stated that previous work by Aquila indicated that Eagle Downs has the potential to export 4.5mtpa from one longwall over the first 10 years of full production.

Following completion of the acquisition and assumption of operatorship, South32 will kick off final feasibility, which will seek to optimise the mine's design and development.

(CONTINUED ON PAGE 38)





South32 reported record production from its manganese operations in the June quarter.

Subject to the findings of that study and requisite approvals, South32, in partnership with Aquila, plan to construct a multi-seam underground longwall metallurgical coal mine and processing plant with a dedicated rail spur and train loadout facility.

#### Arizona Mining

Then the big one – on 18 June South32 entered into an agreement to acquire the outstanding 83 per cent of shares in explorer and developer Arizona Mining for a fully

funded, all cash offer of \$US1.3 billion.

The transaction is subject to a vote of Arizona mining shareholders on 2 August.

Arizona Mining is owner of the Hermosa project in Arizona, which contains the high grade base metals Taylor deposit; the Central zinc, manganese and silver oxide resource; and an extensive, highly prospective land package.

Taylor alone has a reported resource of 101mt grading at 10.4 per cent zinc, and is open at depth and along strike.

Hermosa is close to key infrastructure in an attractive mining jurisdiction, with a Preliminary Economic Assessment completed by Arizona Mining in January 2018 indicating that this low cost, long life project has the potential to deliver a very high Internal Rate of Return.

Mr Kerr said the all-cash offer for Arizona Mining would allow the miner to optimise the design and development of one of the most exciting base metal projects in the industry.

“We have been a major shareholder in

Arizona Mining since May 2017 and an active participant in the Hermosa Project with representation on the operations committee and a nominee on the board of directors,” he said.

“Our deep understanding of this high grade resource and surrounding tenement package, and extensive experience at Cannington, makes us the natural owner of this project and ensures we are well positioned to bring it to development, delivering significant value to our shareholders.”

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## High-quality hardfacing

WA

AS its name suggests, Better Wear Welding is committed to bettering projects through its professional, high-quality welding services.

The WA-based company is currently “the leading hardfacing company” operating in Australia, with a team of staff highly skilled in the areas of hardfacing of spools, medium and heavy fabrication, and pipework for mining.

Established for more than 20 years,

Better Wear Welding has invested in state-of-the-art equipment to assist with the processing of plate and pipework, which enables it to manufacture a quality product by taking full control of component processing.

“Our fabrication work includes piping, tanks, pressure vessels, chutes, hoppers, vibrating machines, skids and structurals,” Better Wear Welding director Joe Mezzatesta said.

“We are also happy to assist clients with 3D modelling, detailing, fabrication, machining and welding.”





Mitchell Services chief executive officer Andrew Elf.

# Growth through diversity

## NATIONAL

THE resurgence in coal, base and precious metals prices is reaping rewards for diversified drilling contractor, Mitchell Services Limited.

The ASX-listed company, headquartered in Brisbane and with over 65 tier one drill rigs across Australia, is now conducting exploration, mine services and underground drilling for the world's major miners and explorers.

"Mitchell Services is one of very few drilling contractors actively providing surface and underground drilling services to both the coal and mineral industries," chief executive officer Andrew Elf said.

"We have committed to a diversified approach to manage the cycles of the mining and exploration industries.

After a tough few years, we are seeing welcome commodity price increases and expanding utilisation across the whole business."

The strategy to diversify is based

on decades of drilling experience and countless commodity cycles.

Starting in 1969, Mitchell Drilling grew to become Australia's largest privately-owned drilling contractor.


After selling Mitchell Drilling in 2008, Mitchell Services entered Australia in 2013 following a reverse merger with ASX listed Drill Torque Limited.

"Just like our clients South32, BHP, and Anglo American, it makes sense to be exposed to various commodities, so we can better manage through the commodity cycles," general manager Commercial Todd Wild said.

"Diversity also gives Mitchell Services the ability to service our clients across multiple mining operations and locations."

In the last twelve months Mitchell Services has opened operations in Kalgoorlie as part of its growth strategy.

Mitchell Services will remain focused on its continued growth and high-level service delivery and look forward to a positive and rewarding year.






# Mitchell




SERVICES

## WE KNOW DRILLING







### EXPLORATION



### MINE SERVICES



### UNDERGROUND



[www.mitchellservices.com.au](http://www.mitchellservices.com.au)



All images: Stanmore Coal.

# A BIG DEAL

**Three years; that's all it took for Stanmore Coal to turn the two-year Isaac Plains mine into a 15-year mega project. Through strategic (and timely) acquisitions, Stanmore Coal now has a strong footprint in the Bowen Basin, and healthy cash flow as coal prices remain strong.**

## ELIZABETH FABRI

STANMORE Coal's purchase of the shuttered Isaac Plains mine several years ago was a watershed moment for the then-explorer.

In 2015, the coal market was in the depths of a downturn. Prices were so bad many companies were looking for an out, but Stanmore Coal had other plans.

In July 2015, the company entered a deal to pick up Peabody subsidiary Millennium Coal's undeveloped Wotonga (Isaac Plains East) project for \$7 million.

Weeks later it struck the landmark deal with Vale SA and Sumitomo Corp to acquire the nearby Isaac Plains mine and infrastructure for a nominal \$1; a giveaway really, given the mine had an estimated \$630 million value four years earlier.

However, as part of the sale, Stanmore became responsible for mine rehabilitation and took over a number of contractual commitments.

Assets acquired included a coal handling and preparation plant; dedicated train load out and rail spur facilities connecting to the Goonyella rail system; Bucyrus 1370W dragline; workshops; and assorted critical spares and workshop goods.

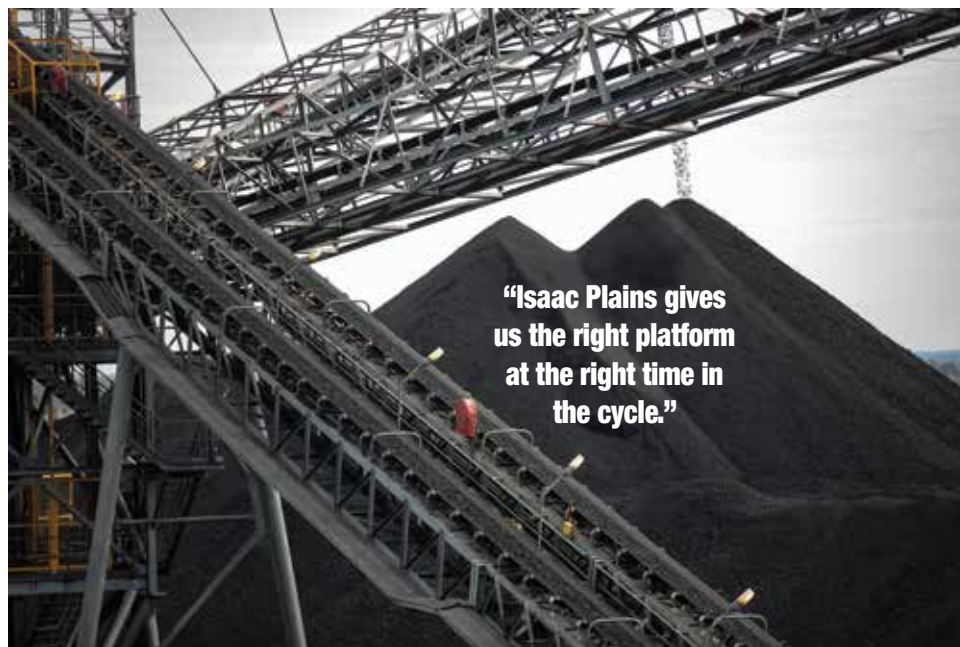
By February 2016 Stanmore had restarted mining, with first production in April and first shipment in May that year.

But with an estimated two year mine life, the clock was ticking for the company to bring other production sources online, namely Isaac Plains East.

Unlike Isaac Plains, Isaac Plains East still needed to obtain Environmental and Mining Lease approvals.

Good news rolled in during the March quarter when the QLD Government granted Stanmore environmental approval, and four new mining leases for the project, adding seven years to the mine life, 210 local jobs, and an estimated \$75 million in State royalties.

"The reopening of Isaac Plains was welcome news for Moranbah nearly two years ago, and this is another confidence-booster for the Moranbah



community and the Bowen Basin mining community more broadly," QLD Mines minister Dr Anthony Lynham said at the time.

"At peak production from the newly approved open cut mining operations, Isaac Plains East can produce 1.6 million tonnes of metallurgical coal annually."

The new leases, coupled with Stanmore's future plans for Isaac Plains Underground, would also help it edge closer to its goal of producing 2.7 tonnes of coal per annum.

### Acquiring Wotonga South

Then, in June another strategic acquisition was announced; the purchase of Millennium Coal's Wotonga South coking coal deposit.

Under the deal, Stanmore would acquire the MDL137 and EPC728 tenements for \$30 million cash, plus a production-based royalty capped at \$10 million if the premium coking coal price reached more than \$170 per tonne.

The tenements are next to Isaac Plains and comprise about 15-20 million tonnes of coal; enough to extend the life of the Isaac Plains Complex by eight to 10 years.

"Wotonga South (which we have renamed Isaac Downs) meets the investment criteria in our strategic plan," Stanmore Coal managing director Dan Clifford said.

"When Stanmore acquired Isaac Plains, the life of mine was only two years; Isaac Plains East and Isaac Downs will extend it beyond 15 years."

Mr Clifford said Stanmore had its eye on Isaac Downs for some time and this was the next logical extension of the Isaac Plains Complex.

"After we set our investment criteria [for the Isaac Plains Complex], Stanmore had numerous opportunities, both internal and external, and Isaac Downs was one of them," he said.

"With the company generating cash and about to improve cash flow with Isaac Plains East, we are well positioned, and the timing couldn't have been better.

"Stanmore has a clear strategy that leverages our existing infrastructure to generate significant value because minimal capital is required to expand our production profile and mine lives."

The purchase now awaits FIRB approval and the completion of other customary conditions.

## FY19 Operations

In FY19 Stanmore said it expects to produce 2.3 million tonnes of coal; a 40 per cent increase from FY18 results.

In the coming months, mining will be conducted at Isaac Plains and Isaac Plains East concurrently.

This means mining at Isaac Plains East will initially involve just a truck and shovel fleet, which will transition to the dragline once Isaac Plains mining ceases later this year.

In July, lead contractor Golding Contractors began operations at the new satellite pit, with production to follow in August.

Meanwhile, Stanmore was also advancing a Bankable Feasibility Study for its Isaac Plains Underground mine, with a final investment decision expected during FY19.

And all going well, the Isaac Downs mine will advance soon also.

Mr Clifford said the miner's experience obtaining permits to develop Isaac Plains East "will be invaluable in fast tracking approvals for Isaac Downs".

"As soon as the transaction is completed, we will finalise mine planning and commence environmental assessment to allow development as soon as practicable," he said.

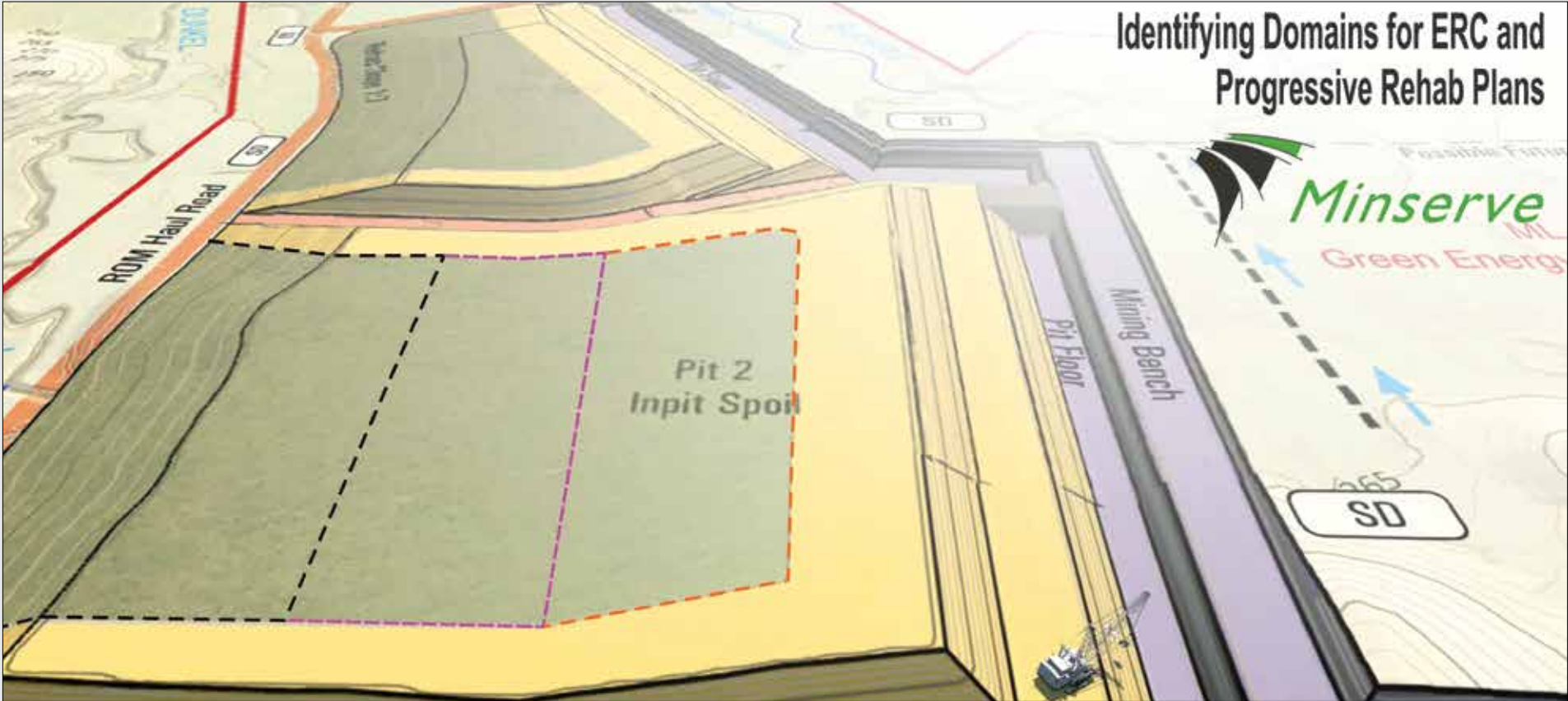
"This allows us to optimise our production profile by focusing on the highest margin coal source first, and subject to the outcomes from Isaac Plains Underground or any other source of ROM coal, puts us in a strong position to fill our CHPP."

Mr Clifford said beyond Isaac Plains the company "will continue to look at other regional opportunities that fit our investment criteria."

"Isaac Plains gives us the right platform at the right time in the cycle," he said.

"With the short and long-term strength in the coal market, Stanmore will continue to assess and evaluate development opportunities for our quality pre-production assets across both metallurgical and 'HELE' thermal sources."





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# REACH THE PEAK

**A transformational deal with Canadian miner New Gold expands Aurelia Metal's footprint in the Cobar region and further diversifies the company's portfolio. The Australian Mining Review speaks with managing director and chief executive Jim Simpson on his outlook for the remainder of the year.**

*All images: Aurelia Metals.*

Hera process plant.

JESSICA CUMMINS

IN June, Australian miner Aurelia Metals made a watershed deal with Toronto-listed miner New Gold to acquire its Peak Mines gold, copper and lead project.

The tier 1 mining operation has averaged over 100,000oz of gold and 8.6 million pounds of copper production per year since commissioning in 1992.

Aurelia Metals bought the mine and its 750,000tpa processing plant in the Cobar region of central NSW, 75km north of its producing Hera mine, for \$US58 million.

The purchase also boosted the company's exploration land package in the Cobar region to 1385sqkm.

Aurelia chief executive Jim Simpson told *The Australian Mining Review* that the deal had surpassed the company's expectations.

"Initially we didn't think that we could buy it for the price we paid – but it was always on our radar. I have been trying to put the assets together since 2004 when I was running Peak," he said.

"The two assets always made sense due to the address and similar ore types."

At the time of acquisition Aurelia Metals set target production for 35,000oz to 45,000oz from Peak Mines for the six month period to June FY2018; however this quickly increased to between 55,000oz and 65,000oz in May.

Mr Simpson said the company knew there was a lot of value in the high grade Chronos orebody, but it was performing better than predicted.

"What makes Peak Mines a valued asset to the company is its extensive inventory with multiple orebodies, which has provided a life of over 25 years," he said.

"Peak was arguably the best operation I worked at before Hera. There are still many areas to be explored, both greenfields and historic workings."

"Most of these targets are untested, and Aurelia has never really been in a position to conduct serious greenfields exploration due to the focus on Nymagee and Hera."

After the purchase of Peak it is expected

**"Peak was arguably the best operation I worked at before Hera – there are still many areas to be explored, both greenfields and historic workings."**

Aurelia Metals chief executive Jim Simpson.

Aurelia's resources and reserves will grow to more than 21.8mt (from 11mt) and 4.2Mt (from 1.47mt), respectively.

Mr Simpson said FY2019 targets for Peak focused on converting resources to reserves, as well as extending its current three year mine life. In a presentation to investors Mr Simpson also reported that opportunities have been identified to reduce operating costs with improved productivity.

The miner plans to accelerate processing of high grade lead from the small but high grade Chronos zone, which is accessible through existing mine development.

While Peak Mines' forecast production is expected to more than double the company's fiscal 2019 output and cash generation, Mr Simpson said the company's

focus for the remainder of the year was on its development and ongoing exploration of the Hera-Nymagee Project; which includes the high grade gold and base metal Hera deposit and the emerging high-grade copper discovery at Nymagee.

## Hera-Nymagee

The Hera-Nymagee Project, 100kms south east of the Cobar Basin in western NSW, has potential as a high-grade, long life mining operation.

FY18 Hera production was a record at 59,822oz at all in sustaining costs (AISC) of \$430/oz, compared to the prior year of 45,679oz at AISC of \$968/oz.

Stoping of the North Pod is expected to

commence in the September 2018 quarter, with two production levels completed in preparation.

Aurelia released a Scoping Study on the potential for mining the Nymagee copper-lead-zinc resource, about 5km north of Hera in May last year. Mr Simpson said Nymagee is the next major project for the company, which it has compared to the neighbouring world-class CSA copper system.

"We are currently drilling to complete full metallurgical assessment for the PFS due mid next year," he said.

"Deep drilling indicates a deep system of mineralisation, which suggests that when the project is started, depth extensions will become evident and [hence] the opportunity for continued LOM extensions."

"As evident from mines like CSA, Endeavour, Peak and Tritton these mines just continue to produce at depth."

CSA, for example, currently extends to more than 2km depth. The Nymagee system remains open at depth, with most recent results discovering two new copper lenses.

The mine is being developed in two stages, with the first focusing on construction of an underground mine as well as a processing plant to enable production of gold and silver dore bars, as well as zinc and lead concentrate.

The second stage will see the development of the Nymagee copper deposit making use of the infrastructure already established at Hera.

## The Future

When asked if the miner would consider expanding operations outside of Cobar, Mr Simpson said the company is prepared to look at any accretive opportunities, however it still sees the potential for growth in the region.

"Our initial focus is locally, as the Cobar Basin mineralisation is complex with gold, silver, copper, lead and tin," he said.

"There are barriers of entry to operate in this district including polymetallic processing and polymetallic expertise – Aurelia Metals has both."



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OzArk’s team of accredited ecologists and experienced archaeologists work in unison and utilise regional knowledge to provide clients with a streamlined and cost-effective environmental assessment solution.

The OzArk heritage team is highly skilled in archaeological assessments, reporting, and prides itself on effectively communicating with the client, the community and Aboriginal stakeholders.

The company’s ecology department is up to date with the new Biodiversity Conservation Act 2017 and the relevant assessment methods and offset requirements.

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# RECORD HIGHS

The largest high quality coal producer in the Gunnedah Basin, Whitehaven Coal, finds itself perfectly positioned to capitalise on rising demand from Asian markets. Against the backdrop of coal prices sitting at seven year highs, *The Australian Mining Review* speaks with chief executive Paul Flynn about Whitehaven's outlook following its most important acquisition.



All images: Whitehaven Coal.

JESSICA CUMMINS

FY17 results for Australian coal producers placed Whitehaven as one of the industry's leaders, with a significant jump in net profit from \$20.5 million to \$405.4m year on year. Now, with met coal prices at seven year highs, Whitehaven remains on track for a record financial result in FY18.

June Quarter ROM production of 5.9 million tonnes boosted Whitehaven's FY18 production to 22.9mt, in line with the previous year.

Maules Creek produced 2.9mt ROM coal for the quarter and a record 11.0Mt ROM coal, up 13 per cent for the year. The Gunnedah open cuts delivered record saleable coal production of 5.4Mt, up 12 per cent and coal sales of 5.3mt, up 16 per cent from the previous year.

Whitehaven has the kind of rare experience and determination that comes with bringing large operations into production, as developer of two of the largest tier one coal mines in Australia, Narrabri and Maules Creek.

"I have seen a number of projects go through prolonged approval processes," Whitehaven chief executive Paul Flynn said.

"Maules Creek was the same. It went through quite a significant approvals process as well; it took over a thousand days to get approved."

"But with determination and the right project – it really comes down to the project itself – the quality of it and the proposition that it represents, you should be able to get through."

## Maules Creek and Vickery

Mr Flynn said the record FY18 production result for Maules Creek, along with continued strong performance of the Gunnedah open cuts, helped to achieve

**"We are attracted to putting more met coal into our portfolio and Winchester South certainly looks like a large scale opportunity to do that."**



Whitehaven Coal chief executive Paul Flynn.

sales within the guidance range.

The company is on course to ramp up production at Maules Creek to 13mtpa into the 2020 financial year.

"Maules Creek certainly taught us a lot – the challenge for Vickery and Winchester South is that there's an obvious and really good benchmark that we have created with Maules Creek," Mr Flynn said.

"It was one of the most capital efficient developments of any large scale coal mine in the last 10 years in Australia.

"That is a benchmark that we seek to apply to our Vickery project, in particular,

which is next cab off the rank – given that it will be developed at a time when the market is running pretty hot as opposed to Maules Creek, which was constructed during the bottom of the cycle."

He said construction at Vickery is expected to begin in early 2020, allowing 18 months for both State and Federal approval. This will coincide with Maules Creek hitting its 13mtpa production rate.

Mr Flynn said the Vickery extension was one of the most significant investments currently underway in North West NSW.

"The project, if approved, will cement our standing as the single largest private sector employer in the area," Mr Flynn said.

"It will generate around 500 jobs during the construction phase and roughly 450 jobs during operations, the majority of which will come from the local communities of Gunnedah, Narrabri, Boggabri and surrounding areas.

"It will also create fresh opportunities for Whitehaven to support local businesses and contractors, and generate more than \$700m in royalties for the people of NSW to help provide important services like education, health and transport infrastructure."

## Winchester South

In June, Whitehaven purchased the remaining 25 per cent of the undeveloped Winchester South project, after paying \$US200m for Rio Tinto's 75 per cent share in late May.

30km from Moranbah in the Bowen Basin, the large Winchester South project contains 356 million tonnes (mt) of resources, and is expected to produce both coking and thermal coal once developed.

Mr Flynn said Winchester South, discovered in 2008, was a well understood project amongst industry players.

"Many players had made overtures to try and buy it from Rio Tinto, but we were particularly attracted to its low strip ratio, its placement in the centre of one of the best coal basins in the world – the Bowen Basin – and its close proximity to some very high quality mines," he said.

"And of course we are attracted to putting more met coal into our portfolio. This project is a large scale opportunity, with infrastructure access right there on the tenement boundary."

(CONTINUED ON PAGE 46)



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(CONTINUED FROM PAGE 44)

**“Maules Creek was one of the most capital efficient developments of any large scale coal mine in the last 10 years in Australia - and that is a benchmark that we seek to apply to our Vickery Project, in particular, which is next cab off the rank.”**



From an infrastructure perspective, Winchester South ticks all the boxes. It sits close to one of the main rail lines in the Goonyella System as well as the nearby Queensland electricity power grid.

Mr Flynn said the company sees the acquisition as another growth opportunity beyond Vickery, as demand for both metallurgical and thermal coal is expected to grow through to 2040 and 2035 respectively.

Whitehaven has commenced integrating Winchester South into its Technical Services and Long Term Mine Planning team, and started the process to recruit a project director to guide the project through to approval, construction, development and operation.

Once developed, the mine will have a life of around 20 to 30 years at an annual production rate of between 7.5mtpa and 15mtpa.

### Outlook

There are good things happening within the coal space, but more work needs to be done to change the public narrative around the resource, Mr Flynn said.

“It’s definitely the case for coal, but it’s the case for businesses generally in this day and age,” he said.

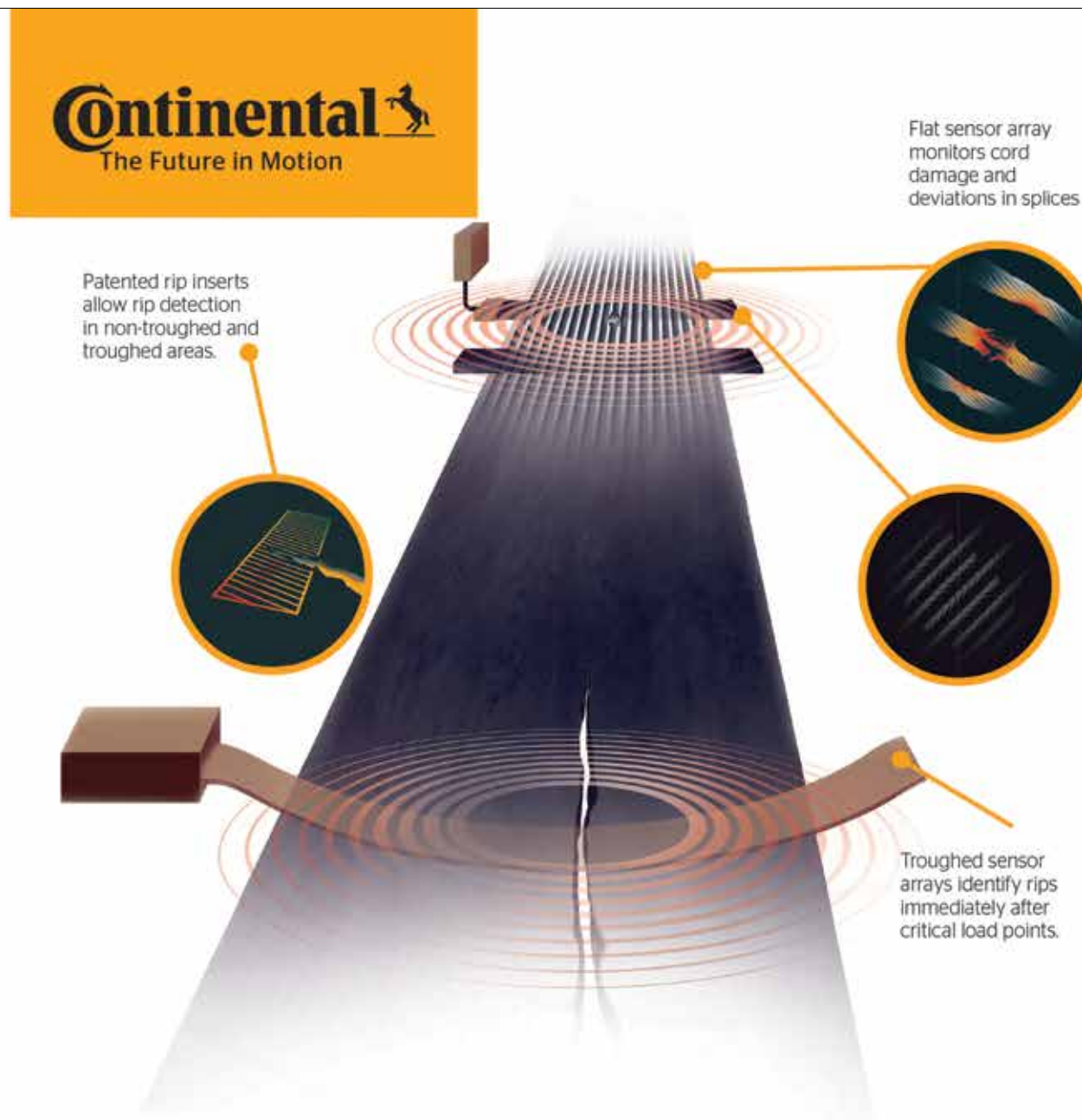
“Coal is no stranger to [negative discourse] but I do believe the industry has responded to try and highlight the positive aspects of coal and its role in the future.

“I’m sure the current public discourse about our energy market and the cost of electricity at home has focused people on the natural advantages that coal has.”

Whitehaven is currently seeing skills shortages “on all levels” from technical skills, engineering skills to trades as well as in a training capacity, Mr Flynn said.

“For us, as a company and as an employer, what we’ve learnt over the last cycle is that you must invest in the local people,” he said.

“The sense of connection and loyalty with your company then tends to be stronger and people become ‘stickier’ as employees.”



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Cirlock has universal lockout devices for circuit breakers in all sizes and brands.

It also provides lockout devices for fuse holders, gate valves, ball valves in all sizes, as well as electrical plugs and hose couplings.

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These locks are available in seven

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## A new way to manage freight

### NATIONAL

GETTING equipment on or off site can be a logistical nightmare and a drain on financial and human resources.

Time wasted sourcing quality and reliable transport operators, uncertainty of equipment location from pick up to delivery and its ETA, and last-minute haggling over prices are common frustrations.

Negative impacts on productivity and risk factors relating to site safety and security are compounded by pressures on both site management and operational staff, who shoulder accountability for adherence to chain of responsibility (CoR) legislation.

The pressure is set to increase with changes to CoR laws coming into effect from 1 October 2018.

As the supplier of one of the Australia's largest ranges of underground equipment, EMS Group knows freight frustrations all too well.

After many years of freighting mining equipment across the country, the company's director developed a creative solution that has reduced costs and increased efficiencies for EMS Group, its clients, and many other companies.

"Channel 40 is a platform we've designed, mainly out of the frustrations we've experienced in terms of our own freight management issues," EMS Group director Tom Cavanagh said.



More information can be found at: [www.emsgroup.com.au](http://www.emsgroup.com.au) and [www.channel40.com.au](http://www.channel40.com.au).

"It enables us to provide our clients with a reliable, convenient and safe way to manage freight.

Mr Cavanagh said Channel 40 was a freely available app and service.

"It connects freight owners with

transport operators via an easy to use web-app that allows you to manage bookings, track loads, and handle payments all from one place," he said.

"We understand the burdens of managing freight, often with tight deadlines, so we've

incorporated a team of transport industry experts that work for Channel 40 behind the scenes to help with everything from tech support to urgent freight movements and finding critical solutions to transport issues around the country."



# Slurry pumps clears silted dams

NATIONAL

TSURUMI'S KRS slurry pumps, designed for the toughest slurry applications, are being applied at Australian mine sites to desilt tailing dams.

The submersibles feature built-in high chromium agitators which stir up silt so it can be pumped out without the need to drain the pit.

Due to demand from mines, quarries and batch plants, the KRS series is now carried in stock by Tsurumi's distributor, Aussie Pump Industries (Aussie Pumps).

"Tsurumi's KRS pumps are being used to remove the concentrated slurry from tailing dams in WA gold mines," Aussie Pumps product manager Neil Bennett said.

"The high chromium agitator stirs the silt that then passes through the pump so the dams don't need to be drained to be cleared."

Tsurumi's KRS slurry pumps are powered by four pole 1450 rpm slow speed motors from 9.5kW to 34kW.

Available in 80mm to 200mm bore diameters, the pumps can deliver flows up to 4000 lpm and heads to 31 metres.

The pump bodies are manufactured from high-grade cast iron with a high



Tsurumi's KRS pumps remove the concentrated slurry from tailing dams.

chromium impeller and agitator for wear resistance.

The pumps feature all of Tsurumi's standard longevity attributes.

These include a unique anti-wicking cable entry that prevents water incursion due to capillary wicking should the power cable be damaged or the end submerged.

The cable entry is absolutely watertight.

The dual, double silicon carbide mechanical seal is completely enclosed in the oil chamber.

The seal is therefore always protected, cooled and lubricated by oil thus eliminating spring failure caused by corrosion or abrasion.

And if that wasn't enough, Tsurumi added an oil lifter.

The oil lifter is a patented guide vane inside the oil chamber that ensures the mechanical seal is lubricated even if the oil level falls or the pump is installed at an angle.

The top discharge design means that the liquid passes through the pump casing and cools the motor.

This means the pump doesn't have to be fully submerged or even installed vertically.

"Tsurumi's KRS series can link its heritage back to major projects of land reclamation carried out in Japan over the last fifty years," Mr Bennett said.

"The pumps are built with Tsurumi's fanatical approach to quality and shows their passion for products that won't quit."

Further information on the Aussie Pump Tsurumi series is readily available from Aussie Pumps, Aussie Pump mining partners throughout Australia, or [www.aussiepumps.com.au](http://www.aussiepumps.com.au).

# World class mining services

NATIONAL

CMI Technical Services was the brainchild of managing director Zeb Ogilvie, who began the company in 2011 as a single man operation.

From humble beginnings, the company's original offerings were mill installation management and maintenance.

However over the years this has grown into much more; services extend to mill and crushing plant, CIL, flotation, thickeners, and wash plants to suit diverse commodities.

The team also offers construction management, procurement, commissioning planning and management, asset management, condition monitoring, training and development, and are now beginning to take enquiries for rebuilds and rotatable spares.

Reflecting on the company's seven years in business, Mr Ogilvie said customer satisfaction has always been his main driving force.

"Our potential and growth has gone down the simple path of customer satisfaction," Mr Ogilvie said.



More information on its services and products can be found at: [www.cmitech.com.au](http://www.cmitech.com.au).

CMI Technical Services general manager Tito Chacono echoed Mr Ogilvie's views, citing a focus on customers as the company's recipe to success.

"Our team is very diverse; we have professionals now coming from around the world and different industries to join the CMI family, all with the one mantra that has propelled us — precision and customer satisfaction," Mr Chacono said.

"For example Zeb recently made his

way to PNG to add it to our list of countries we service.

"Our Middle Eastern division headed up by Ron Hellberg is also going well with continued growth.

"I spoke with Ron late last week who said he was really happy with the current climate in the Middle East with further calls for work to be completed by the CMI team."

New additions to CMI's maintenance equipment include one of the only fully mobile line boring units in Australia capable of 254mm (10") to 1524mm (60") bore diameters.

"This unit in particular has proved to give better accuracy and faster finish times for bores more than 500mm (19.68"), due to heavier cut and feed rates through a superior set up in rigidity over smaller boring bar units," Mr Chacono said.



# PROK launches new PROKOMPOSITE roller

## NATIONAL

PROK brings to market the “most advanced conveyor roller ever to exist”.

The PROKOMPOSITE roller is designed and manufactured by PROK Conveyor Components Australia.

PROK has had a long history in high performance products and the PROKOMPOSITE is no different.

Many years of research and development now comes to market to deliver to its customers what they have been searching for: a lightweight, belt-friendly non-metallic roller that lasts.

The PROKOMPOSITE range satisfies the need for a lightweight, non-metallic roller without the compromises associated with plastic rollers seen in the market previously.

PROKOMPOSITE is a true composite designed and developed specifically for iron ore and heavy-duty applications.

It is safer, quieter and more economical, generating 50 per cent less noise than traditional steel rollers.

It is also up to 55 per cent lighter than traditional steel rollers, and costs up to 20 per cent less to own due to easier maintenance and lower energy demands.

The PROKOMPOSITE roller shell and bearing housing uses technology otherwise not seen in conveyor idlers; this is unlike many other products on the market that have adapted old technology, mostly from water pipe and gas applications.

Additionally, low tolerance injection moulded bearing housings are now a thing of the past.

PROKOMPOSITE is not only lighter than steel, it is also the lightest non-metallic roller on the market for heavy duty applications.

Despite its light weight, the PROKOMPOSITE roller delivers durability in demanding heavy duty conveying applications.

In addition, the PROKOMPOSITE features a new seal package that adds a fixed end cover for high pressure water and rock-jam protection and greatly improved drag performance, while still featuring the lip seal and long path labyrinth from our current seal design.

Suitable for high speeds and large tonnages, the rollers are available in 152mm and 178mm diameters, with bearing sizes from 6306 up to 6310.

The advantages of the PROKOMPOSITE stem from PROK's use of specifically designed and engineered materials, which provide the strength and durability of traditional steel rollers while delivering the weight benefits of composite materials.

The PROKOMPOSITE project had some lofty goals – to develop a lightweight, low noise, and low drag roller with a structure that eliminated the risk of belt damage in the event of a bearing failure.

This was all while having a shell structure that was rigid enough to ensure bearing life was maximised, and a shell that was a no-compromise alternative to steel shells when it came to durability and service life.

Working with a leading European university in the composites field, PROK developed composite structures for the tube and end cap assembly, including the seal package.

This led to the production of prototype material samples which allowed the



The PROKOMPOSITE is up to 55 per cent lighter than traditional steel rollers.

## HOW PROKOMPOSITE ACHIEVES ITS PERFORMANCE

### A REAL COMPOSITE

The secret to the performance of the PROKOMPOSITE Roller is in the materials.

PROK's structural components feature fibre mats and rovings arranged to its specific requirements to achieve the necessary stiffness, strength and fatigue performance, while using resins that provide exceptional abrasion resistance.

### RIGID TUBE FOR BEARING ALIGNMENT

Many rollers that use tube materials such as PVC or HDPE are simply not suitable for medium and heavy duty applications.

This is because they bend excessively under load, or need a shell so thick that any weight advantage is negated.

The PROKOMPOSITE Tube material overcomes this issue.

### BUILD-UP RESISTANT TUBE SURFACES

The resin materials used in PROK's composite roller tube are build-up and abrasion resistant. This means the PROKOMPOSITE Roller will provide consistent noise performance, as it is not affected by the surface build-up that typically affects low noise rollers.

### PRECISION MANUFACTURED TUBE

Balance and run-out are key to minimising roller and conveyor noise. PROK has optimised its tube manufacturing

processes to achieve straightness, wall thickness consistency and roundness to the standards required for a low noise Conveyor Roller.

### PRECISION ANTI-CREEP BEARING HOUSING

To maximise bearing and roller life it is essential that the end caps have parallel and circular bores, to the required tolerances, and they hold their shape over time and under load.

By making the PROKOMPOSITE end caps from a composite, PROK has overcome this common problem with Injection Moulded End Caps.

### RIGID END COVER

PROKOMPOSITE Fixed End Covers are designed to prevent distortion in the event of a rock jam between the roller and idler frame. Distortion of this part can result in contact the End Cap, resulting in elevated Drag and Noise.

It also ensures clearances between the End Cap and Cover are maintained at all times, allowing the external labyrinth to function as intended, draining contaminants and washdown water away from the lip seal.

### LOW DRAG LIP SEAL

PROKOMPOSITE Lip Seal acts on a stainless steel running face for maximum service life and seal performance.

PROKOMPOSITE is a genuine alternative to steel rollers, where performance and service life are not compromised.

theoretical design work to be validated with test rig trials of shell structures, as well as traditional laboratory testing to verify strength, fatigue and stiffness performance of the materials.

With the material design completed, the PROK team then moved to develop manufacturing processes that achieve the dimensional tolerances required for conveyor rollers.

In PROK's experience no supplier, except for its partners, can provide the tube and end-cap materials required for a roller like the PROKOMPOSITE.

In parallel, PROK ran extensive drag

and fatigue testing at its Bayswater R&D laboratory, supplemented with third-party noise and seal performance testing.

Satisfied with the quality of materials and performance of the rollers in the laboratory environment, in early 2018 the team embarked on its final step before release – the commencement of field trials on live conveyors.

To date the PROKOMPOSITE Rollers have not had a single failure in the field.

With a long history as a supplier of quality conveyor components, PROK was motivated during this program to not move to the field trials until it was

completely satisfied it had a product that met primary criteria.

This included being as strong and durable as its steel rollers, while still providing the weight, noise, and belt protection features of a non-metallic roller.

PROK is a part of NEPEAN Conveyors, a wholly Australian owned company. NEPEAN Conveyors has specialised in the design, in-house manufacture, installation and service of overland, underground and surface belt conveyor products, systems and bulk materials handling projects for more than 30 years.



# Introducing the ROSTA EZ-TENSIONER system

## NATIONAL

FOR more than 15 years ROSTA has supplied the mining and quarrying industries with safe, easy, and relatively maintenance free screen drive belt tensioning solutions.

The ROSTA EZ-TENSIONER screen drive belt tensioning system is used on single drive belts powering oval stroke vibrating screens, and is proven to reduce running costs and increase productivity when compared to traditional coil spring-based belt tensioners.

The inbuilt damping and progressive upper end spring rate characteristics of the ROSTA design compensates for belt stretch, while at the same time helping control drive belt stability when the vibrating screen passes through resonance during shut down.

**No Coil Springs**

The ROSTA EZ-TENSIONER system draws on ROSTA's 70 plus years of experience with rubber torsion spring technology.

The SE Tensioner is attached to a mounting bracket assembly and comes complete with a pulley axle in readiness to fit a customer's standard jockey pulley, however a jockey pulley can be supplied as an extra if required.

Gone are the days of unreliable coil spring failures and associated costly drive belt damage with resultant machine downtime.

**Easy Installation**

The ROSTA EZ-TENSIONER system bolts in place of the standard OEM



Before and after: the ROSTA EZ-TENSIONER system is an easier maintenance free tensioning solution for oval stroke vibrating screen single belt drives.

belt-tensioning unit.

This can often be done with little or no changes to the existing supporting steel work or guards, making installation simpler and quicker.

### Reduced Maintenance

Compared to standard single drive belt tensioning systems, the ROSTA EZ-TENSIONER system reduces maintenance downtime.

The ROSTA EZ TENSIONER is maintenance free, eliminating the pivot bearings and associated greasing requirements of the standard system.

### Improved Adjustability & Safety

The angular adjustability of the ROSTA EZ-TENSIONER when compared to the standard belt tensioning unit also provides improved flexibility in the drive setup to achieve the best efficiency possible for this type of single belt drive.

The ROSTA EZ-TENSIONER system

utilises a safety socket to provide additional locking force, as well as allowing finer adjustment of torsion spring preload for belt tensioning.

As there is no longer an unguarded coil spring pinch points are eliminated, thereby creating a safer working environment.

### Energy Efficiency

When relying on a single drive belt it is important to maintain as high a drive efficiency as possible in order to reduce belt slippage which can increase pulley and belt wear rates.

By continuously compensating for drive belt elongation, the ROSTA EZ-TENSIONER system reduces belt slippage and subsequent power draw.

### Cost Effective

The ROSTA EZ-TENSIONER system is competitively priced.

Coupled with the reduced need for

maintenance and associated downtime, the ROSTA system provides peace of mind and improved productivity.

### Benefits of the EZ-TENSIONER

- Eliminates coil spring failure to improve productivity.
- Inbuilt safety mechanism eliminates pinch points and allows for fine adjustments.
- No more pivot bearings failures or regreasing.
- Absorbs belt shock loads for improved belt life.
- Can be simply retrofitted with existing jockey pulley, or supplied with new.
- Automatic belt stretch compensation.
- Suits major OEM screening systems.

More information on the ROSTA EZ-TENSIONER system can be found by calling (08) 9248 1588 or emailing [sales.aus@rosta.com](mailto:sales.aus@rosta.com).

# The structural steel experts

## NATIONAL

HARD BAKKA is a major player in providing steel structures for ore sorting machines for the mining industry, among others.

The Hard Bakka team has a combined 30 years of experience in steel fabrication and welding, with its successful journey beginning in the management, fabrication and welding of structures for oil refinery plants, before expanding to executing steel structures for roads and maritime services.

Today Hard Bakka is a preferred steel fabricator for mining solutions, Australia-wide.

"We specialise in supplying plant structures for sorting machines, complete with stairs, gratings, rails, conveyors and skid frames," Hard Bakka general manager Mona Hwalla said.

"We also specialise in fabricating ore bins, rock boxes and complete wash screen units.

"Our services include producing shop drawings, fabricating, surface finishing, deliveries, trial assemblies and onsite construction supervision, to ensure a



More information can be found at: [www.hardbakka.com.au](http://www.hardbakka.com.au).

trouble-free assembly of the complete plant."

The company operates a 1000sqm workshop in South West Sydney, and fabricates, delivers and installs with safety front of mind.

"We approach the project with

consideration to our client's pocket, peace of mind, and time," Ms Hwalla said.

"From this set of values, we build lasting relationships.

"We maintain consistent communication on the job to eliminate risks and produce excellent results,

winning the reputation of being reliable."

Hard Bakka understands the importance of accuracy and the structure's working life in the mining environment.

Compliance to the steel fabrication codes and delivering on time is a priority without compromise.



# Worldwide engineering consultants

## NATIONAL

MINERAL Engineering Technical Services (METS) has a reputation for providing quality services to the global mining industry.

Its engineering and design capability is based on extensive operational and delivery experience providing services to the resource industry for 30 years.

The company takes pride in the success of its clients' projects through providing practical, functional, cost effective and constructible solutions to complex problems.

The independent consulting group has provided national and international clients with a wide range of services, including mineral processing, engineering design, test work management, plant audits, metallurgical accounting and more.

METS Engineering includes experienced processing, electrical, mechanical, civil and structural engineers with substantial experience for all stages of a project from front end engineering design, conceptual design, planning, detailed design through to commissioning.

With the planned mining of a new ore body at the Al Jalamid site, in Saudi Arabia, Ma'aden Phosphate Company required a large and comprehensive test work program to define the geophysical and metallurgical characteristics of the new ore.

METS was engaged to develop test plans, coordinate with the laboratories and report results with interpretation.



More information can be found at: [www.metsengineering.com](http://www.metsengineering.com).

The engineering specialists were involved in front end engineering design (FEED) for the Marillana Iron Ore Project in the Pilbara.

METS identified areas from the Definitive Feasibility Study (DFS) that had risk associated which impacted

plant utilisation, operability, efficiency of beneficiation and providing solutions to overcome these obstacles while ultimately achieving a final costing before execution.

The company used expert knowledge to develop the efficient mineral processing route needed to achieve throughput target

for operations.

METS' core business is founded on establishing long-term relationships with its clients, enabling the company to draw upon historical knowledge of specific project operations to derive the best possible solution outcomes.

## Connecting Australia's mining sector



Image: Brenden Scott.

## WA

THE Qantas Group, as a leading provider of air transport services to the mining and resources sector, has recently enhanced its capability in WA with Network Aviation adding two Airbus A320 aircraft to its Perth-based fleet.

The 180-seat jets are now operating flights on resources routes within WA and are available for mining charters.

The Airbus A320 performs well in high temperatures and offers greater

operational reliability at high elevation airfields, like those in WA's Pilbara region.

Plus, as the aircraft is configured as a single-class cabin, it can carry more passengers and is well suited to the State's resource markets.

The two A320s and 17 F100s are operated by Network Aviation alongside the Qantas Group's existing Perth-based Boeing B737 and B717 aircraft.

This mix of fleet types allows the Qantas Group to offer flexible capacity

with 180, 174, 125 and 100 seat options for customers across both charter routes and the nine regular passenger transport air routes in WA.

From greenfields to steady state operations, the Qantas Group's broad range of air transport solutions is available for the various stages of a mine's development.

More information on Network Aviation's charter options can be found by calling 08 9277 8977 or emailing [charter@networkaviation.com.au](mailto:charter@networkaviation.com.au).

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# Keeping drivers on time

## NATIONAL

TRACK My Ride is an Australian industry leader in real-time GPS tracking.

TMR has been helping Australian businesses increase their fleet productivity, safety and security since starting in 2011.

The tracking platform allows customers to instantly locate all their vehicles and view detailed driving history from the convenience of a PC, laptop, iPad or smart phone on a specially designed app (available for both Apple and Android).

Track My Ride is 100 percent Australian owned, designed and supported and their friendly team are always happy to assist customers.

The company is constantly adding new features and improvements to TMR, thanks to the feedback from its customers.

Customers also benefit from a full range of comprehensive reports, automatic alerts, 24/7 real-time tracking, driver ID system, immobiliser, engine hour recording, motion detector and more.

Every TMR GPS tracker includes three months free tracking service and a two year warranty, with affordable service plans available thereafter.

Clients can use the coupon code "mining" to save 10 per cent on their TMR hardware. More information can be found at: [www.trackmyride.com.au](http://www.trackmyride.com.au) or by calling 1300 553 022.



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# Pitram 4.10 increases performance



More information can be found at: [www.micromine.com](http://www.micromine.com).

## INTERNATIONAL

MICROMINE is pleased to announce the release of Pitram 4.10, which delivers major new features and functionality for users.

Pitram is the market leading fleet management and mine control solution assisting mining operations to record, manage and process mine site data in near real-time.

It provides mine managers with an overall view of the current mine status through the acquisition of key mining data relating to equipment, personnel and materials and is suitable for underground and surface mine construction, development and production.

“Pitram 4.10 includes a number of enhancements specifically focused on improving stability and performance, which means users will have more control over their operations,” Pitram product strategy manager Gareth Dean said.

Pitram 4.10 includes 35 new major features and more than 650 improvements

across the Pitram solution.

Some of the key highlights for the release include the removal of compatibility mode to support modern browsers; a new non-critical faults panel entry and commenting in maintenance view; improved IIS connectivity and major performance improvements to Pitram Mobile.

The Pitram Restful Integration Service (PRIS) functionality has been extended for personnel and reference data elements.

Extensive development work has also taken place to enhance the shift planner function, which now includes multiple shift roster functionality.

Earlier versions of Pitram were only able to operate in a single shift roster mode.

In the enhanced version, the shift planner function has been extended to support multiple shift rosters.

“A major feature of this release is the multiple shift rosters functionality. Mining is a 24hr operation with shift

handovers and overlap covered by more than one shift, we introduced this functionality to ensure accurate capture and reporting of production,” Mr Dean said.

Previously, Pitram was supported by Internet Explorer browser (IE10 and IE 11) and required the compatibility mode to be turned on.

Enhancements in version 4.10 allow all Pitram modules not using Microsoft Silverlight to be displayed and used in other popular browsers, such as Chrome, Edge or Mozilla Firefox.

The Pitram development team has also redesigned and replaced the mobile database in Pitram Mobile to improve the overall performance of the application.

The improved database will save time for users, increase efficiencies and allow for a more streamlined user experience.

Pitram 4.10 also assists clients with stabilising mobile installs, increasing data transfer and improving the overall stability of the mobile platform.

Current analysis has shown reference

data to have improved significantly, with some instances taking only 14 per cent of the original data transfer and processing time.

Its software is renowned for its ease of use yet powerful capabilities.

All products are available in numerous languages and supported by local experts.

Changes to the MICROMINE products address the feedback provided by the company’s global client base.

“We place a lot of emphasis on better understanding our clients’ needs and their feedback has guided some of the changes in Pitram 4.10. The new features and enhancements will provide greater control for mine managers and assist to increase production, reduce costs and improve the decision-making process,” Mr Dean said.

More information on Pitram 4.10 and how it can assist operations, increase productivity, and reduce costs can be found at the Micromine website.



## Pitram Fleet Management and Mine Control Solution



Pitram is a fleet management and mine control solution that records, manages and processes mine site data in real-time. As a scalable solution, it is suitable for underground and surface mine construction, development and production.

Pitram records data related to equipment, personnel and materials, providing an overall view of the current mine status and therefore enabling improved control over operations. Greater control allows sites to increase production, reduce costs, and improve safety and business intelligence.

[marketing@micromine.com](mailto:marketing@micromine.com)  
T: +61 (0)8 9423 9000  
[micromine.com](http://micromine.com)



Intuitive Mining Solutions



# MTE trailers get thumbs up

## NATIONAL

IN order to compete against long-established heavy haul trailer manufacturers in the Australian market, Modern Transport Engineers (MTE) knows it has to produce trailing equipment that withstands the test of time.

MTE director Michael Ratcliffe knows the company is getting things right, because when customers return to place repeat orders, increase their fleet size or capability he regularly hears them say "I couldn't kill it", "you can't break them" and "they don't let you down".

Mr Ratcliffe said the company had a very clear understanding of the expectations of the heavy haul customer and what they put the equipment through.

MTE customer Jody Thompson of Hartley (The Blue Mountains) said she had a three rows of eight (3x8) and that the trailer performed "better than it should have".

"I loved it, so buying another MTE was a no-brainer," Ms Thompson said.

"I have now taken delivery and the finish is first class.

"I already know the strength and other virtues of the product and the team at MTE couldn't have looked after me better."

MTE plans on being a true force in the heavy haul trailer market and believes by offering the right product, at the right price, with the right service it will achieve its goal.



More information can be found at: [www.modtrans.com.au](http://www.modtrans.com.au).



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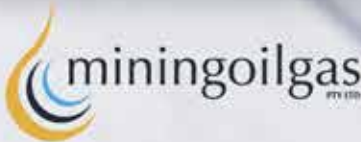
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# Not another tyre management article

INTERNATIONAL

TYRE Management has been labelled as a luxury in the past, proof of an operation's dedication to a philosophy that, in part, promotes specialists who analyse every millimetre of tread, report every pebble on the roads, and spend hours hovering over a laptop interrogating their tyre management software (TMS) of choice.

In decades gone by, this was a rare thing but now it is standard practice in the mining tyre industry.

But industrial tyres don't cost \$40,000 each, people aren't flown into the desert for weeks at a time to work on them, and rarely do companies have in-house specialists to manage them.

So, why would you bother with a TMS? It often means spending more time printing out forms, writing out job details, returning them to the office, and entering it into software.

After all, you're pretty sure that tyre lasted for 6 or 7 months, right? And just like that, tyres are banished to the land of porta-loos & air filters.

KLINGE found that a typical fleet owner's focus is on preventing work stoppages and fixing them quickly.

Firm handshakes and offhand advice from their tyre dealer doesn't instil confidence like it used to, and is often taken as an opinion rather than facts.

This common misunderstanding leads to more work stoppages and less



More information can be found at: [www.klinge.com.au](http://www.klinge.com.au).

productivity despite the best efforts of those involved.

The key here is communicating actionable information, the stuff that matters.

The goal for KLINGE with an

Industrial TMS was to work with and improve the relationship between tyre dealers and fleet owners by using fast and simple technology.

The results of this is a tyre fitter recording live tyre maintenance

and inspections to the cloud via their smartphone, then sending an automatically produced report on future tyre requirements based on hard data.

No hours or days of report writing, or double data entry here.

The results for users is more scheduled maintenance booked, fewer early tyre failures and a reinforcement of the bond between dealers and fleet owners.

Both parties had never seen such transparent, and relevant information delivered so fast, decisions on servicing and stock ordering became clear and simple.

Industrial tyre users and dealers who adopt tyre management need results fast.

Cost per kilometre and scrap data will always be key for Procurement and Tyre Selection, but any TMS on the market today can report on these things.

Valuable tyre management software must keep up with the digital world and contribute to more than just the keeping statistics to be worthwhile in the commercial and industrial tyre sectors.

Tyre Management is accessible, valuable and simple for these industries using Total Tyre Control® Web.

KLINGE is the world's leading tyre management software company and it's our business to keep our client's fleets efficient, their tyres safer and their own customers satisfied.

# KLINGE™



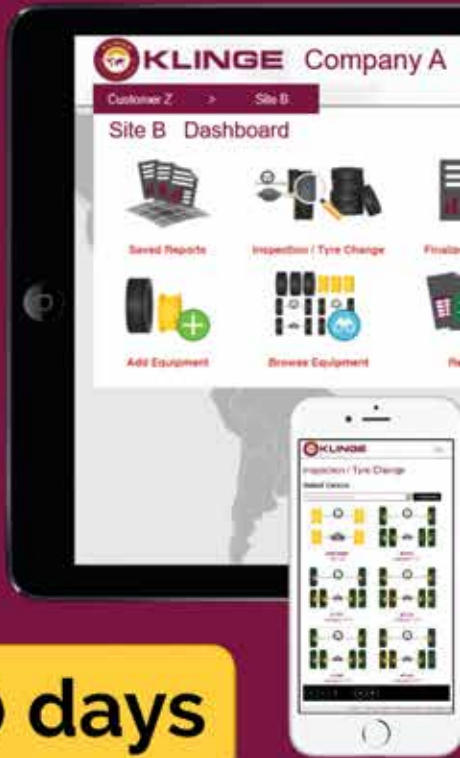
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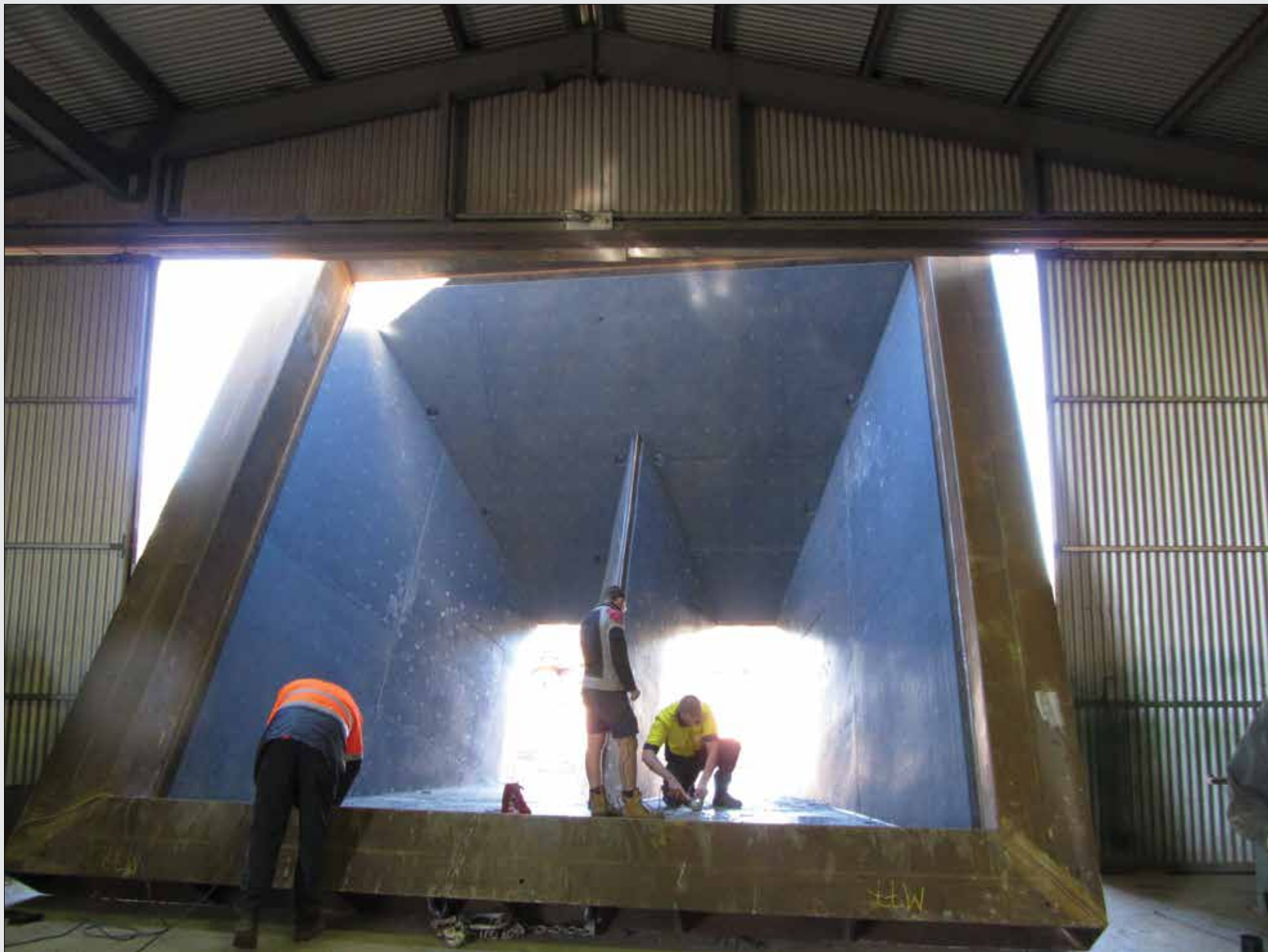
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# Light weight material alternatives



More information can be found at: [www.dotmar.com.au](http://www.dotmar.com.au).

## INTERNATIONAL

DOTMAR Plastic Solutions is one of the largest importers, distributors and machinists of thermoplastic stock shapes, polyurethane and conveyor components in Australia and New Zealand.

Dotmar draws on years of in-field experience to provide products and services to a range of projects, including large on-shore and off-shore resources projects.

Dotmar assists clients at the design, tendering and installation phases to help bring the project to commercial reality.

Converted to finished parts, advanced

engineering plastics are emerging as improved replacement materials for traditional metal components.

Examples include bearings and bushes, filtration, chemical tanks, safety guards, rope sheaves, pulleys, and MATROX® – the industry standard for flow promotion liners.

Dotmar and its business partners distribute and install MATROX® lining systems, a specially formulated Ultra High Molecular Weight Polyethylene (UHMW-PE) extremely low co-efficient friction liner.

MATROX® is specifically designed for lining storage and transfer equipment, hoppers, chutes, bins, dump truck bodies

and loader buckets – all of which require remedies to sliding abrasion and release of sticky bulk materials.

Dotmars' international partner, Rochling, has introduced formulation enhancements and strict metrics to create an extremely high quality MATROX® product for use in many demanding bulk solids handling areas.

Mining, minerals and concentrate handling, processing, chemical, filtration, and wharf loading all benefit from its impressive physical properties.

MATROX® liners reduce boundary friction, provides substrate protection, and achieve full design capacity and consistent

discharge rates.

These results are achieved through the extremely low friction surface, outstanding wear resistance, high impact strength and excellent chemical resistance.

High performance materials specified by mine design consultants must meet the demands of the end users, and MATROX® responds by delivering best-case production flow rates at optimum wall angles.

Quality material, coupled with liners installed to the manufacturers' recommendations, are important in achieving successful flow promotion and maximum longevity while improving site safety, health and environmental targets.

## IN THE SPOTLIGHT

Australian Geoscience Council president Bill Shaw



Turn to **Page 70** for the full interview





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# Nivek to launch new servicing tool

## NATIONAL

HOME-GROWN innovation doesn't get much better than the Nivek Industries' story.

The initial concept for the remote controlled, hydraulic, belly plate jack was one borne out of necessity when Kevin Cant was nearly crushed while removing a belly plate.

After the incident, Kevin immersed himself in finding a safer way to remove and replace belly plates.

After three years of design and experimentation, the first Tracked Elevating Device (TED) was trialled on a local Hunter Valley mine site.

Since then, TED has evolved into an essential maintenance tool for mining workshops and field repairs.

Boasting 14 attachments currently, with more in the concept phase, TED can be utilised for a multitude of maintenance tasks.

Nivek Industries recently won an award for 'Excellence in Innovation' through the Singleton Business Chamber and will be progressing to the next level as a finalist of The Hunter Business Awards, announced in August.

Its products are now seen across a large range of resources projects in Australia, with Peabody's Wambo coal mine in NSW as one example.

Wambo coal mine general manager Albert Scheepers said TED was solving the real issues in safety.



Nivek was recently presented with the Singleton Business Chamber 'Excellence in Innovation Award' by sponsor Peabody.

"It sits high on the hierarchy of controls as an engineering solution, taking employees out of the line of fire by removing them from the hazard," Mr Scheepers said.

"Every site needs a TED!"

Nivek's next TED attachment, due for release in September, will also be a game changer in mining maintenance.

With an international mining giant already onboard trialling Nivek's new tool, all parties are incredibly excited about the potential safety and efficiency gains it will bring to a myriad of maintenance operations.

Updates on the progress of this exciting innovation can be found on Nivek's Facebook (@TrackedElevatingDevice) and Instagram (@nivekindustries) pages.

# DON'T BUST YOUR BACK USE TED INSTEAD



With a growing range of attachments, TED is a valuable maintenance tool, saving lives and limbs and increasing efficiency.

Contact Nivek Industries to find out how TED can drastically increase efficiency in the field and workshop.



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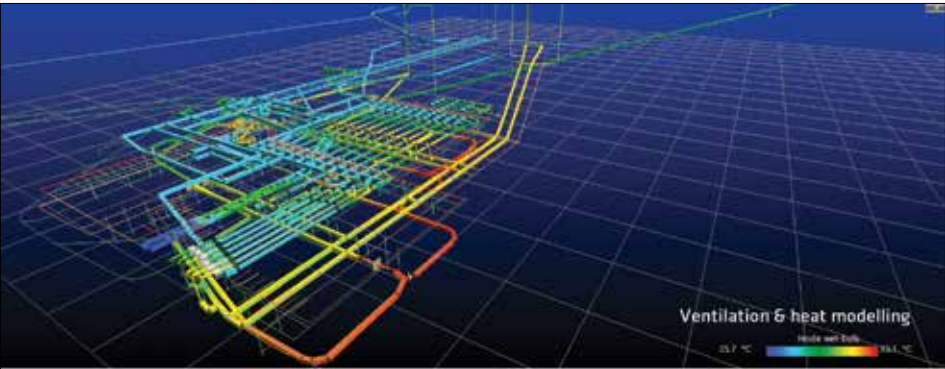
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**NATIONAL**

BBE is a global mine ventilation and refrigeration consultancy with a staff of more than 100.

Established more than 25 years ago, the company is considered a leading independent professional service provider for mine ventilation, and has a global footprint with offices in Australia, Canada and South Africa, and projects in Africa, Asia, Europe, North and South America.

BBE's Australian business unit was incorporated in 2013 and has rapidly grown to a team of 10 professionals and support staff.

Fully backed by the global BBE Group, the company is ideally positioned to support projects through the entire project life cycle, from concept studies to detail design and implementation support.

"Our team has been supporting both hard rock and coal clients with ventilation and heat modelling, equipment selection and specification, fans and refrigeration system design as well as performance assessments," BBE Consulting (Australasia) principal ventilation engineer Leon van den Berg said.

"We have also been involved with several ventilation-on-demand technology studies."



More information can be found at: [www.bbegroup.com.au](http://www.bbegroup.com.au).



# Partnering to create solutions

## INTERNATIONAL

BOST Group believes its success comes from attention to detail.

The company's business vision revolves around fulfilling customers' needs and exceeding expectations. Partner networking, product quality, environmental awareness and safety are its key priorities.

Bost Group was approached by leading Turkish distribution company, Pena Maden, to assist in the design, manufacture and commissioning of multiple underground refuge chambers.

There was a unique requirement to get large capacity chambers through exceptionally small declines but Bost Group jumped at the opportunity to work with another customer focussed business.

While Bost Group has designed and built many underground refuge chambers for the Australian market over several years, this was the company's first segmented chamber project, and its first in Turkey.

Keen to fulfil ongoing commitment to customers through product quality, Bost engineers met with all parties to understand requirements and expectations before setting out to deliver a certified, user- friendly product.

After months of mechanical and electrical designing, obtaining CE certification, incorporating remote access monitoring, then testing and commissioning, Bost Group's team



A recent refuge chamber installed in Turkey.

delivered a state-of-the-art product customised to the customers' requirements were in accordance with new legislative requirements.

Group Sales Manager Darren Newman stated that the company is enthusiastic about entering into the international

refuge chamber market and welcomes the responsibility in helping to raise industry standards across the globe.

"We are excited about the improvements we have in the pipeline, however we remain vigilant about adding unnecessary costs and over complications to what should

fundamentally be a safe and user friendly product that's built to standards no matter where in the world your mining operation is," he said.

More information can be found at: [www.bostgroup.com.au](http://www.bostgroup.com.au).

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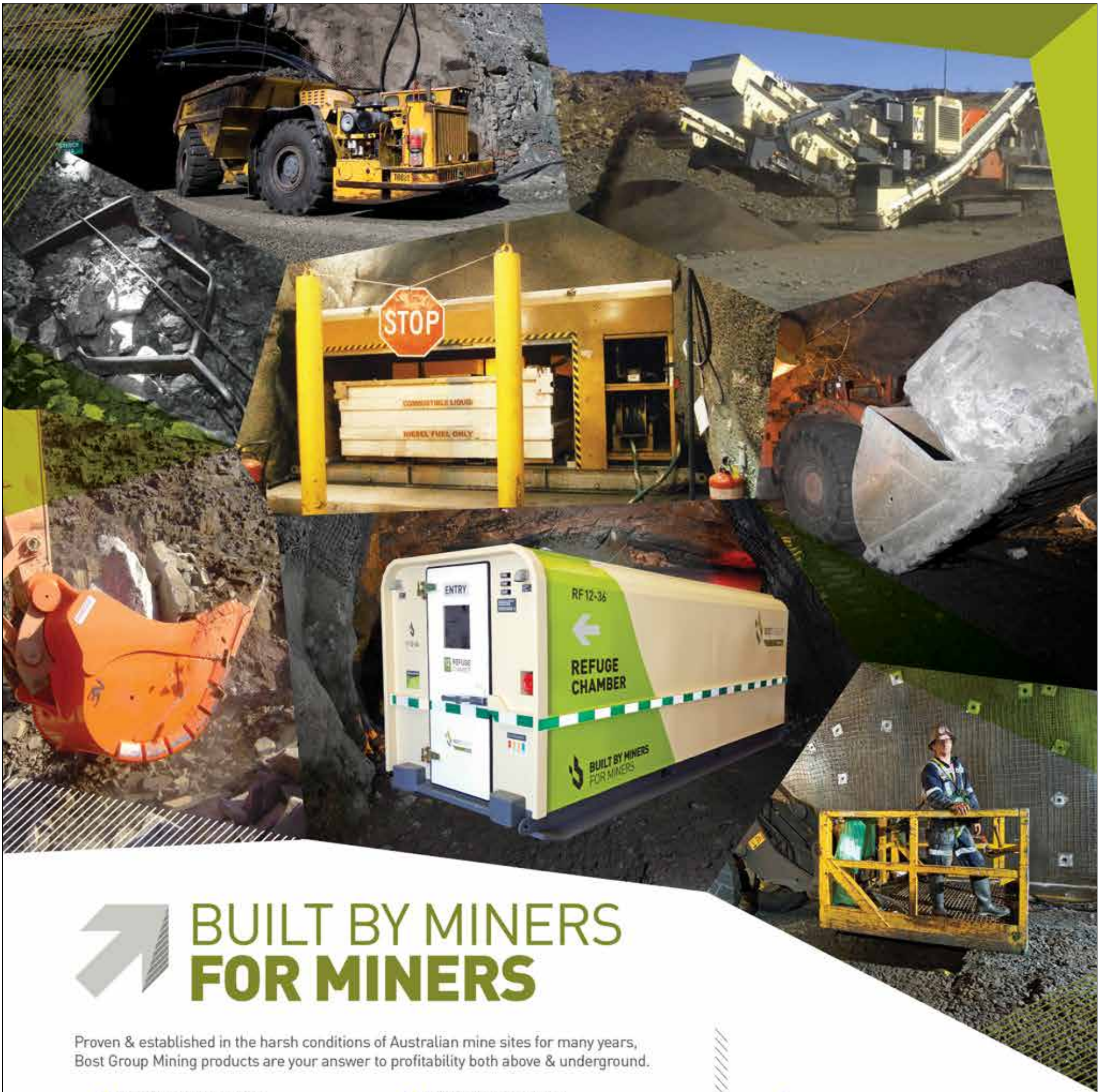
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# AUSTRALIAN GEOSCIENCE COUNCIL PRESIDENT BILL SHAW

More than 2000 geoscientists will meet this October for the inaugural Australian Geoscience Council Convention in Adelaide. Elizabeth Fabri spoke with Australian Geoscience Council (AGC) president Dr Bill Shaw about the upcoming event, and how the industry can work together to “smooth out” the booms and busts in Australian mining.

**“Without tipping the possible outcome too much, geoscientists can ride out the ‘busts’ by building and playing to their key strengths.”**

**Q. AGC will soon launch its first Australian Geoscience Council Convention. What prompted you to start the event?**

The Australian Geoscience Council organised the very successful 34th International Geological Congress which was held in Brisbane in 2012.

This event heralded the value and importance of getting as many geoscientists together as possible, to share our technical knowledge and work experiences.

By having a large critical mass all engaging at once we identified opportunities to actively work together on common issues.

We also generated sufficient revenue to be able to make that vision into reality. While the AGC has been around since the 1980s, the excitement that was generated in Brisbane gave us the impetus to work much more strongly together.

The AGC is made up of eight member organisations, many of which are familiar to resource professionals in mining and energy, and which all have specialities: AIG (geoscientists), AusIMM (mining), ASEG (geophysics), AAG (geochemistry), AGIA (data), GSA (geology), IHA (hydrogeology), and PESA (oil and gas).

The AGC’s role is to promote and raise the profile of geoscience.

Our convention in Adelaide, AGCC 2018, 14-18 October, is the next step for us in developing a broad acceptance of the importance of geoscience to our community.

This event is running during Earth Science Week and is open to all stakeholders in our society.

Of course we want to see as many geoscientists as possible come along, but there is much that is non-technical as well.

There will be a Big Issues Day devoted

to more general discussions, workshops and field trips, evening functions, a focus on early career geoscientists, emphasis on diversity, a large GeoEXPO for exhibitors, opportunities for sponsors to get their message out, a special afternoon for secondary school science teachers, a three-minute presentation challenge, an active social media network, many meetings and forums, and much more.

This is likely to be the biggest Geoscience event in Australasia since 2012 and is planned to be held every four years.

**Q. You’ve mentioned ‘smoothing out the booms and busts in Australian mining’ will be a central discussion point at AGCC 2018.**

This is a challenge that many people initially consider is intractable.

Of course Australia cannot control the global metal markets, and in a democratic economic system it is not conceivable that we would.

However that does not mean we cannot enhance and optimise the way we are impacted by these external commodity cycles. Geoscientists specialise in dealing with large, complex, ‘fuzzy’ problems.

This is the science that deals with ‘deep time’ (from now back to the origins of the Earth 4.6 billion years ago), huge scale differences (from crystalline processes to plate tectonics), and physical extremes (high temperature, and/or high pressure, to aquatic and atmospheric conditions).

Bringing 2000 geoscientists together to consider hard problems will certainly provide new insights and approaches.

Without tipping the possible outcome too much, geoscientists can ride out the ‘busts’ by building and playing to their key strengths.

More geos engaged in our education, social and political systems will increase the chance of our multicultural pluralist

society engaging with the earth in the most effective and efficient way. It will make them more effective and better utilised.

**Q. What opportunities do you see in Australian mining from a geological perspective?**

The UNCOVER initiative has been big news for nearly five years and many other countries are starting to develop similar programs to maximise the effectiveness of looking and drilling under cover.

We have to create a viable funding model to maximise the value of our lead in this field before our intellectual capital is eroded or hijacked.

The big achievement so far is getting everyone talking and working together on a common framework. We need Government and industry to actively push this initiative harder.

One thing I have learnt in a long geoscience career is that you cannot predict the next boom commodities.

But we know that there are large areas of Australia still unexplored and uncharacterised. There will be more ‘gold rushes’. We need a framework to support the explorers, developers, landowners and other stakeholders.

We need open communication about issues that impact on all Australians.

The increasing price of energy is an example of short-sighted thinking, when there are safe technologies that could be carefully pursued.

**Q. What emerging technologies are you excited about?**

Australian miners are among the most innovative in the world. Time and again we have developed software packages that break new boundaries, and we effectively spread our influence rapidly everywhere that our professionals go.

The early hype around AI and Big Data is now settling down, but robotics and remote control systems will provide safe work for many people for many years to come as the mining industry modernises.

A manufacturing approach to commodity production is developing in large iron, copper and coal mining companies.

This will trickle down into medium size companies as the support industries mature and start to provide their services to the smaller players.

One of the big drivers is when there is a change from cost minimisation to production optimisation (that is, getting the grade up instead of the unit costs down).

**Q. What career prospects are opening up in geoscience? Many geologists struggled during the downturn. Is there enough work out there?**

The message that I have developed here is that geoscience is for everyone. That means career opportunities are limitless.

Geologists make great scientists, explorers, innovators, software programmers, report writers, data guardians, communicators, historians, and journalists.

Yes, they are also mostly pretty good people as well, so they are of value in many roles.

The more geoscientists we have in society the better off we will be.

Thinking of geoscientists as miners, or technicians who log drill holes is self-defeating, for them and for society.

We can use hyperspectral scanners to do the logging. We need geoscientists for thinking, interpreting and decision-making, on mine sites and in many other situations.



# Hope For Men over 40 Struggling With 'Age-Related' Erectile Dysfunction

A limited number of readers will receive a free assessment by our experienced consultants and doctors and start the journey to a confident and more sexually satisfying future!

**AT LAST!** A ground-breaking treatment tried and approved by Australian men from all over the country suffering from erectile dysfunction. They reported increased levels of confidence, happier relationships and most importantly longer and harder erections.

This treatment is not a gimmick or false promises; this is a doctor prescribed treatment program that is personalised for each patient and their unique circumstances.

Erectile dysfunction can affect more than the physical in a man's life, it can undermine confidence, happiness and self-worth. Now, as part of a nationwide initiative, *Men's Health Institute Australia* is offering a limited number of FREE assessments to men over 40 who want to get back to the best version of themselves.

## THE KEY TO GAINING BACK CONFIDENCE, HAPPINESS AND MORE SATISFYING RELATIONSHIPS

Treating erectile dysfunction can:

- Restore confidence and self-worth
- Increase sexual satisfaction
- Regain motivation and drive
- Feel happier and more alive

"Tried and approved by Australian men from all over the country, they feel younger, happier and more confident"

Erectile dysfunction is one of the most common sexual health issues experienced by men as they age. An Australian survey showed that at least 1 in 5 men over the age of 40 have erectile problems<sup>1</sup>. A landmark study conducted in the US found that 67% of men have some form of erectile dysfunction by the age of 70<sup>2</sup>.

Men who suffer from medical conditions like diabetes, high blood pressure, cholesterol and heart disease are also at a higher risk of having erectile dysfunction issues.

*Men's Health Institute Australia* now offer effective treatment programs for Australian men who have lost hope in ever regaining their sexual prowess. In most cases, erectile dysfunction is a reversible and treatable condition.

*"If you have struggled to gain or maintain an erection, or it has been years since your last erection, we have a treatment program that could help you and improve the quality and quantity of your sex life"* says Matthew Cameron from *Men's Health Institute Australia*.

**Private and confidential discussions with knowledgeable Australian doctors**

Research indicates that many men are uncomfortable speaking to their family doctor about sexual health issues like erectile dysfunction. *Men's Health Institute Australia*

takes the awkwardness away from these sensitive conversations by introducing phone consultations with professional doctors who are knowledgeable and experienced in dealing with men's sexual health.

Our patients are raving about the unbelievable results that they achieved on our treatment programs. They are happier, more confident in their day-to-day lives as well as their sex life.

*"At first I was doubtful that the program and medication would work, but I'm very happy to say that I have my mojo back and feel like a new man"* - Paul M

No gimmicks. No false promises. No awkwardness. This simply is a personalised treatment program that is based on a confidential consultation with an

Australian doctor and medications that are delivered from an Australian pharmacy directly to your door.

*"Once I started the program I found it amazing and even better than they claimed it would be"* - Brian F

The team at *Men's Health Institute Australia* are highly experienced in their field, including doctors, pharmacists and men's health consultants. They provide this specialised care in a supportive environment of complete privacy and confidentiality.

Now, for a limited number of readers, they are offering FREE assessments to help begin your journey to your most optimal sexual self. But this is limited to the **first 98 callers only**. From 8am today, the FREE ASSESSMENT Hotline will be open. Simply call 1300 230 580.

## RESTORE YOUR CONFIDENCE AND IMPROVE YOUR SEX LIFE



1. Andrology Australia - <https://www.andrologyaustralia.org/sexual-difficulties/erectile-dysfunction/> 2. Feldman HA, Goldstein I, Hatzichristou DG, et al: Impotence and its medical and psychosocial correlates: Results of the Massachusetts Male Aging Study. J Urol, 1994; 151:54-61.

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