

THE AUSTRALIAN MINING REVIEW

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FRESH PROSPECTS

As Bowen Basin coal producers enjoy their biggest profits in years, players are gearing up for the next generation of projects to feed a growing global appetite for high quality thermal and metallurgical coal.



MINING IN THE BOWEN BASIN p17

Vitrinite is one explorer in the Bowen Basin making moves, recently signing a deal with ITOCHU to fast-track its Karin coking coal deposit.

Image: Vitrinite.

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NEWS

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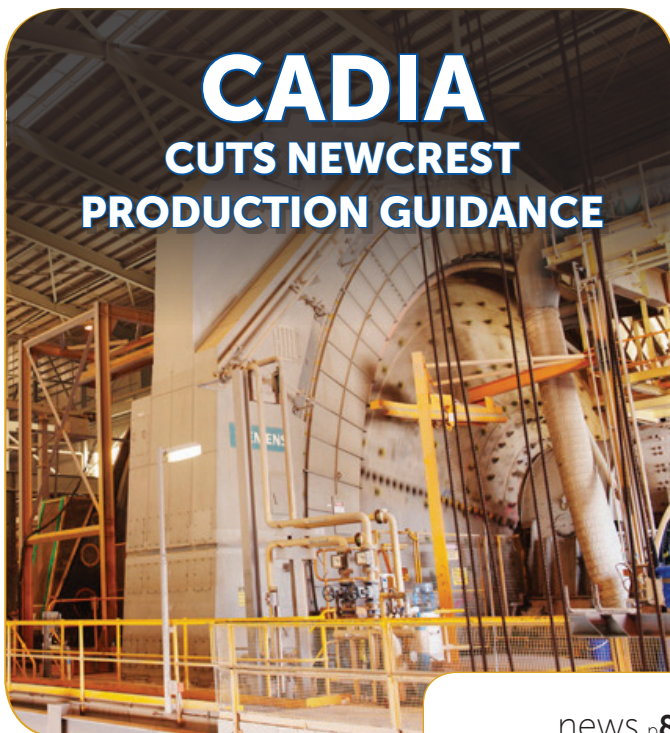
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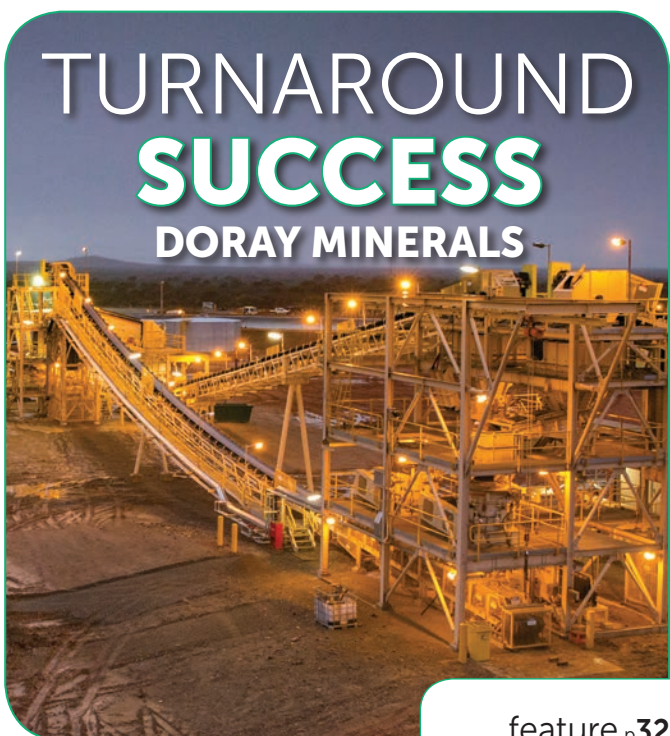
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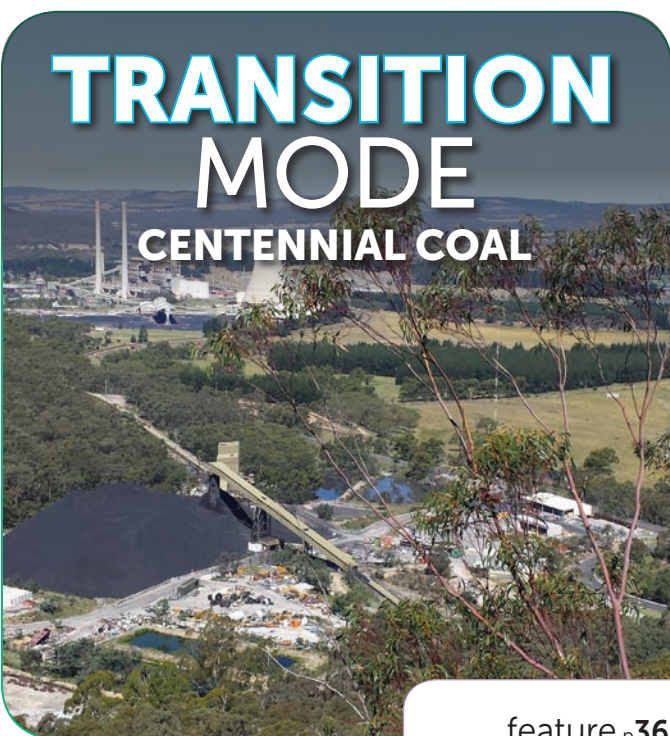
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GENERAL MANAGER

Brad Francis
brad@miningoilgas.com.au

MANAGING EDITOR

Reuben Adams
reuben@miningoilgas.com.au

JOURNALISTS

Cameron Drummond
cam@miningoilgas.com.auElizabeth Fabri
elizabeth@miningoilgas.com.au

GRAPHIC DESIGNER

Charlotte Lufino
charlotte@miningoilgas.com.auMoe Aung
web@miningoilgas.com.au

SALES EXECUTIVES

Beej Francis, Penny West, Daniel Mott

PRINTER

Rural Press

CONTACT US

P: (08) 6314 0300

F: (08) 9481 7322

160 Beaufort Street, Perth, WA 6000.

PO Box 8023, Perth BC, WA 6849.

E-mail the editor at
editorial@miningoilgas.com.auFor all other emails to staff, the standard convention is,
first name (only) @miningoilgas.com.au

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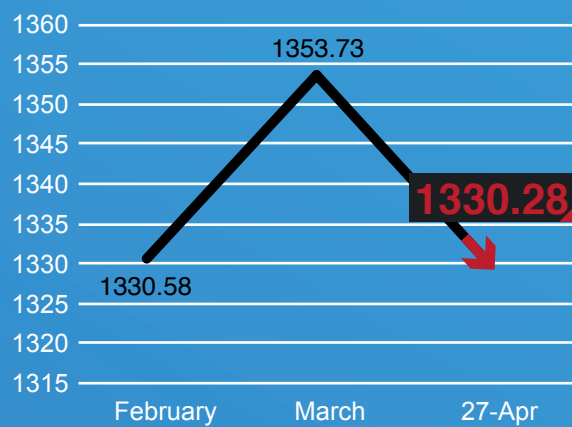
MAJOR COMMODITIES

SNAPSHOT

GOLD

\$US/oz

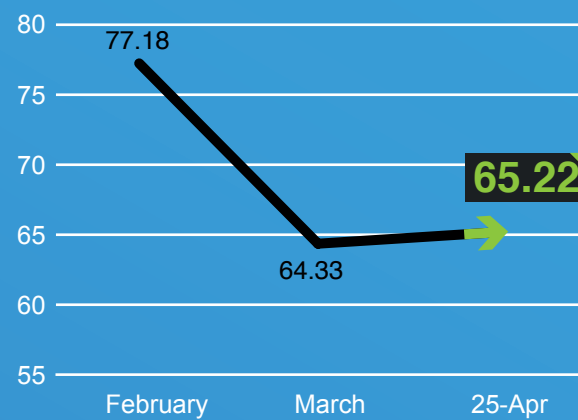
Gold hit five-week lows as the \$US strengthens and healthy US bond yields soften interest in the precious metal.



IRON ORE

\$US/t
62% Fe CFR China

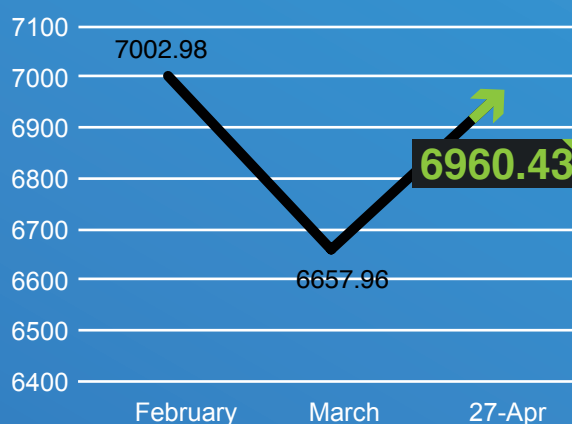
Iron ore remained around the \$US65/t mark during April, amid steady concerns about the outlook for Chinese steel demand.



COPPER

\$US/t
LME Price

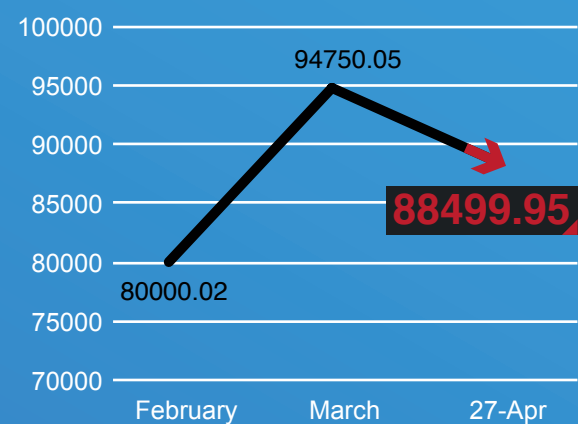
Copper remains buoyant, jumping back from mid-March lows of \$US6500/t.



COBALT

\$US/t
LME Price

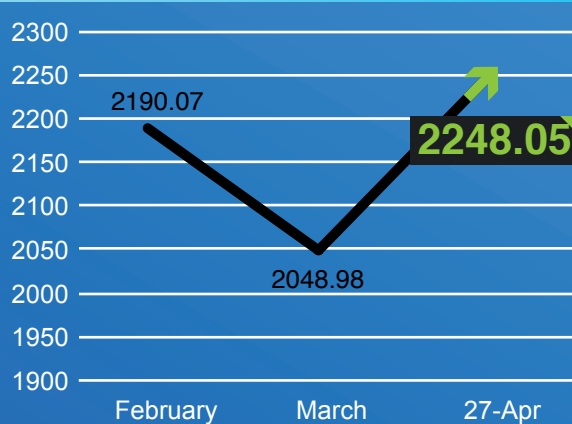
Cobalt has eased from runaway highs during March, which saw the sought after commodity peak over \$US95,000/t.



ALUMINIUM

\$US/t
LME Price

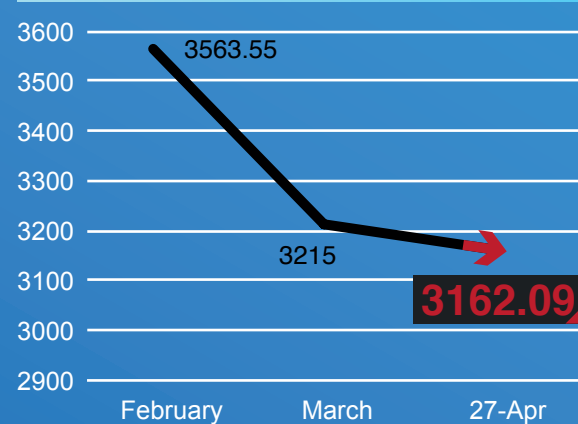
Aluminium has fallen nearly 20 per cent from early April highs, after the US Government gave domestic customers of Russian giant Rusal more time to comply with new sanctions.



ZINC

\$US/t
LME Price

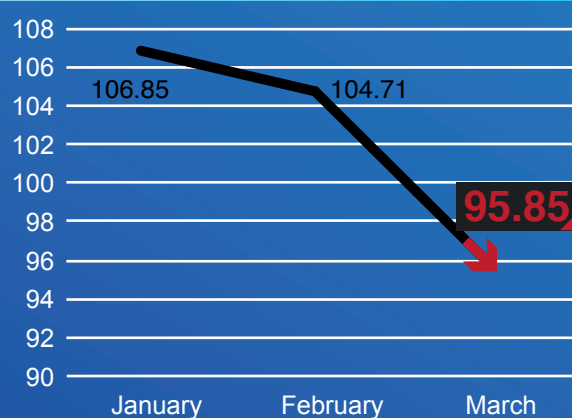
In February Inventories hit their lowest levels in a decade, before surging 15.5 per cent toward the end of April, making zinc prices the biggest faller among base metals.



COAL

\$US/t
Australian Thermal

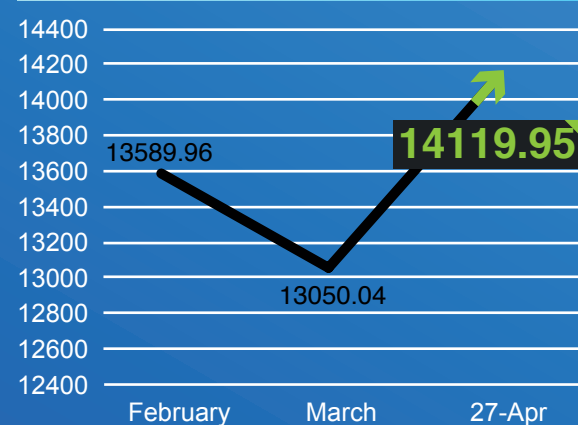
Coal prices fell nearly 10 per cent for March, as analysts forecast imports to China to ease during 2018.



NICKEL

\$US/t
LME Price

Nickel fell from its 19 April peak of \$US16,690 – a three-year high – as fears of sanctions spreading eased.





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Royalty hike 'threat to investment'

ELIZABETH FABRI
NORTHERN TERRITORY

THE resources industry has given the Northern Territory's revised mining royalty plan the thumbs down, claiming a new system will jeopardise future investment and put jobs at risk.

Introduced as part of the 2018 Territory Budget, the new hybrid royalty scheme, effective from 1 July 2019, will force all operating mines to pay increased royalties.

This includes paying the greater of the existing 20 per cent profits-scheme or a minimum value-based royalty on their gross mineral production revenue as soon as they start operating – 1 per cent in a mine's first year, 2 per cent in its second, and 2.5 per cent in the third and following mineral royalty years.

The decision follows news in early April that the Northern Territory's share of GST will fall by \$136 million next financial year, while all other Australian jurisdictions – except QLD – will see an increase in their GST payments.

Until recently, mineral royalties in the Territory have been collected under the profits-scheme (apart from a few operating under legacy-value-based arrangements), which could essentially be avoided until capital costs of the project were fully absorbed.

Through the scheme, some mines which opened for short periods before closing or entering care and maintenance, paid no royalties.

Glencore's McArthur River mine reportedly paid no royalties to the Territory



A drill rig at Mount Peake mine, under development in the Territory.

Government in 2015 and 2016 as a result of capital investments such as its Phase 3 Development project.

The Territory Government's decision to change the royalty system was met with opposition from key industry bodies such as the Association of Mining and Exploration Companies (AMEC) and Minerals Council of Australia.

AMEC chief executive Warren Pearce described the royalty increase as an "absolute disaster for the Northern Territory economy".

"This decision immediately threatens the viability of \$6 billion of new mining projects, that would have delivered 4000 new jobs and hundreds of millions in new royalty revenue for the Government," Mr Pearce said.

"Many of these mining projects will

simply no longer go ahead."

Some of the projects in the planning pipeline included the revival of the Minotaur and Andromeda Metals' Rover JV project, TNG's Mount Peake vanadium-titanium-iron project, and Arafura's Nolans rare earths and phosphate project.

Mr Pearce said the Territory was already struggling to attract investment and was widely regarded as a "high cost jurisdiction" and the new royalty scheme would make it "one of the most expensive places in the world" to develop a mining project.

Minerals Council of Australia said the new royalty would "add uncertainty and complexity" and "further damage the NT's attractiveness as an investment destination".

In 2017, the Northern Territory saw a decline in its score and rank on the

Fraser Institute Annual Survey of Mining Companies, sliding to 33rd place out of 91 jurisdictions, compared to 22nd the year prior, attributed to the region's legal system, infrastructure and availability of labour and skills.

Northern Territory Treasurer Nicole Manison said the royalty changes were all part of a budget repair to address unprecedented fiscal challenges facing the Territory.

"These changes represent a fair and balanced approach to Budget repair, and I thank the Territory business community and other peak bodies for their contribution to the Revenue Discussion Paper," Ms Manison said.

On 1 May, Northern Territory Resources minister Ken Vowles also announced a new Resourcing the Territory initiative to replace its current Creating Opportunities for Resource Exploration (CORE) program.

Resourcing the Territory will invest \$26 million over the next four years; an increase of \$2.2 million on the existing program.

"The initiative is designed to make the Territory a preferred destination for resource investment and support local businesses and communities, such as Tennant Creek, that are dependent on the exploration and mining sector for business and employment opportunities," Mr Vowles said.

"The initiative includes programs to provide immediate stimulus to the sector through industry grants for innovative greenfields exploration, and programs to promote the Territory's resource potential and attract investment from international markets."

MinRes to offload Wodgina stake

CAMERON DRUMMOND
WA

DIVERSIFIED mining services company Mineral Resources is looking to offload 49 per cent of its Wodgina lithium project in the WA Pilbara region to help fund potential downstream processing capabilities.

The company said the move followed a number of unsolicited approaches to MinRes from interested parties, including lithium processors, battery manufacturers and traders expressing interest in securing a direct investment in the project and/or offtake rights.

MinRes said it would "shortly start engaging" with these and other interested parties, and expected to announce a transaction in the second half of this year.

Wodgina is the world's largest hard rock lithium project with an updated mineral resource of 233 million tonnes (mt) and a reserve in its Casserite Pit of 142.4mt.

The project would support a mine life of almost 30 years at a production rate of 5.65 million tonnes per annum (mtpa).

MinRes is currently mining direct shipping ore (DSO) at Wodgina to provide cash flow while it progresses the open pit pre-strip and constructs its concentrate plant, with a design to produce 750,000tpa of 6 per cent spodumene concentrate.

The company is also finalising a pre-feasibility study into a downstream processing plant of globally significant scale at Wodgina to produce between 50,000t and 75,000t of lithium hydroxide or lithium carbonate.

MinRes managing director Chris Ellison



Image: Mineral Resources.

MinRes is looking for partners to develop Wodgina into a large-scale downstream lithium project.

said the minority sales process was in line with MinRes' strategy of investing in early-stage projects, adding significant value and then seeking equity partners to share in the value from a full development plan.

"The decision to embark on a process to sell a minority interest in Wodgina will allow MinRes to focus on its core strategy of being a world-leading mining services provider at the same time as having

like-minded strategic partners invest with us to fully unlock Wodgina's lithium potential," Mr Ellison said.

"However, MinRes will only introduce project partners if acceptable terms can be secured.

"MinRes has the capability to finance and implement its downstream processing strategy at Wodgina on its own."



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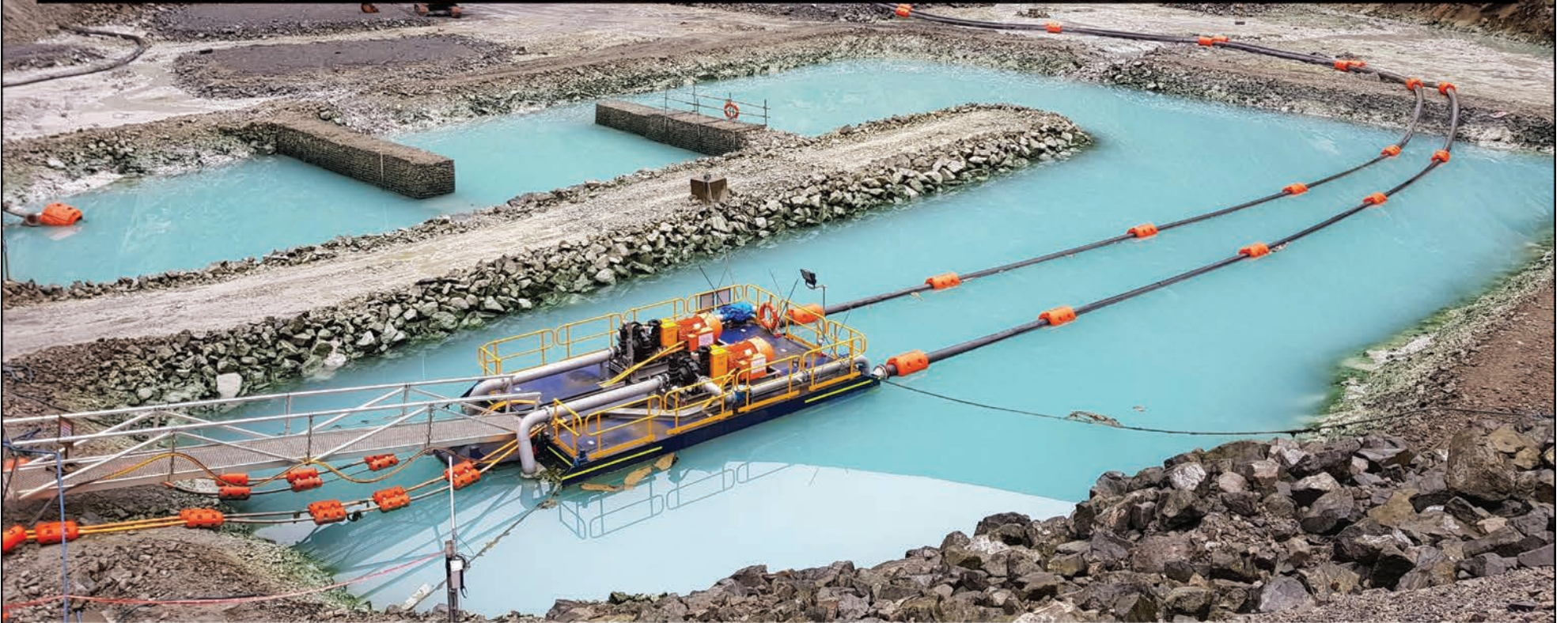
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IN BRIEF

Rio Tinto lifts production, advances automation

IRON ORE/WA

RIO Tinto has increased March quarter iron ore production, benefitting from the ramp up of its Silvergrass project and from fewer weather disruptions compared with the corresponding quarter in 2017.

83.1 million tonnes (mt) of ore was produced during the quarter, up 8 per cent on the same period last year.

Autohaul continued to advance, with about 65 per cent of trains at the end of the quarter in autonomous mode.

Rio stated that the project continued to progress with the regulatory approval process and is on schedule to be completed by the end of 2018.

The Koodaideri feasibility study also remained on track for completion this year.

Port constraints force BHP to cut guidance

IRON ORE/WA

BHP's total iron ore guidance for the nine months ending March 2018 increased 2 per cent to a record 175 million tonnes, or 203t on a 100 per cent basis.

However, guidance for the 2018 financial year was reduced to between 236mt and 238mt (between 272mt and 274mt on a 100 per cent basis) reflecting car dumper reliability issues as the miner pushes to record levels of production.

With system constraints now at port, a program of work is underway to improve car dumper performance.

In February, BHP received approval to increase capacity at its Port Hedland operations to 290mtpa (100 per cent basis) and expected to reach this run rate by the end of FY19.

Higher C1 costs, weaker exports for FMG

IRON ORE/WA

FMG reported iron ore shipments of 38.7mt for the March quarter, compared to 40.5mt for the previous quarter.

C1 costs increased slightly to \$US13.14/wmt, 9 per cent higher than the prior quarter, reflecting "production volumes, maintenance, a higher Australian dollar and fuel prices". These were partially offset by FMG's productivity and efficiency initiatives.

The company commissioned the first of its autonomous haulage fleet (AHS) at its Christmas Creek operations in the quarter.

"Together with the relocatable conveyor at Cloudbreak, the ongoing rollout of AHS at the Chichester Hub is set to contribute to further productivity and efficiency," FMG stated.

Feasibility studies and approval processes continued on the Eliwana mining project, with a final investment decision due by the end of FY18.

Production payoff for Yancoal

REUBEN ADAMS COAL

YANCOAL'S Australian thermal coal sales surged 123 per cent year-on-year in the March quarter, as it enjoys its second quarter of full output from the newly purchased \$US2.9 billion Coal and Allied assets.

Yancoal, now Australia's largest independent coal producer, saw equity share of thermal coal sales from its Australian mines jump to 6.97mt from 3.12mt on the year ago period, but still down by 14 per cent from the December quarter.

Its equity share of metallurgical coal sales volumes of 2.25mt was a 19 per cent increase on the year prior.

In NSW, Moolarben saleable coal production was up 53 per cent on the year-ago period to 4.68mt, with preparations now underway to commence the first scheduled longwall move around the middle of the year.

Mount Thorley Warkworth maintained strong production and throughput rates throughout the reporting period, to achieve saleable coal production of 3.05mt.

Hunter Valley Operations achieved 2.89mt saleable coal for the reporting period, with the operation preparing for the integration of the proposed joint venture with Glencore, expected to be completed in the first half of the year.

Yancoal also reported the Stratford Duralie operation would commence development of the 1.2 million tonnes per annum Stratford extension project in April.



A map of Yancoal's Mount Thorley Warkworth operation.

Approved by the NSW Planning and Assessment Commission in June 2015, the Stratford extension application could extract up to 21.5 million tonnes of ROM coal over 11 years at a rate of up to 2.6mtpa.

At the time, Yancoal stated that coal prices would need to rise before it considered going ahead with the expansion.

The 2015 PAC approval found the project would create around 500 direct and indirect jobs, and generate around \$62

million in mining royalties.

In Queensland, the Yarrabee open cut achieved saleable coal production of 0.36mt, down 47 per cent on the year prior, with the operation impacted by poor weather conditions.

The Middlemount joint venture also overcame wet weather impacts during the reporting period to achieve saleable coal production of 1.0mt, up 13 per cent on the previous year.

Cadia cuts Newcrest guidance

CAMERON DRUMMOND GOLD

NEWCREST has lowered its gold production forecast to reflect the temporary suspension of operations at its Cadia gold project in NSW.

Cadia's production guidance was downgraded to between 560,000 ounces (oz) and 600,000oz for FY18, down from between 680,000oz and 780,000oz.

An embankment slump of Cadia's Northern Tailings Facility occurred in March, halting production at the mine.

Mining was suspended, with processing recommencing at a restricted capacity from 29 March due to limitations of the capacity of the Southern Tailings Facility.

In April, the gold miner announced it had received approval from the NSW Department of Planning and Environment to use the first 200m of the old Cadia Hill open pit as a tailings storage facility.

The permit, as well as the mine's Southern Tailings Facility, will allow Newcrest to return to the mine to full production rates for about 16 months.

Cadia produced 142,970oz in the March quarter, down from 180,223oz in the December quarter.

Its other Australian operation, Telfer, also had its production guidance slightly lowered due to lower mill feed grade and access to the Main Dome pit due to wet weather during the March quarter.

This was buffered by higher than forecast production at its Lihir and Gosowong mines.



SAG and ball mills at Cadia.

Production across its five operating mines for the quarter was 576,000oz, down 6 per cent from the previous period.

Newcrest now expects to produce between 2.25 million ounces (moz) and 2.35moz this financial year, down from between 2.4moz and 2.7moz.

Newcrest managing director Sandeep Biswas said despite the challenges, the March quarter had some positive outcomes.

"It has been a busy quarter, starting with our acquisition of an interest in Lundin Gold, followed by the release of an updated feasibility study for Wafi-Golpu,"

Mr Biswas said.

"Both are Tier 1 asset development opportunities for Newcrest.

"I have been particularly impressed by the efforts of our people at Cadia who have risen to the challenge and are striving to safely restore the operations to normal production.

"At Lihir, we achieved a record annualised throughput rate of 15 million tonnes per annum (mtpa) for the quarter – this significantly exceeded our sustainable target milling rate of 14mtpa and is a great achievement."



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IN BRIEF

Kerman nabs Greenbushes contract

WA

KERMAN Contracting has secured a \$20 million contract from MSP Engineering to carry out structural, mechanical, piping and electrical installation works for the crushing circuit at Talison Lithium's Greenbushes operation in WA as part of the CGP2 project.

Construction works are due to start in May with up to 100 jobs created.

The company was also currently completing a project for MSP at the Tianqi lithium hydroxide processing plant in Kwinana.

Kerman managing director Chris Kerman said the team looked forward to strengthening its relationship with MSP Engineering and being part of another project in the emerging lithium market.

Jemrok wins Granville expansion work

TAS

JEMROK will construct a new tailings storage facility for Aus Tin Mining's Granville tin mine expansion in Tasmania.

Construction has commenced immediately downstream of the existing tailings storage facility, and will take an estimated six weeks to complete.

Jemrok will also provide contract mining services at the Granville East mine, build new waste rock emplacements, and be responsible for mining activities at the expansion – which includes drill and blast, waste and ore mining, open pit dewatering, ore crushing and haulage.

“Once appropriate stockpiles of crushed ore have been established at the Granville processing facility, concentrate production will recommence, and thereafter ramp-up during the second half of the year,” Aus Tin chief executive Peter Williams said.

Aqura provides BHP tech upgrades

WA

VERIS subsidiary Aqura Technologies has entered a three-year services contract with BHP to provide technology and infrastructure upgrades across its projects.

As part of the deal, Aqura will design, supply, install and commission the BHP accommodation villages' in-room communication and entertainment systems, which is expected to be complete by October.

“Veris is pleased to have formalised this long standing relationship with BHP,” Veris managing director Adam Lamond said.

“Importantly it also allows for BHP to engage us for surveying services across the country as well.”

GR scores \$93m Karlawinda work



Image: Capricorn Metals.

Drilling at Karlawinda's Bibra deposit.

CAMERON DRUMMOND WA

CAPRICORN Metals will choose GR Engineering as its preferred contractor for the design and construct of its Karlawinda gold project near Newman in the WA Pilbara region.

The work is valued at \$93 million, a 23 per cent discount on the cost outlined in Capricorn's 2017 feasibility study for the project, and includes the construction

of a new 3 million tonne per annum Carbon-in-Leach (CIL) plant.

Capricorn executive chairman Heath Hellewell said the move was a major milestone to becoming a new Australian gold producer.

“The Capricorn team are looking forward to working closely with GR Engineering as we move towards a final project development decision by mid-year with the aim of first gold production in the September quarter,” Mr Hellewell said.

“By embarking on the tender process and implementing a fixed-price solution, we have also been able to secure a significant reduction in the capital cost of the project.

“This is a very important step which further de-risks the development of Karlawinda and places us in a strong position as we move to secure project financing.”

Karlawinda has a mineral resource of 38.3 million tonnes grading at 1.1 grams per tonne for 1,326,000oz; and if developed, is expected to produce 100,000oz per annum.

Downer wins \$660m Carrapateena contract

ELIZABETH FABRI SOUTH AUSTRALIA

DOWNER EDI has secured a \$660 million underground mining contract at OZ Minerals' Carrapateena mine in South Australia, which is currently under construction.

The six-and-a-half year contract will include all underground mining activity, including site set up and development, production, and ramp up to nameplate capacity.

Downer is now mobilised on site as part of a 10-week transition with PYBAR Mining Services, and is scheduled to commence operations on 1 July.

The contract is in addition to the \$312 million engineering, procurement and construction contract OZ Minerals awarded to Downer and its JV partner Ausenco in December 2017.

Downer chief executive Grant Fenn said the company was pleased to be expanding its relationship with OZ Minerals.

“This new contract is an excellent example of the breadth of services we can offer to customers in the mining and resources sector,” Mr Fenn said.

“We look forward to working closely



Image: OZ Minerals.

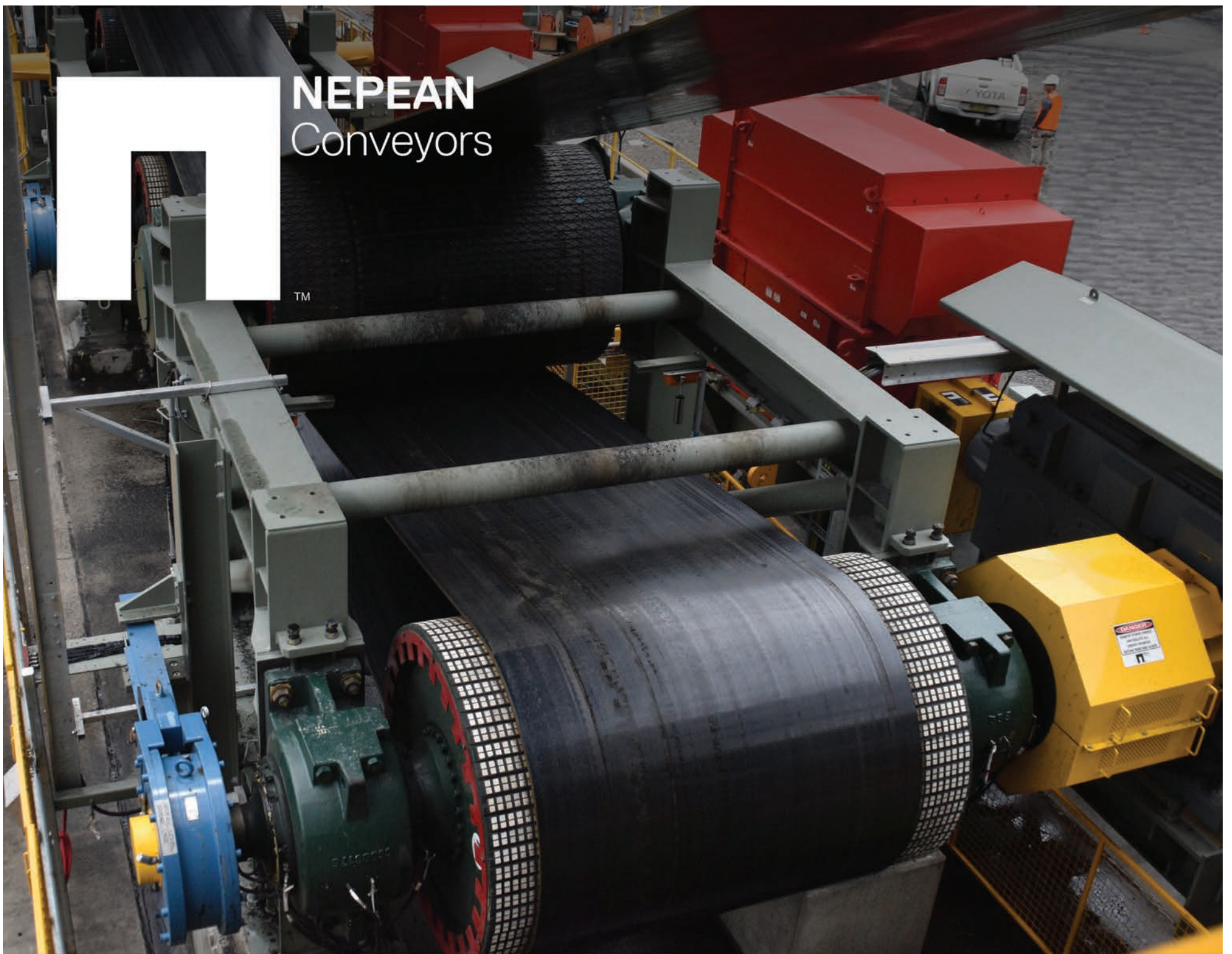
Phase two of construction began at the Carrapateena project mid-April.

with OZ Minerals to ensure this important project is delivered safely and efficiently.”

In a statement, OZ Minerals thanked PYBAR for the development work it had undertaken in the last two years, and “major contribution in reaching development schedule and budget milestones”.

The Carrapateena project was now well advanced, with stage two construction underway, and all mining leases approved.

The project is scheduled to begin commissioning in late 2019, with an annual output of 65,000t of copper and 69,000 ounces (oz) of gold over a 20 year mine life.



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Uearthed Perth 2018 winners Team Steel Ballers.

REUBEN ADAMS NATIONAL

MORE than 100 innovators gathered at CORE Innovation Hub over 13-15 April to tackle four real operational challenges from BHP Nickel West for Uearthed Perth 2018.

Students and professionals from the science, engineering, business, entrepreneurial, software development, and mathematics disciplines participated in the 54-hour open innovation event.

Nickel West head of integrated operations Karl Stokes said working with Uearthed was an opportunity to connect with some of the best minds in the technology and data science space.

"Nickel West is in an exciting period as we are set to become a globally significant battery material supplier very soon," Mr Stokes said.

First prize went to Unleashing SAG2; a

State based simulation and genetic algorithm developed by University of WA Engineering alumni Team Steel Ballers, which increased the processing throughput of an ore crushing circuit.

"We used Machine Learning Regressions to unleash a Digital Twin Model of the SAG crusher, which was then used along with a genetic algorithm to adjust operator tuneable parameters to increase the processing throughput of an ore crushing circuit by 3 per cent," team member Rohan Mehra said.

In addition to winning \$2500 cash, plus tech prizes with the support of SAP and Amazon Web Services, Team Steel Ballers will meet with Nickel West staff on site and pitch its prototype.

Uearthed Perth teams can now apply directly to the Uearthed Accelerator program, which provides seed funding, and access to experienced industry mentors, training and facilities to selected start-ups looking to grow and commercialise their prototypes.

Uearthed director Justin Strharsky said alumni from Uearthed Accelerator 2017 have graduated with industry contracts and continued to build sustainable businesses with global markets.

"We were excited to discover new talent in Perth and look forward to welcoming the 2018 start-ups to the program later this year," Mr Strharsky said.

Since Uearthed Perth 2014, more than 4000 innovators from across Australia, South Africa, the US, Canada, and South America have engaged with Uearthed.

"With the support of our resources technology community, we have run 26 hackathons in 14 cities, six online competitions, two accelerator programs and four demo days; addressed over 100 industry challenges with terabytes of data; witnessed the development of over 400 prototype solutions, and the distribution of over \$250,000 in cash and \$150,000 in credits and prizes," Uearthed director Zane Prickett said.

METS tech exchange launched

ELIZABETH FABRI
CHILE

METS Ignited, in partnership with the Australian Trade and Investment Commission, has launched a new international exchange program that promotes business opportunities for Australian mining companies in Chile.

Officially opened at the EXPOMIN conference in Chile, the METStech Passport program comprises a two-week immersion in Chile during the second half of 2018 to promote collaboration between METS Ignited and Chile innovation powerhouse Expande.

"METS Ignited is committed to harvesting more ways to collaboratively support the METS sector and help them meet common challenges, creating more and better solutions for the mining ecosystem," METS Ignited chief executive Ric Gros said.

"This, to us, is a huge first step that will allow us to continue finding more commercial opportunities and strengthening our sector, with innovation as its growth engine."

Applications for the program were now open to Australian METS companies.

Rio backs automation course

REUBEN ADAMS
WA

AUSTRALIA'S first nationally accredited courses in automation will be delivered for the first time in 2019.

This is the next step of a landmark partnership between South Metropolitan TAFE and Rio Tinto announced in October last year, with the miner contributing \$2 million towards a new curriculum including robotics, data analytics and digital inclusion education.

Rio Tinto Iron Ore chief executive Chris Salisbury said the new wider curriculum being developed would enhance capabilities of those in the mining sector and form part of the learning pathways for those seeking to enter a range of industries applying automation and technology.

The proposed curriculum will be completed by the end of 2018, and delivered through a range of new industry traineeships and post-secondary courses predicted to start by 2019.

"The demand for people educated in the areas of science, technology, engineering and mathematics will continue to grow," Mr Salisbury said.

"I invite my industry partners, who are also investing in automation technology, to join us in this collaborative education initiative as the State economy continues to diversify."

"By partnering directly with industry, we can ensure the new curriculum futureproofs jobs by training Western Australians with the skills we know industry will need."



Copyright © 2018 Rio Tinto. Image: Christian Sprogoe Photography.

WA Education and Training minister Sue Ellery said creating clear education and training pathways was key to maintaining the State's competitive advantage as a leader in automation technology.

"By partnering directly with industry, we can ensure the new curriculum futureproofs

jobs by training Western Australians with the skills we know industry will need," she said.

"This is a great example of industry working collaboratively with Government to ensure our training sector creates a highly skilled workforce."

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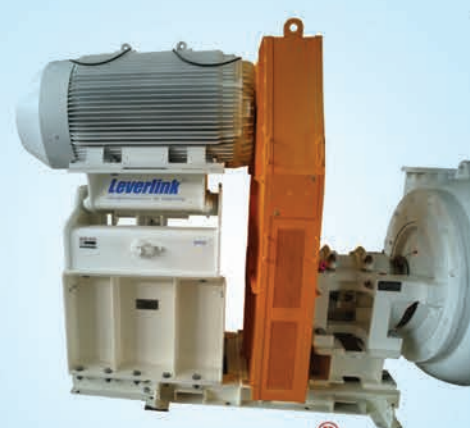
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IN BRIEF

Coronado hires brokers for \$1bn ASX listing

US

US-based coal producer Coronado Coal has hired three brokers to oversee an initial public offering (IPO) of its Australian and US assets, the *Australian Financial Review* has revealed.

Goldman Sachs, UBS and Bell Potter Securities have started meetings to test listed market appetite in the company.

Coronado's four main assets include its recently acquired \$700m Curragh coal mine in QLD, and three Virginia and West Virginia mines in the US.

The IPO is expected to be worth about \$1 billion, and would need to have at least 30 per cent free float to gain entry into Australia's key share market indices.

If successful Coronado will become the largest coal listing on the ASX since the beginning of the decade.

Latitude acquires Mbeta lithium

AFRICA

ASX-listed Latitude has agreed to acquire a 70 per cent interest in the Mbeta lithium-tantalum project from a Zimbabwean national.

The southern Zimbabwe project comprises 13 mineral claims over a combined area of 18km.

"Our technical team has identified considerable exploration potential within the Mbeta project and surrounding mining claims which we believe have the potential to host additional lithium mineralisation," Latitude chairman Tim Moore said.

"It is our intention to undertake data compilation of past work, followed by a field exploration program to accurately assess the extensive strike and in-pit targets located on the property."

Contura to merge with Alpha

US

METALLURGICAL coal producers Contura Energy and Alpha Natural Resources have agreed to merge, to become the largest US producer of metallurgical coal.

The two companies split after bankruptcy in 2015 during a deep downturn in the coal industry.

Under the terms of the agreement, Alpha shareholders will end up with 46.5 per cent ownership in the merged entity.

The combined entity will retain the Contura Energy name and be led by Contura's existing management team, with plans to list on the New York Stock Exchange when the deal is complete.

Cameco returns to profit

CAMERON DRUMMOND
INTERNATIONAL

URANIUM producer Cameco is back in the black after returning to profit in the March quarter.

The world's largest publicly traded uranium miner posted net earnings of \$US55m – compared to a Q1 2017 loss of \$US18m – largely due to the restructuring of its Inkai joint venture and higher realised prices in the uranium sector.

Revenue for the quarter rose \$US46m to \$US439m, which was also reflected by the company's recent cost saving measures.

Cameco chief executive Tim Gitzel said the company would continue to focus on what it could control.

"In the first quarter we generated significant cash flow, which is due to our portfolio optimisation activities, the benefits of our cost saving measures, and by pulling back on our production lever and drawing down inventory," Mr Gitzel said.

"While our average unit cost of sales was higher than a year ago, this was expected due to the care and maintenance costs incurred while production is suspended at the McArthur River and Key Lake operation."

Mr Gitzel said the uranium market as a whole remained quiet.

"There are a lot of moving pieces, and utilities continue to evaluate the implications of what is perhaps best described as unprecedented noise in the political economy," Mr Gitzel said.

"Things like the possible trade action

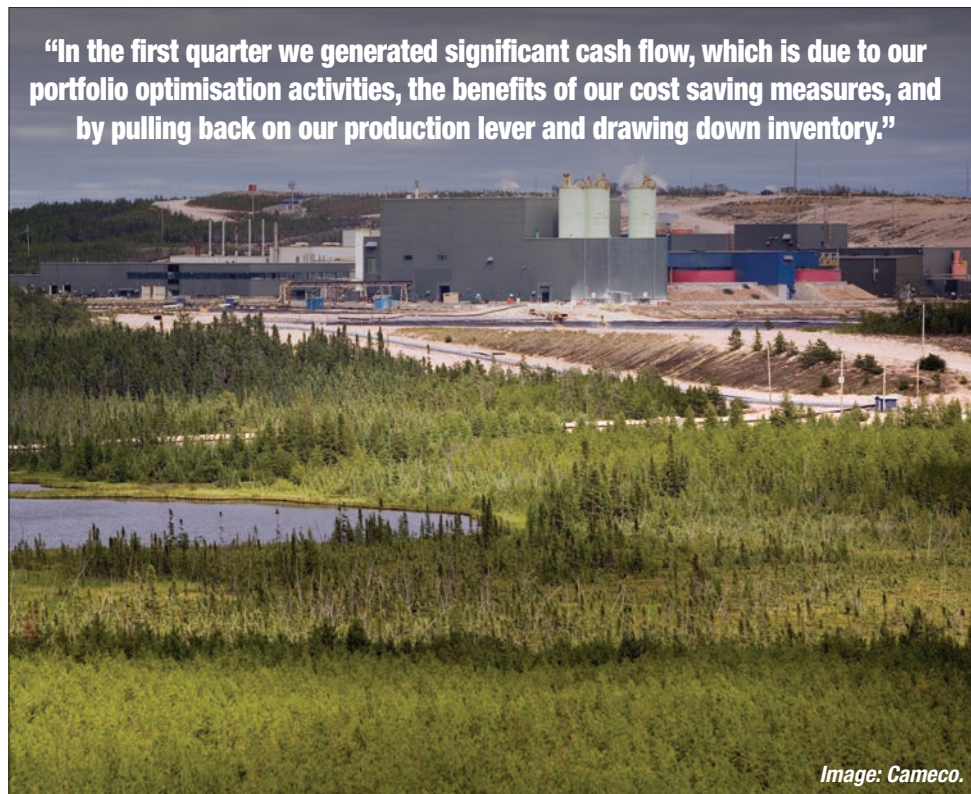


Image: Cameco.

Cameco's Key Lake uranium project was put on care and maintenance together with its McArthur River operation.

under section 232 of the Trade Expansion Act, the suspension of US Department of Energy's excess uranium sales for the remainder of 2018, review of the Russian Suspension Agreement, and a potential Russian ban on all trade with US nuclear power companies.

"On the demand front, news remains mixed with additional Japanese reactor restarts, new construction announcements

in China, India and the Middle East, further potential retirements in the US, and an announced phase out of nuclear power in Belgium.

"As 2018 unfolds we will continue to evaluate the market signals, however we remain resolved in our efforts to focus on what we can control and deliver long-term value to our shareholders."

Sandfire dips toes in the Balkans

ELIZABETH FABRI
BOSNIA & HERZEGOVINA

SANDFIRE Resources has become a cornerstone investor in base and precious metals explorer Adriatic Metals, after pouring \$2 million into its IPO early May.

The investment will give Sandfire a 7.7 per cent stake and strategic partner status in Adriatic, which owns the Vares project in Bosnia and Herzegovina.

Adriatic is now the first ASX-listed company with exposure to the emerging mining scene in the formerly war-torn country.

Its Vares project comprises a historic open-cut zinc/lead/barite and silver mine at Veovaca mined between 1983 and 1987, and the undeveloped Rupice deposit.

Adriatic said it would benefit from Sandfire's significant technical expertise to fast track the feasibility and development of both Veovaca and Rupice.

Sandfire also has the option to nominate one director to the board as a non-executive director if it increases its interest beyond 10 per cent.

The board is chaired by Independence Group non-executive chairman and industry veteran Peter Bilbe, and led by chief executive Geraint Harris, who has more than 20 years' experience in the business.

"We welcome Sandfire as a strategic investor and partner of Adriatic as we transition to a publicly listed company," Mr Harris said.

"Securing a high-quality partner with world leading expertise in the exploration and development of base metals projects

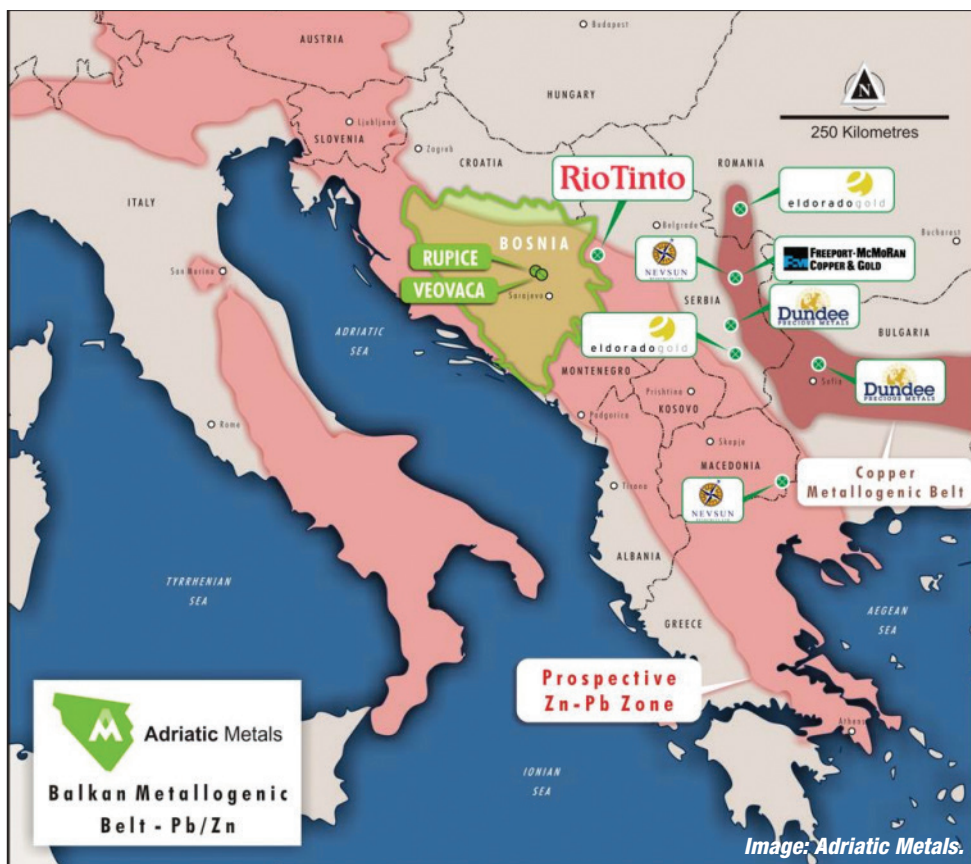


Image: Adriatic Metals.

Location of the Veovaca and Rupice projects.

is a strong endorsement to the quality and potential of Adriatic's portfolio following an exhaustive period of due diligence.

"This also validates the prospectivity of our licence areas to host further discoveries as we commence our 2018 exploration program."

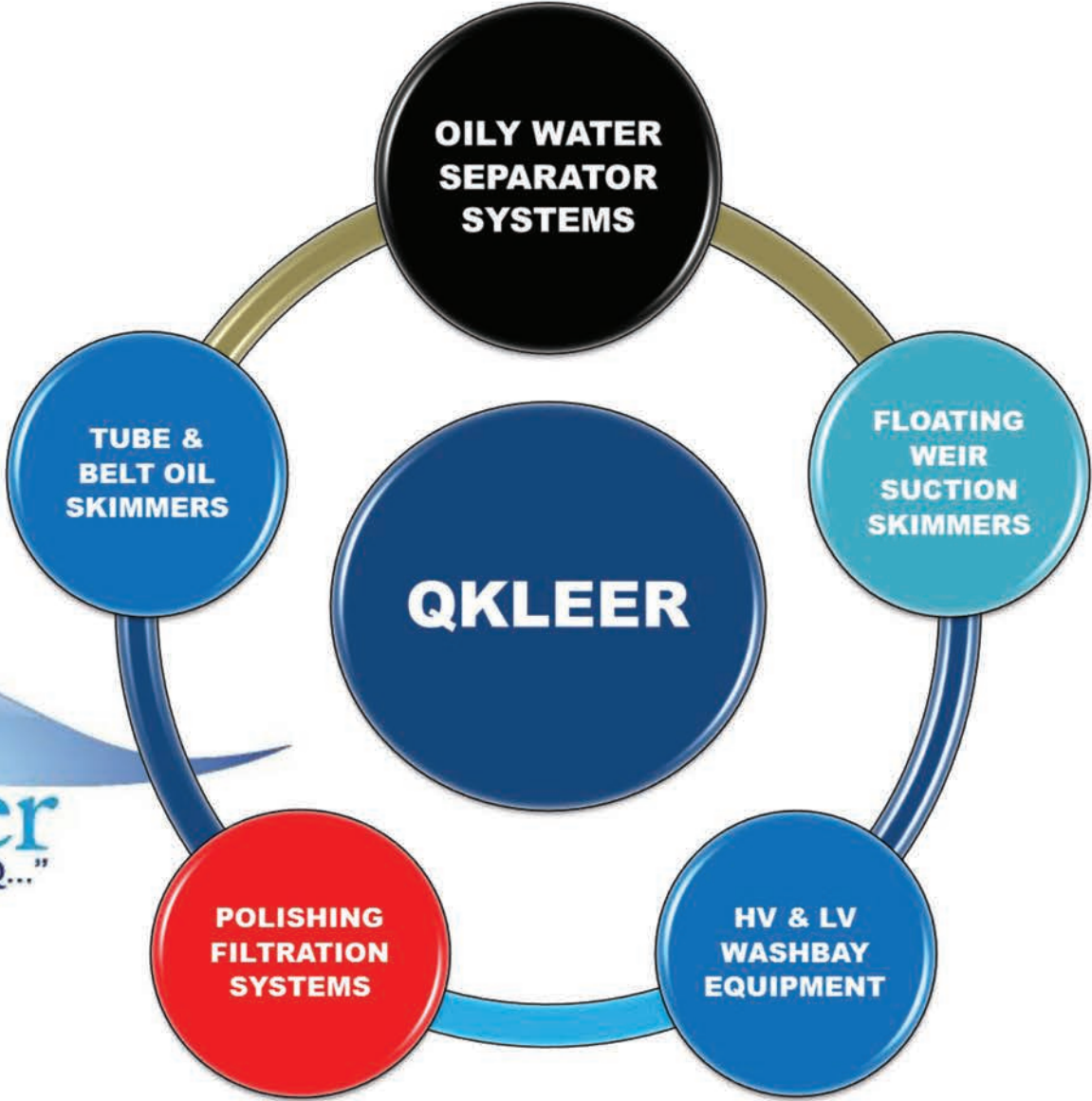

This isn't the first time Sandfire has invested capital in overseas ventures.

The miner, which operates the Degussa

copper mine in WA, has a 78 per cent interest in Tintina Resources, which is currently securing approvals to develop the Black Butte copper project in Montana, US.

Sandfire also holds an 11 per cent stake in gold and lithium explorer Kingston Resources, which merged with Toronto-listed WCB Resources in 2017.

Kingston Resources is currently advancing the Misima gold project in Papua New Guinea.



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New Hope managing director Shane Stephan.

New Acland thrown a lifeline

REUBEN ADAMS
QLD

THE Supreme Court of Queensland has overturned a finding by the Land Court that New Hope Coal's New Acland Stage 3 project should not proceed.

The Supreme Court found grounds for review were established in the areas of groundwater, noise and intergenerational equity "with the consequence that it would be appropriate to order the Land Court's decision be set aside, and the matter referred back to the Land Court for further consideration".

"New Hope Corporation welcomes today's judgment of the Supreme Court of Queensland on its application for a Judicial Review of the 31 May 2017 Land Court of Queensland recommendation in respect of the \$900m New Acland Coal Mine Stage Three Project," the company said in a statement.

"We remain committed to securing approval for this Project and in doing so being able to provide ongoing employment for the circa 700 jobs reliant on the Project."

Evolution snaps up Connors Arc

ELIZABETH FABRI
QLD

EVOLUTION Mining has acquired Orion Minerals' Connors Arc gold exploration project, which is strategically positioned near Evolution's existing Mt Rawdon, Mt Carlton, and Cracow operations in central QLD.

The acquisition includes an upfront cash payment of \$1.5 million, followed by two payments of \$500,000, and a 2 per cent net smelter return royalty over gold produced from the project, with payments capped at \$5 million.

Evolution Mining vice president Discovery Glen Masterman said Connors Arc was a technically compelling project with multiple and extensive alteration zones, which could be indicative of multiple preserved epithermal gold systems.

"The Connors Arc acquisition is in line with our strategy of building a pipeline of quality exploration projects," Mr Masterman said.

"It represents a rare opportunity to secure a large and underexplored land position in a region where we are already operating and have significant expertise."

Evolution executive chairman Jake Klein told *The Australian Mining Review* earlier in the year acquisition opportunities that fit the bill were few and far between in the current market, and it would only acquire a project if it improved the quality of its portfolio or was accretive to shareholders.

"For it to be accretive to shareholders there are really two scenarios where it can



Image: Orion Minerals.

Quartz vein outcrop on Connors Arc's Aurora Flats.

be in our view.

"One is where there is some distress or you have a motivated seller.

"The second scenario is where our geological or discovery team believes there is more upside than what is currently defined in the resources and reserves, and that is still an opportunity but it requires a geological call."

Orion said funds from the sale would enable it to progress bankable feasibility study work on its flagship Prieska zinc-copper project and exploration on the Jacomynspan nickel-copper-cobalt project, both in South Africa.

IN BRIEF

New Century on track for Q3 production

QLD

NEW Century Resources' restart of the Century zinc mine in QLD is on track for production in the September 2018 quarter after executing \$42m in contracts and securing further zinc offtake agreements during the March quarter.

The Front End Engineering Design (FEED) study was also completed, and EPC contracts with Sedgman and Ausenco have commenced for the refurbishment of the processing plant and other infrastructure.

Once operational, Century will again be one of the top 10 largest zinc projects in the world, with a forecast annual production of 507,000 tonnes of zinc concentrate per annum.

Dugald River reaches 80pc nameplate

QLD

MILL throughput from MMG's newly minted Dugald River zinc project near Cloncurry, QLD, reached more than 80 per cent of nameplate capacity during the March quarter.

340,576 tonnes (t) of ore was processed in the first three months of operation, producing 28,522t of zinc as the mine ramps up to its nameplate capacity of 1.7 million tonnes per annum.

MMG said it expected to produce between 120,000t and 140,000t of zinc in zinc concentrate in 2018 and has lowered the expected total project cost by at least \$US45 million.

"The total capital cost from 1 August 2015 to project completion is now expected to be around \$US550m, below the previous guidance range of [between] \$US600m and \$US620m plus interest costs," the company stated.

Auroch reveals "spectacular" findings

SOUTH AUSTRALIA

EXPLORATION junior Auroch Minerals has delivered "spectacular" polymetallic rock chip samples from its recently acquired Arden zinc project in South Australia.

Three prospects within the project area delivered high-grade results, including 6.97 per cent zinc, 12.4 per cent copper and 3.9 per cent lead.

"The recent fieldwork at the Arden project has confirmed the presence of high-grade base-metal mineralisation over multiple target areas and highlights the potential for a substantial zinc, lead, copper and cobalt play supported by excellent infrastructure, which includes Nyrstar's large base-metals smelter and refinery nearby in Port Pirie," Auroch executive chairman Glenn Whiddon said.



CAMERON DRUMMOND

A TIGHTENED refined zinc market has been evidenced by a declining stocks-to-consumption ratio, and 2017 refined production has seen a second straight year of decline, according to Reuters' *2018 Global Base Metals Outlook*.

It estimated that global refined zinc production fell 506,000 tonnes (t) short of consumption last year, again constricting the market after a 2016 shortfall estimated at about 200,000t.

The catalyst was a flurry of zinc projects that had shuttered their doors toward the end of 2015, as prices trickled down to below \$US1750/t.

Base metals giant Glencore made the decision to cut 500,000 tonnes per annum (tpa) of zinc production – a third of its annual output at the time – mostly from mines in Australia.

It shuttered its Lady Loretta mine in QLD, cut back 135,000tpa from its McArthur River mine in the NT and 245,000tpa at its underground George Fisher mine in Mt Isa.

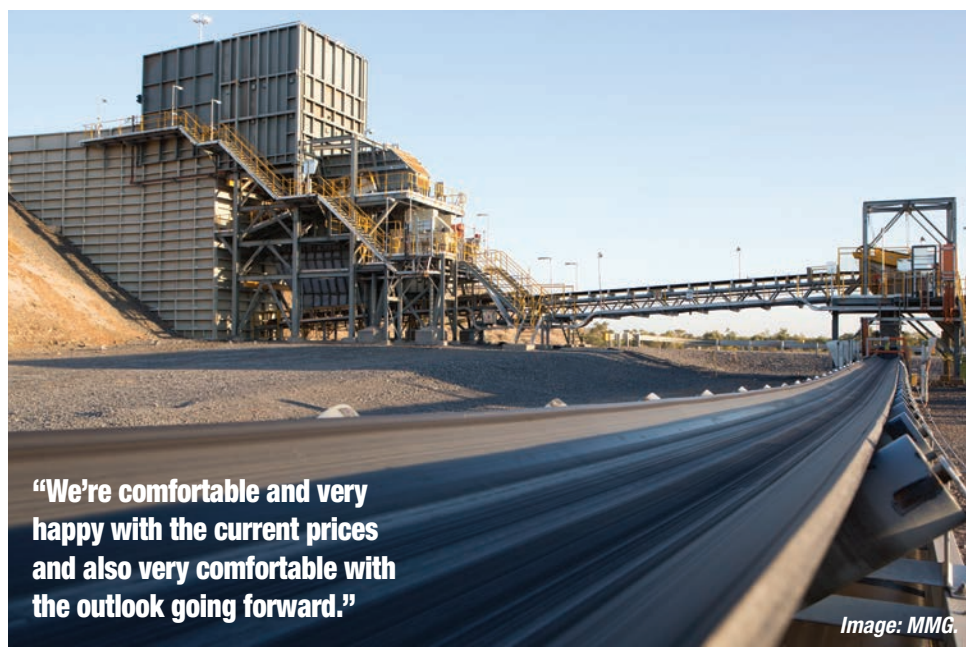
Europe's biggest zinc producer Nyrstar also made cuts, and MMG's Century mine in QLD – now owned by New Century Resources – shut its doors, along with Vedanta's Lisheen mine in Ireland.

With no new mines coming online during the period, prices started to bounce back throughout 2016, shooting back above \$US3000/t by August 2017 – the first time in almost a decade.

Supply

CRU Group Base Metals research manager Ryan Cochrane said that Australian operations such as MMG's Dugald River, and restarts of Glencore's Lady Loretta and McArthur River projects, as well as New Century's Century zinc mine, will add to supply lines by mid-2018.

"Net for net we see probably 75,000t to 100,000t of incremental growth hitting the



market entirely," Mr Cochrane said.

"What has surprised a lot of the market is you haven't seen the Chinese mine supply coming forward fast, certainly last year it was underwhelming, rising only 1 per cent.

"What's clear is that now in 2018, there is a balance where the world outside China is expected to produce a lot more zinc and lead concentrate [and] we think the turning point is going to be somewhere around the middle of this year, [though] if producers don't hit guidance like they may, [prices] could be pushed out slightly further."

Mr Cochrane said he wouldn't be surprised to see zinc prices hit highs of \$US4000 per tonne (t) before dropping off towards the end of the year.

"In terms of pricing we think peak zinc prices will probably be in the middle of this year, at a quarterly average of about \$US3750/t, an annual average of \$US3340/t, and then starting to come off from 2019 onwards."

General Manager of MMG's new 170,000tpa Dugald River zinc mine in QLD, Pierre Malan, said he was confident on his outlook for the zinc market even

though more mines were now, or soon to be, entering production.

"Our outlook for zinc certainly hasn't changed," Mr Malan said.

"In fact I think it's healthy and sustainable to see mines like [Glencore's] Lady Loretta come back into production.

"What it's doing for the industry globally is meeting the demand with some additional supply.

"If these new sources had not come in at current prices, we could have seen a bit of a shock potentially with a [price] spike.

"Spikes in metal prices or any commodity prices are generally never good for industry in the long term because it invites substitution.

"It would often also scare off different consumers and users of that commodity or metal, so we believe this is a good thing for sustainability.

"We're comfortable and very happy with the current prices and also very comfortable with the outlook going forward.

"We can see the market close to being in equilibrium for the foreseeable future."

SPECIAL FEATURES

MINING IN THE BOWEN BASIN

IN THE BLACK

Bowen Basin locals may be quick to talk down another coal boom, but there is no question confidence is returning to the region. An upturn in coal prices is boosting new exploration and development, M&A activity, mine expansions, and prompting companies to reopen shuttered operations.

Vitrinite team members with a core sample taken from their Karin deposit.

Image: Vitrinite.

ELIZABETH FABRI

OPTIMISM has returned to the coal-rich Bowen Basin in central Queensland.

In late 2016 recovering coal prices signalled hope – dampened only slightly when Cyclone Debbie rocked the region in 2017.

And by early this year many Bowen Basin miners were wearing a smile again.

Take Anglo American; the miner made a decision to weather the downturn by hanging onto its QLD coal assets. This year, its Moranbah North mine is on track to deliver record production targets.

BHP Mitsubishi Alliance (BMA) also enjoyed record production at four of its seven Bowen Basin mines in the March quarter, and last year increased its intake of Bowen Basin apprenticeships.

Higher production bodes well for operations in the current market, with metallurgical [coking] coal prices at “relatively high levels”, according to the Office of the Chief Economist’s March *Resources and Energy Quarterly*.

“The Australian Prime Hard Coking Coal (HCC) FOB spot price remains around US\$220 a tonne, as strong Asian demand, bad weather in the United States early in 2018 and ongoing supply problems in eastern Australia all keep the seaborne market tight,” the report stated.

“The prospects for metallurgical coal demand over the medium term are firm.

“Strong growth in emerging Asia will drive strong growth in steel production and hence metallurgical coal demand.”



Bowen Basin Mining Club director Jodie Currie.

Thermal coal prices had too increased in recent months, due to supply concerns and strong demand.

While higher production and prices signalled profits, many miners had also benefited from the timing of strategic acquisitions and divestments.

Stanmore Coal, for example, picked up the mothballed Isaac Plains coking

coal mine for a token \$1 in 2015 from international mining giants Sumitomo and Vale (valued at \$860 million during the boom).

In April 2016, Stanmore reopened the mine just months before coal saw a revival, and in March was granted a seven-year life extension for the project.

A similar scenario for TerraCom; in

early 2017 the company bought the Blair Athol thermal coal mine from Rio Tinto for \$1 (in which Rio agreed to pay \$80 million for required rehabilitation works), and this year secured a one year extension to mine life.

At the time of the sale, Blair Athol had been shuttered since 2012, and Rio made two previous attempts to sell the asset.

Aside from Blair Athol, Rio has generally timed its exit from the QLD and NSW coal industry very well.

In 2017, the miner let go of its Hunter Valley Operations (HVO) in NSW for \$US2.7 billion, and in March sold its interest in Hail Creek and the undeveloped Valeria project in the Bowen Basin to Glencore for \$US1.7 billion.

Days later, Rio entered a binding agreement to sell its 75 per cent interest in the undeveloped Winchester South coal project to Whitehaven for \$US200 million, and – in a separate agreement – sold its 80 per cent interest in Kestrel to a consortium for a huge \$US2.25 billion.

Bowen Basin Mining Club director Jodie Currie said by examining recent activity, green shoots were returning to the region as the coal price held steady.

“Overseas demand is only projected to increase as South-East Asia especially sees more of their population move out of energy poverty and into the middle-class,” Ms Currie said.

“This development requires both metallurgical and thermal coal – the proportion of demand between the two varies, but it’s not slowing down.”

(CONTINUED OVER)

(CONTINUED FROM PAGE 17)



“The Bowen Basin also brings significant opportunities to educate communities and the world around mining technologies and services.”

Image: Ben Dolphin Photography.

A Bowen Basin Mining Club event in February.

Image: Vitrinite.



Exploration work at one of Vitrinite's QLD projects.

Fresh Prospects

With increased appetite for coal, miners were gearing up for the next generation of projects as older mines neared the end of their operating lives.

One of the most significant projects was Adani's Carmichael thermal coal project, a few hundred kilometres to the west in the neighbouring Galilee Basin.

The project made national headlines for the best part of 2017, and while not directly in the Bowen Basin, it has caused a wave of anticipation with the promise of local jobs, and infrastructure.

But after failing to secure sufficient finance by a March deadline, the Carmichael project has reportedly been delayed up to a year.

Despite the setback, the Bowen Basin had a number of key exploration and advanced projects of its own underway, headed up by players such as Vitrinite, Red Metals, New Hope Group, QCoal, and Pembroke Resources.

“Pembroke Resources' Olive Downs project will be a large and long-term metallurgical coal project,” Ms Currie said.

“Fitzroy Australia Resources is another new player to watch, as well as Sojitz and Bengal.”

QCoal's \$1.76 billion Byerwen coal mine was close to completion and will add up to 10 million tonnes of hard coking coal production per annum.

In the exploration space, the QLD Government recently announced two companies — Metroof Minerals and Sojitz Coal — as preferred tenders to unlock 13,100 hectares of coal reserves in the Basin between Middlesbrough and Blackwater.

A mining lease out until 2032 has also been granted to Bengal Coal to develop Dysart East underground coal mine, which will create 200 jobs and produce about 1.9mtpa of prime hard coking coal once operational.

In March, exciting junior Vitrinite was in the spotlight after signing a binding investment agreement to join forces with Japanese ITOCHU Corporation for the “rapid development” of its flagship Karin deposit.

The mine, directly southeast of Clermont, was acquired by Vitrinite in August 2016 and contains multiple, thick

coal seams with exceptional metallurgical coal properties.

Vitrinite executive director Nicholas Williams said the company believed Karin was one of, if not the best, positioned deposits to fill the growing need for high-fluidity coking coal.

“We will push Karin as quickly as possible to first production,” Mr Williams said.

“We are confident the mine life will be well in excess of 20 years with annual throughput targeting the 2-4mtpa range.”

Mr Williams, who spearheaded an exploration campaign during the downturn in the coal market, said “people thought he was crazy” at the time.

“That was a very common reaction among friends in the industry,” he said.

“We are firm counter-cyclists and given the massive drop in coal exploration over the past few years it was obvious that supplies were going to get very tight.

“I think even we underestimated how tight it would get [but] we have been firm believers in this portfolio for nearly a decade.

“The waning interest in the coal sector

generally created a spectacular opportunity.”

Industry Hurdles

Even with today's improved conditions, there were still a handful of challenges facing emerging projects, including growing anti-coal sentiment.

“New projects that are still trying to establish a social license to operate struggle the most, and this is the biggest threat to the industry's pipeline of work in the mid to long-term,” Ms Currie said.

“If these projects don't go ahead due to a threat (whether that threat is perceived or real), Queenslanders are the ones who suffer in the long term due to loss of employment opportunities and royalties that build roads, hospitals and schools.

“The activists are often from outside the State and aren't impacted by this economic loss.”

Ms Currie said the concept that coal is still needed as part of the energy mix for a sustainable energy future was not widely understood by the activist community.

(CONTINUED ON PAGE 22)

Image: Glencore.



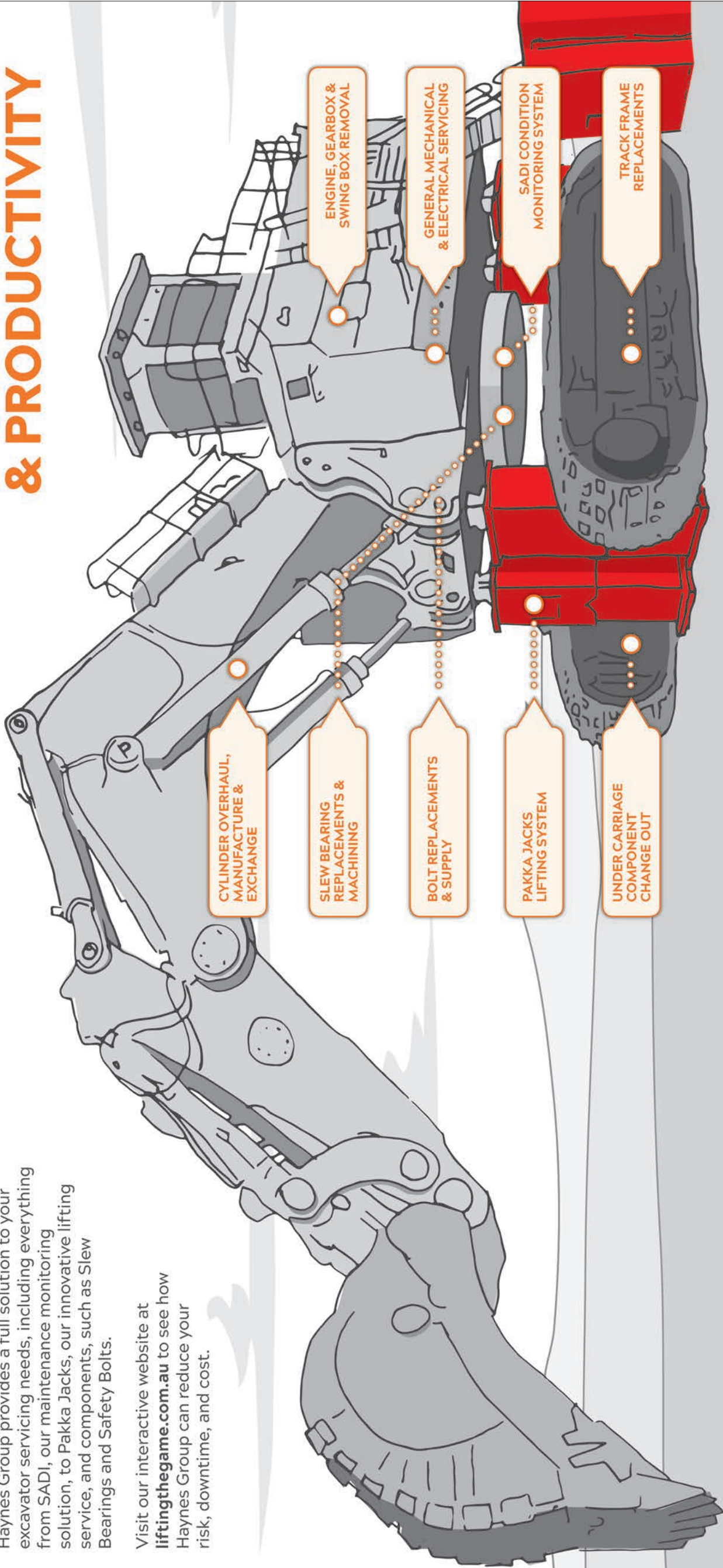
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The new face of Haynes Group

NATIONAL

WITH a fresh new face in the form of a rebrand, Haynes Group – which includes Haynes Mechanical, AustChrome, Labour Hire & Recruitment, and Pakka Jacks – has its sights set squarely on expansion via regionally focused growth.

Having recently opened a Moranbah facility, and with another expansion in the works in Mackay in the Mechanical and Chroming businesses, the future is looking promising for this innovative solutions provider.

Innovation is, in fact, central to the company's new purpose.

'Simplicity through fearless innovation' is the purpose the Haynes Group team aspire to live and breathe.

Innovation is apparent in the company's Pakka Jacks lifting system, offering the safest and fastest lifting solution in the Australian mining market, and SADI, a predictive maintenance tool for excavator slew bearings wear – just two examples of the outside-of-the-box thinking that is a signature of the 'new' Haynes Group.

Of course, there is a continued focus on the core of what made Haynes, Haynes.

Haynes' specialisation in recruitment and labour hire, predictive maintenance management, performance monitoring, rebuilds, commissioning and decommissioning, reclamation and servicing and repairs for heavy and light industrial machinery and equipment,



Haynes Group's purpose is 'Simplicity through fearless innovation'.

means that the company continues to offer a broad spectrum of critical services to the mining sector.

What also hasn't changed is Haynes' focus on clients.

On its website, the company's promise is front and centre – "At Haynes, we are all about offering our clients responsive,

reliable, end-to-end labour hire and equipment management services that enable continuous productivity, every day".

So, if clients are driving around Moranbah, Mackay, Singleton, Brisbane or various other places Haynes operates, they can keep their eyes peeled for a fresh new Haynes Group brand – but know that

they'll be treated to the same excellent service with a large helping of innovative thinking.

More information on Haynes Group's unique interactive excavator service offering site can be found at: www.liftingthegame.com.au, or at its booth at QME between July 24-26.



earthtrade specialists negotiate access and pricing for a biodiversity offset project in Central Queensland.

Environmental offset solutions

WA

AUSTRALIA'S leading offset procurement and solution specialist earthtrade assists clients to meet their specific requirements for biodiversity offsets, by sourcing and securing land that meets their project approval obligations and corporate policies.

This approach enables clients to achieve their development approval conditions, and also often contributes towards their corporate social responsibility goals.

With clients including the likes of BHP, AngloAmerican, QCoal and CSG, and major infrastructure projects under its belt, earthtrade is well positioned to maximise efficiencies for project proponents.

In the Bowen Basin, earthtrade has completed more than 73 biodiversity offset projects.

For a recent project, a range of properties

that were potentially suitable for the client's needs were identified, and the landholders were approached to negotiate commercial terms that are satisfactory to both parties.

After field surveys by ecologists confirmed that the area is suitable to offset the impacts of the project, earthtrade prepared the necessary documentation and assisted the clients to negotiate a suitable outcome with the regulators.

Commercial terms were subsequently completed, and the proponent's project proceeded to production stage, on time and within the allocated budget for the offsets.

Additionally, the offset project contributed to the client's corporate social responsibility policies and goals by engaging with indigenous landholders, created employment opportunities for indigenous people, as well as contributing to the environment.

AUSTRALIA'S LEADING OFFSET PROCUREMENT AND SOLUTION SPECIALISTS.

- Offering a full offset service including assisting with project site due diligence, offset site sourcing and securing, offset site management, monitoring and reporting.
- Advisor for the Business and Biodiversity Offsets Programme (BBOP) based out of Washington DC
- Successfully assisted in over 73 Biodiversity Offset Projects to a value of over \$100M

For a tailored solution to your environmental requirements, get in touch with us.
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Wealth of skill and experience

NATIONAL

GEOTECHNICAL and geological consultancy Blackrock Mining Solutions (BMS) provides consulting and specialist drilling services to the mining industry.

BMS's experience in consulting services ranges from geotechnical design and mine site coverage to the installation and monitoring of geotechnical instrumentation.

BMS also has a long history of providing geological services to many mines, from data collection and interpretation to geological mapping and modelling.

BMS's team includes several degree-qualified geotechnical engineers and geologists who have experience in strata control monitoring, workforce training, auditing and testing of underground support, as well as a wealth of experience in project management services including drift development, quality assurance, longwall move operations and ground consolidation programs.

BMS also provides specialist drilling services to numerous mines throughout Australia, with innovative and proven underground technology.

The company has successfully undertaken projects in geotechnical



Blackrock Mining Solutions has a long history of providing geological services to Australian mines.

investigation coring and sampling, structural definition and ground pre-consolidation.

BMS utilises several Highlander Series 3

Air Tracks, with associated NMLC barrels and a single-shot survey tool, to undertake projects in a swift and economical manner while maintaining accuracy and incurring

minimal disruptions to production.

More information about BMS and its services is available on the company's website.

Providing technical service professionals to the mining industry

Consulting Geotechnical Engineers and Geologists

- Strata Control Design • Underground Mapping
- Geotechnical/Geology Minesite Coverage • Project Management
- Strata Management Plans • Instrumentation & Monitoring

Specialist Drilling Services

- Underground Geotechnical Investigations
- Core and CQ sampling • Fall Recovery
- Ground Pre-consolidation Specialists



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(CONTINUED FROM PAGE 18)



Image: Rio Tinto.

Rio Tinto sold its Kestrel mine to a consortium for \$US2.25 billion in March.

“Activists have a huge digital platform that they use to spread misunderstanding, and we haven’t been united enough as an industry to try and drown out that misinformation on a larger scale,” she said.

QLD Natural Resources, Mines and Energy minister Dr Anthony Lynham said he met frequently with industry and community representatives to gauge sentiment.

“Areas the Government is working with communities and industry on include ongoing social license, financial assurance, safety and health and regulatory approvals processes,” Dr Lynham said.

“Regular round tables involving industry and/or community representatives are held as the Government continually works at engaging with the resources industry and other stakeholders, including the QRC.”

Dr Lynham said as a result of the feedback he received, the newly-introduced fly-in, fly-out (FIFO) laws were implemented to reinforce jobs for local communities.

“Companies will no longer be able to discriminate against local workers,” he said.

Ms Currie agreed local jobs and casualisation of the workforce were issues that had caused damage.

“This was brought in during the downturn as companies adopted a lean approach to labour,” she said.

“A side-effect of this was less apprenticeships offered to young employees and at the other end of the spectrum, redundancy packages offered to senior employees.

“It worked at the time, with productivity record after productivity record broken, but the industry is now facing a skills problem.”

This has been addressed at a legislative level with the Strong and Sustainable Resource Communities Act, but Ms Currie said this now needs to be addressed at an organisational level throughout the industry.

“When permanent positions start being offered again – or even better, casual workers

“New projects that are still trying to establish a social license to operate struggle the most, and this is the biggest threat to the industry’s pipeline of work in the mid to long-term.”



Image: Rio Tinto.

The Hail Creek mine was sold in March to Glencore.

shifted to permanent – this is a solid sign of recovery for the region,” she said.

Vitrinite’s Mr Williams said there was also an emerging gap in the market as existing mines neared the end of their lives, with more exploration in coal needing to happen.

“[Exploration] quality has fallen precipitously,” Mr Williams said.

“Problem is, everyone is busy chasing the new shiny investment hype which is cobalt, lithium etc.

“People forget that these are well established markets globally and are not going away in the near future.”

Mr Williams said there has been a perception that “all coal is bad” which has starved the sector of funding from traditional sources used to help greenfields exploration.

“There still seems to be some belief in capital markets that the steel sector will just magically keep going on without new supplies of coking coal,” he said.

“In reality, it is just going to get worse as coal qualities deteriorate further and China continues its pursuit of more environmentally friendly (high-quality) sources of coking coal.”

Building a METS Hub

Coal will continue to dominate the Bowen Basin economy over the coming years, Dr Lynham said.

“With a vast quantity of proven and probable resource reserves in the Bowen Basin the future is headed for a vibrant and prosperous coal industry that continues to lead the world in mining and rehabilitation

innovation and better safety and health technologies,” he said.

“The Bowen Basin also brings significant opportunities to educate communities and the world around mining technologies and services.”

In October last year, the QLD Government supported the launch of a new pilot METS Ignited Bowen Basin Cluster Program, which aims to bring thousands of mining equipment and services positions to the region within the next decade.

“The recently launched pilot METS Ignited Bowen Basin Cluster Program has received a range of applications for some new and innovate mining solutions,” Dr Lynham said.

“Successful applicants will be announced later this year.”

Dr Lynham said he was also working on some other technology initiatives, including the Coalition of Energy Efficient Comminution CEEC – which is seeking to make rock crushing and mining processes more efficient and cost-effective.

“The Palaszczuk Government also is developing an online database of all available testing facilities available to METS companies,” he said.

“This is to provide industry with a readily accessible resource for mining companies to easily access specific and up to date information on testing facilities.”

Ms Currie said she would “love to see the Bowen Basin become more of a hub for METS”.

“I think our regional Queensland location has set us back in that regard – other resource-rich regions are far closer to major population centres,” Ms Currie said.

“Technology will disrupt the way that things have always been done, but I think the productivity and efficiency focus is here to stay.

“Companies that can keep innovating and using technology to create their own opportunities will be the ones that are still around in the next decade.”

Moorvale moves the earth for clients

QLD

MOORVALE Earthmoving is a family owned business with a fleet of machines operating in the Bowen Basin mining area.

The company has provided earthmoving services, primarily to the mining industry, throughout the region for the past 10 years.

In recent years, a wide range of projects have been undertaken including construction of sediment and water storage dams, mine haul roads, creek diversions, and general site civil and maintenance earthworks.

Moorvale Earthmoving has completed extensive rehabilitation work for a range of major clients, which has led to the development of extensive expertise in the rehabilitation field with specialist teams available to its clients for this specific work.

“We offer tailored earthmoving solutions designed to meet our client’s specific needs, working closely with the client to ensure that projects are delivered on time, on budget and, most importantly, safely,” Moorvale Earthmoving business director Joy Deguara said.

“An important part of our business is also the opportunity to provide our clients with quarry products from our Moorvale Quarrying granite quarry, situated on Daunia Station in close proximity to our site offices at Moorvale Station.”

A safe working environment and a quality product for its clients were primary aims of the company, Ms Deguara said.




Moorvale Earthmoving specialises in the provision of earthmoving services in the Bowen Basin.

“This is supported by a team of health and safety specialists who work on site, on an ongoing basis to ensure that both

our employees and our clients have the opportunity to work in a safe environment at all times.”






More information can be found at: www.moorvale.com.au or by contacting Aaron Deguara on 0427 437 137.



Moorvale Earthmoving offers businesses requiring earthworks the potential to access equipment in a timely and cost effective manner.

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Hassle-free mining services

QLD/NSW

FARRELLY Construction Services is a proud project management and construction contractor across the east coast of Australia.

Delivering complex technical projects on time and within budget, the company specialises in civil and concrete, structural mechanical piping installation, offering a total service.

This includes from pre-feasibility and budgeting through to project delivery, with the core business being mining construction, fabrication, engineering, detailed design, labour hire and crane hire.

"Next year we will celebrate 10 years in business," Farrelly Construction Services general manager Troy Cudbertson said.

"It's a big feat, and while we have achieved so much in this time, our vision and commitment to our clients remains the same; to deliver quality contracts on time and within budget, which strictly adhere to current safe work practices."

Mr Cudbertson said the company operates a modern fleet of equipment, ranging from 20 tonne to 250t cranes, mine compliant site vehicles, earthmoving equipment which comprises of 5t to 30t excavators, skid steer loaders, tipping trucks, bobcats, and vibratory machines, and many more, including a fleet of mine compliant



More information can be found at: www.fpcs.com.au.

Lincoln Air Vantage 575 diesel welding machines.

"We believe that owning and maintaining our own equipment gives

us the ability to work with new and near new equipment maintained to the highest standards at all times, which in turn means our clients, get the high

productivity and safety compliance that they expect from working with Farrelly Construction Services," Mr Cudbertson said.



Farrelly Construction Services

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STRUCTURAL STEEL AND PLATE WORK FABRICATION,
STRUCTURAL AND MECHANICAL INSTALLATION WORKS,
FIRE, WATER AND COMPRESSED AIR PIPING SUPPLY AND INSTALLATION PROJECTS, DETAIL PROJECT DESIGN, PROJECT MANAGEMENT AND SUPERVISION, LABOUR HIRE, CRANE AND MOBILE PLANT EQUIPMENT HIRE.

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All images: Heron Resources.

BLUE SKY

Heron Resources' Woodlawn zinc-copper development is on track to begin commissioning in late 2018. Once in production, the high-grade, long-life Woodlawn will be well placed to participate in a zinc market facing a significant supply shortfall. Reuben Adams spoke with Heron Resources chief executive Wayne Taylor.

REUBEN ADAMS



Heron Resources chief executive Wayne Taylor.

It must be nice to see Woodlawn in development.

It is – it has been a while coming. We got to a place where we had all the studies done and, as a lot of companies do, found the major hurdle was getting the money to make it happen on the ground. We got that done in September last year, so that was a significant step forward for us.

I joined TriAusMin [former Woodlawn owner, which merged with Heron in 2014] in 2011 after working at Glencore. There were some key attributes to Woodlawn that really made it stand out.

Being a former operation there's a lot of infrastructure established on site. It was, and still is, a high-grade ore body. I have heard a couple of industry commentators question that 'grade is king', but show me anyone who doesn't prefer a high-grade ore body.

There's also a lot of exploration upside. We have a plan and reserves for nearly 10 years of operational life, which we only completed to get the project financed. Beyond that we can see plenty of opportunity, not just in the mine but regionally. So we really like the Woodlawn story.

You've noted many times that securing finance was a long and arduous process. Was it a relief getting the \$240m funding package over the line in July 2017? What other funding arrangements were looked at?

Timing is everything when getting this sort

of thing done. It wasn't an easy process and we are very lucky to have three cornerstone private equity groups [Orion Mine Finance for \$129m, Greenstone Resources for \$42m, and Castlake for \$33m] who put up the lion's share of the financing to make it happen.

We had local funds who were giving us very strong indications that they wanted to be involved in the financing, but when it came down to it they were facing a poor return on the resources component of their funds. I'd say the initial financing process was seven months of looking for a debt piece which didn't materialise from the source we thought it was going to come from. That put us back a little bit.

We, certainly in hindsight, could have accelerated the process but we were chasing a very typical project financing structure. What we have ended up with is a little bit different.

The financing structure is split between debt and equity – does that provide opportunity to pay down that debt quickly?

We would like to. If commodity prices are maintained – and we actually expect them to strengthen further – we should have a pretty rapid pay down on the debt. We also have the ability to refinance it as well.

Once the funding package was locked in, it was like flicking a switch on the construction phase. Any highlights in the build so far?

It's a highlight every time we start a new activity on site; the earthworks was one, and then we started pouring concrete at the start of February. There's a bit over 1000 cubic meters of concrete in the ground on foundations now.

We've started to receive some of the equipment on site now, so the next major step for us now is the structural steelwork and getting that underway.

You've hired former Xstrata Zinc Australia chief operating officer Brian Hearne as mine manager. With a 16 year tenure at Woodlawn from 1978 (40 years ago!) what sort of insider knowledge does he bring to the table?

He pretty much joined Woodlawn straight out of school, starting on the shop floor and in the process plant.

Every so often he'll come up and remind you about some of the frustrations that they had with the plant onsite at the time, so

wherever possible you try to work through those issues and engineer them out.

Veolia is using the existing open pit at Woodlawn for its landfill gas bioreactor. Are there any logistical issues associated with sharing a site?

There are some operational headaches that you have to deal with – none unsurmountable – because you have two companies sharing a site.

It would be great if we had the run of the complete site, but there are also significant benefits in Veolia being there.

They've maintained all the infrastructure there, which has given us a real head start. There's a rehabilitation benefit as well. They are producing a compost which is licensed for mine rehabilitation, so they will be delivering that to us to use for our mine site rehab requirements.

What does the early mining plan look like? Will you be favouring the tailings resource over the underground early on?

It will happen together but we will commission on tailings, principally because it is a more homogenous, low-grade feed source. When you ramp up, trying to improve recoveries, the last thing you want to do is throw away metal from your highest grade sources.

The other benefit of the tailings resource is that the underground can ramp up at a more natural rate, rather than being driven by the need to fill a hungry mill.

We can let the mine progressively ramp up and as we reach more working areas, as the decline gets deeper, we will be able to progressively increase that underground production rate.

If we were to treat just tailings the plant is configured to 1.5mtpa. For hard rock it's 1mtpa. If we do a combination of the two, depending on the ratio, you'll end up with something between 1mtpa and 1.5mtpa. If, for whatever reason, we were to find ourselves in a difficult underground working position we have the ability to fall back to the tailings.

How crucial are in-mine discoveries like Lisa to enhancing project economics and mine life? Do these discoveries allow the company flexibility to change mining and processing strategies?

What we are finding now drilling the G2 and Lisa Lenses will certainly improve the picture.

Our starter case is reserves only and there's no reserves on the G2 lens. We have also started doing a little bit of drilling on Lisa, a new lens discovery which also isn't on the reserves. There's a rig onsite at the moment and the intention there is to prove up some more shallow material we can add to the early stage of the mine plan.

It is clearly where all the blue sky sits. You don't get too excited about the blue sky in tailings; there is little bit there with about 1.1mt of inferred resources which we do expect it to come into the plan.

The blue sky really sits with the discoveries and further extensions we find in the mine; and there's so many different areas that we could be targeting.

We currently have a modest budget to keep working on some of the high ranking prospects – and we have some pretty good ground out there with some known deposits.

Any other regional exploration highlights you'd like to talk about?

Peelwood (105km north of Woodlawn) is a recent pickup that has JORC 2004 resources and reserves and – supposedly – a feasibility study done on it.

It's relatively advanced in the sense that we know that there's a deposit. We still need to get comfortable with the data and the work that has already been done, because we haven't had it long.

It allows us, one or two years out, to be quite certain that we have an additional project in the pipeline that is going to contribute to production at Woodlawn.

Where would you like Woodlawn to be this time next year? Do you have a long term vision for the company?

One of the things to focus on is expanding the in-mine footprint – that goes without saying. Also developing a pipeline of regional projects that will help enhance the operation, knowing that if you were to discover a VMS type ore body within about 150km of Woodlawn it should probably go through Woodlawn.

Beyond that, once we have got ourselves producing and have established our credentials we will be looking further afield on the merger and acquisition side of things. The intention is not to be a single asset company, with a focus first-and-foremost on base metal exposure.

There's a variety of [projects] that we keep a watching brief on. You look in your home patch first, but there are opportunities that exist outside NSW and Australia.

All images: Pilbara Minerals.

BUILDING MOMENTUM

After a successful 2017, mining and civil construction contractor MACA is riding high with a strong balance sheet and order book in excess of \$1 billion.

ELIZABETH FABRI

MINING continues to be the engine room of MACA's diversified contracting business, accounting for 85 per cent of its group revenue in the 2017 financial year.

The last 12 months have been bullish for the company with the successful tendering of new mining projects, across commodities such as gold, lithium, iron ore and heavy rare earths.

One of the most notable contracts was a \$100 million work program to provide open cut mining services at Ramelius Resources' Mt Magnet gold project from July 2017 until February 2020.

In September, the good news continued when MACA secured a two-year \$85 million open pit mining contract for Pilbara Minerals' Pilgangoora lithium-tantalum project, which is expected to hit the start button on production in the coming months.

As part of the deal, MACA will provide drill and blast, and load and haul services at a mining rate of 8mtpa for the production of 2mtpa of ore, with an option of three, one year extensions.

The contract is also employing about 70 personnel, and includes the mobilisation of an extensive mining fleet of two hydraulic excavators, seven large capacity haulage trucks, drill rigs and other items of support equipment.

A \$54 million contract for earthworks at the Gruyere project in the Goldfields was also underway, as well as major work at Blackham Resources' Matilda mine, also in WA.

During the period, works continued at Rosemont, Garden Well and Moolart Well for Regis Resources, and works were completed at Metals X Central Murchison operations, Northern Minerals' Browns Range project, and Atlas Iron's Abydos project.

To maintain momentum, in September last year the MACA board raised \$60 million through the placement of 33.4 million shares at an issue price of \$1.80 per share



MACA is currently contracted at Pilbara Mineral's Pilgangoora lithium-tantalum project.

to maintain MACA's financial capacity to drive further growth opportunities.

"The company expects strong growth given the exceptional pipeline of work available which would require additional mining fleet and an increase in its working capital needs," MACA said.

Overcoming Challenges

Despite the lucrative contracts under its belt, the first half of FY18 saw a 28 per cent drop in Earnings before Interest, Tax, Depreciation and Amortisation (EBITDA).

"The first half result has been significantly impacted by operational losses within the MACA Interquip segment and Victorian Civil contracts as disclosed via the ASX market update on 13 November 2017," MACA said in its FY18 half year report.

In the November address MACA chairman Andrew Edwards said the company increased its revenue base from \$431 million in the FY16 to \$498 million in FY17, with expected revenue of \$560 million in the 2018 financial year.

However, the Victorian Civil and Infrastructure divisions and MACA

Interquip division (60 per cent owned by MACA) had "underperformed" in the first half of FY18 due to loss-making contracts.

The company purchased a 75 per cent stake in Victorian road asset management and maintenance service provider Services South East (SSE) in April 2016, and acquired the Interquip structural, mechanical and piping business back in December 2016 for \$8 million.

The underperforming contract through Interquip has since been completed, and MACA said it saw many new near term opportunities to grow the business through its strong balance sheet (net cash of \$89.4 million as of 31 December 2017).

"Actions have and are being taken to improve our contract management processes in these divisions as well as the management and integration of business acquisitions," Mr Edwards said.

"The Board remains supportive of the strategy to expand and diversify the Group's revenue base outside of the mining division; nevertheless, we also fully acknowledge the need to ensure positive financial performance in these other divisions.

"We remain confident that these relatively new divisions will deliver strong

results for our shareholders over the years to come."

The November announcement saw the company's share price drop more than 20 per cent from \$2.21 on 10 November to \$1.72 on 13 November.

MACA's share price has since been on the decline, sitting at around \$1.29 at the time of writing.

Yet the company appears on track to achieve its revenue guidance for FY18.

In the second half to date, MACA has landed an \$11 million mining services contract at Minjar Gold's Gossan Hill project, and a subsequent crushing services contract for Atlas Iron's Mt Dove using DSO from Pilbara Minerals.

In January MACA also entered into an agreement to support Blackham Resources recapitalisation strategy, loaning the miner \$14.3 million on commercial terms.

Outlook

Over the next 12 months, the company said it saw great potential for more opportunities in the mining sector as the new generation of projects come online.

"There is a large pipeline of prospective opportunities," Mr Edwards said in the November address.

"MACA is currently in contention on a number of significant mining and crushing projects, which if won, will materially contribute to earnings in FY19 and beyond."

And while the civil sectors within WA and Victoria remained challenging, MACA said an increase in work available on the east coast was starting to result in margin uplift.

In WA, the Gruyere bulk earthworks project had performed well and was on target to finish ahead of schedule in the second quarter of 2018, and the Victorian Civil business has also been awarded several small and medium size civil projects which will carry on into the next financial year.

Trusted mining fleet solutions

NATIONAL

ESTABLISHED during 1949, Hitachi Construction Machinery Australia (HCA) is a subsidiary of Hitachi Construction Machinery (HCM) in Japan.

Over the years, it has evolved into a leading global manufacturer of mining equipment, including both AC Drive mining trucks and hydraulic mining excavators.

HCA is also an exclusive distributor of Wenco International Mining Systems throughout Australia, New Zealand, New Caledonia and Papua New Guinea.

Wenco is one of the worlds’ oldest and largest mining fleet management systems and has provided fleet management solutions to the open cut mining industry for more than 25 years.

This is an important and strategic step in HCA’s market leadership by strengthening their commitment to the mining sector.

Along with a strong sales and support team based out of HCA’s mining head office in Brisbane, HCA sales director Gilberto Pauleta said “this will underpin our future growth in the mining technology sector throughout Asia-Pacific region.”

“We now have the product range, sales and support network to increase the HCA and Wenco market penetration significantly,” Mr Pauleta said.

As a subsidiary company of HCM, Wenco also capitalises on HCM’s capabilities and resources.



More information on Hitachi’s mining range, can be found at: www.hcma.com.au.

HCM owns more than 60 subsidiary companies and distributorships worldwide, and has an ongoing autonomous mining truck project, a strong R&D program and global brand recognition for quality products and services.

Furthermore, HCA pride themselves on its executive mining fleet combinations available to customers from the EH3500AC-3 / EX3600-6 or the EH4000AC-3 / EX5600-6, to the flagship Hitachi EH5000AC-3 mining truck and EX8000-6 backhoe excavator combination.

Setting the highest standard of mining excellence, Hitachi’s ultra-class hydraulic excavators and electric drive mining trucks are engineered to maximise the productivity of mining operations.

The latest low emission engines, with both Cummins and MTU options, are matched with the more efficient hydraulic system performance.

“Our flagship duo delivers mine sites with the best load and haul fleet performance for the lowest cost on the market, the most powerful combination

yet,” HCA general manager of mining Eric Green said.

HCA delivers comprehensive sales, service and parts support to Australian customers across the mining, construction, quarry, forestry, material handling and recycling industries through a wholly-owned national branch network.

It is the exclusive distributor of Hitachi, Bell and John Deere products in Australia — three of the most renowned and innovative Original Equipment Manufacturer (OEM) brands in the world.

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Reliable solutions

Built tough and safe for mining

WA

ABLE Bus and Coach design and build robust, safe, and practical 2WD and 4WD coaches to suit harsh and hazardous conditions.

For businesses looking to mobilise a mining workforce, ABLE is one of Australia's most experienced manufacturers of purpose-built coaches.

It offers a variety of mine site coaches with a seating capacity of between 10 and 50 people.

All ABLE coaches are custom-built and meet or exceed Australian Standards and Australian Design Rules.

Since 1998, ABLE's business philosophy has always been to build tough, yet safe, reliable and comfortable vehicles that meet the highest standards set by a customer base that includes BHP, Rio Tinto and Byrnes, giving it a repeat business rate of more than 90 per cent.

ABLE is also proud supplier to MACA, servicing the company's mine coach needs since 2011.

Features such as exceptional ground clearance, ease of maintenance and access, practical comfort and safety are all designed in from the outset.

These include a built-in Roll Over Protection Structure (ROPS) to Australian Standards 1636.1 and 2294.2 and Australian Design Rule rollover compliance, full size coach seats with



ABLE is a premier supplier of mine-spec buses and coaches to mining companies, and contractors such as MACA.

seat belts on all seats, driver's air bag, speed limiter and lockable battery isolator switch.

All stages of production undergo

rigorous inspection to meet high standards of quality control and all engineering tests are validated.

To date, ABLE has developed and built

over 400 buses and coaches for clients Australia-wide.

More information can be found at: www.ablebusandcoach.com.au.

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PURPOSE BUILT COACHES

All images: Newmont.

RACE TO THE TOP

All signs indicate Newmont Mining could dethrone Barrick Gold as the world's largest gold producer this year. Newmont's Australian division has been a key player in the race, kicking goals across its three operations – KCGM, Tanami, and Boddington.

ELIZABETH FABRI

BACK in 2007, Newmont's vice-chairman at the time, Pierre Lassonde, told reporters at the Kalgoorlie *Diggers and Dealers* conference that he hoped Newmont would overtake Barrick Gold (its joint venture partner in KCGM) in the gold space.

In 2016, Newmont president and chief executive Gary Goldberg told *Bloomberg* this wasn't an area of focus; instead the value that is added to projects and growing margins.

"We're not about getting bigger, it's about growing margins," Mr Goldberg said.

However, by looking at the two gold major's production outlooks for 2018 Barrick may not stay in the lead for much longer.

Now, the gap between the two miners' production guidance was particularly narrow, with Newmont and Barrick producing 5.30 million ounces and 5.32moz of gold in 2017 respectively.

This year, Newmont set a guidance of between 4.9 and 5.4moz, while Barrick expects full-year gold production of between 4.5 and 5.0moz.

In the first quarter of the 2018 calendar year, Newmont produced 1.21moz of gold, with no change to the company's full year guidance, while Barrick Gold production sat at 1.05moz.

"Newmont delivered solid operating and financial results in the first quarter," Mr Goldberg said.

The performance, however, was overshadowed by a tragic accident in April



The Boddington operation is 130km from Perth, WA.

at its Ahafo Mill Expansion in Ghana, which resulted in six fatalities.

"Production has recommenced at Ahafo and Akyem but civil construction at the Ahafo Mill Expansion project will remain suspended until we and the authorities are satisfied that work can resume safely," Mr Goldberg said.

"In the meantime, our priorities are to

support the people who lost loved ones in the accident and cooperate with authorities to investigate its causes."

Boddington in Focus

In Australia, the Newmont team has been busy launching its first centralised process control hub, which allows experts at each

site to collaborate in resolving problems and raising performance.

Newmont said this year it aimed to produce between 1.5 and 1.7moz from its Australian division, and between 1.4 and 1.6moz in 2019 and 2020; this equates to roughly 17 per cent of the country's total production.

(CONTINUED OVER)

(CONTINUED FROM PAGE 31)

The slight slump in the coming years can be attributed to a stripping campaign at Boddington to access higher grade ore, which will be completed in 2020, just in time to offset lower grade stockpiles at KCGM.

Boddington, within the Saddleback greenstone belt of WA 130km southeast of Perth, is currently Australia's largest gold mine producing 787,000oz in 2017 (KCGM is soon tipped to overtake the mine).

It operates two pits utilising three electric rope shovels as its prime ex-pit material movers, with a fleet of 40 production haul trucks, and a fleet of ancillary equipment.

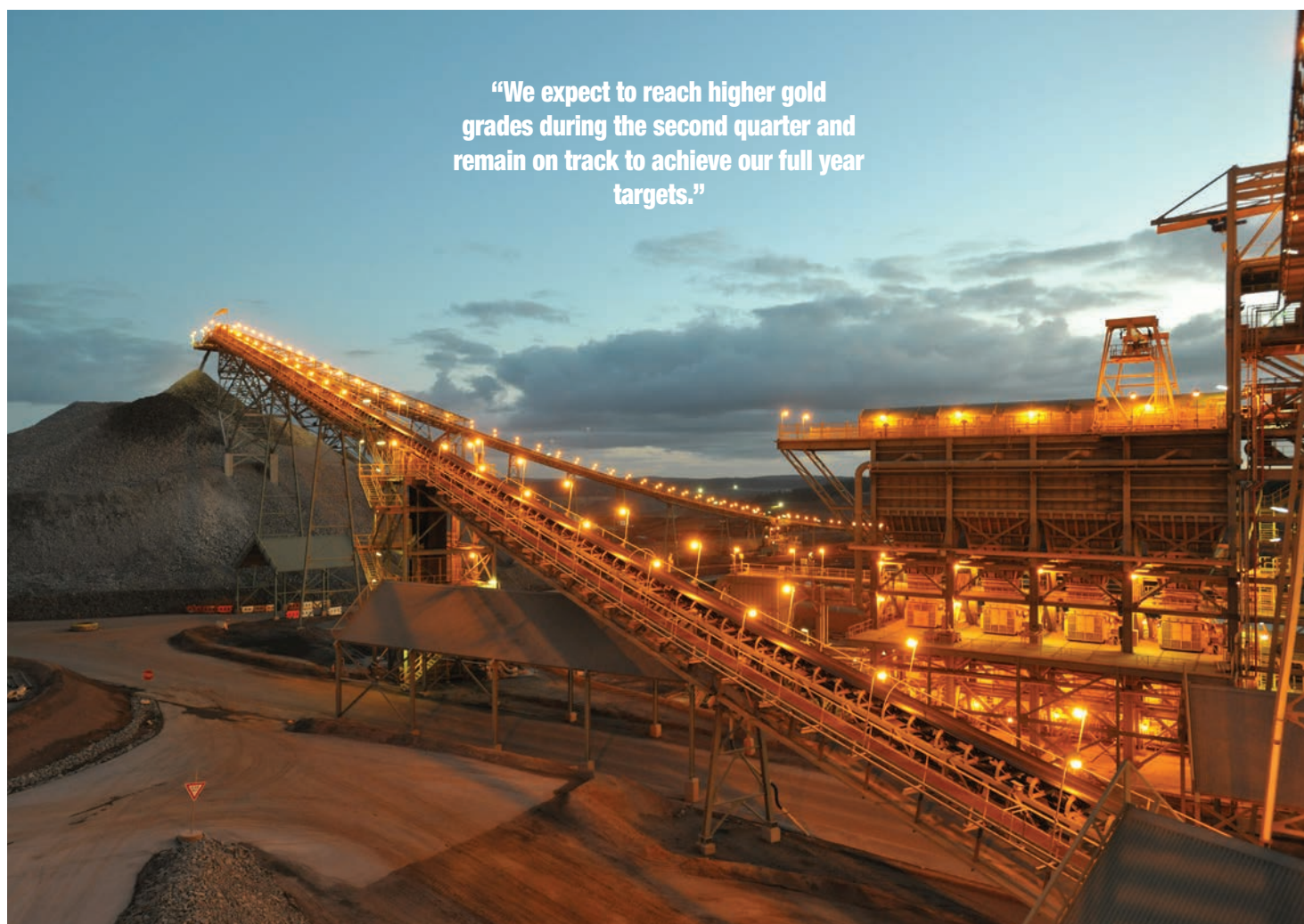
It is also one of the biggest private employers in the South West region, recruiting close to 2000 people, with deep ties in the community through initiatives such as the Moorditj Booja Community Partnership Agreement and its Kalyagool Kadadjiny Scholarship – worth \$120,000 – to Murdoch indigenous students who want to pursue a career in mining.

In an April conference call, Newmont chief operating officer Tom Palmer said the company was currently optimising Boddington's mill maintenance strategy to reduce the number of plant shutdowns per year from four to three.

"This change delayed some production in the first quarter but we expect to recover those ounces over the course of the year," Mr Palmer said.

"Mine sequencing at Boddington resulted in higher copper and lower gold production in Q1.

"We expect to reach higher gold grades during the second quarter and remain on track to achieve our full year targets."



"We expect to reach higher gold grades during the second quarter and remain on track to achieve our full year targets."

Boddington produces both gold and copper concentrate.

Outlook

If Newmont and Barrick stick to their production guidance – Newmont could become the world's largest gold producer by the end of the year.

Mr Goldberg said this year was the first time since the global financial crisis that

he had seen signs of economic recovery and growth in developed and emerging markets.

"These conditions – coupled with decreasing mine supply and increasing demand for gold as a safe haven – create a brighter outlook for gold and for Newmont," he said.

In the first quarter, the company achieved

higher than expected profits due to higher average realised gold prices.

"We expect to deliver steady gold production at competitive costs over the next five years and beyond," Mr Goldberg said.

"This will give us the means to continue investing in the next generation of Newmont mines and leaders."

Quality, performance and proven safety

WA

SINCE leaving the mining construction industry in 2009 to open up his very own mining services company, Boddington Mechanical & Auto Electrical, Steven Derrick and his team have completed more than 900,000 hours of labour across WA.

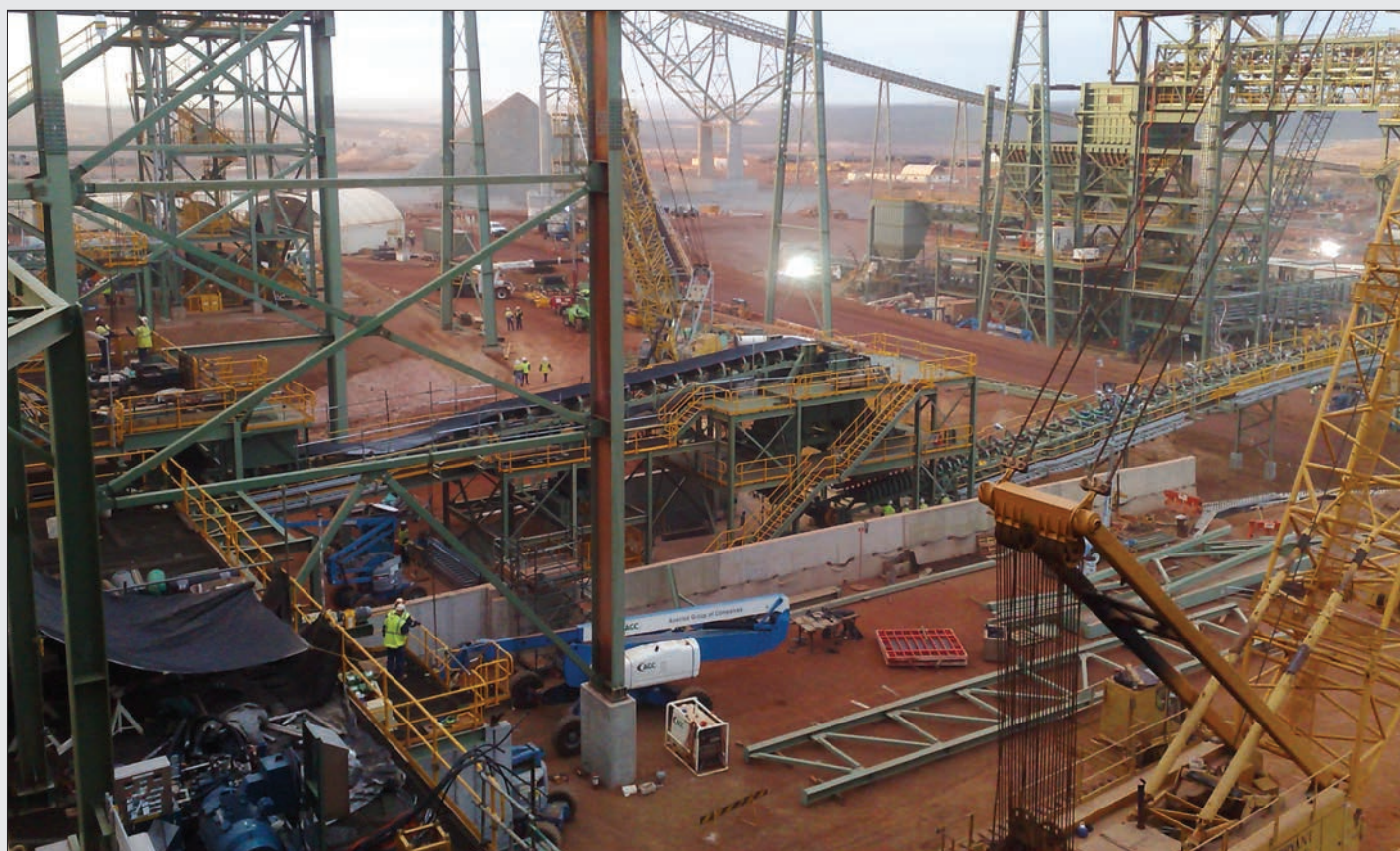
A proud contractor at sites like Newmont's Boddington operation, Boddington Mechanical's principal focus is to offer a 24-hour, 365 day service for earthmoving equipment, drill rig and auxiliary equipment/light vehicle maintenance, in a safe and productive manner.

The company is also a preferred short term and long term labour hire supplier to the industry, with staff trained across all areas including equipment rebuilds, general maintenance, auto electrical and air conditioning, in-pit maintenance and boiler maker services, and more.

Two years into the business, Boddington Mechanical had grown to a team of 75 staff, which have now serviced the needs of Atlas Copco, Macmahon, Terex, Bucyrus, Hitachi, Telfer, Golden Grove, Roy Hill, BHP, FMG, the fleet of Caterpillar equipment on site at Boddington, and many more.

"This May marks our company's nine year anniversary," Mr Derrick said.

"It all began back in May 2008, when I returned to my home town of Boddington for the NGB construction project and subsequently in May 2009 starting Boddington Mechanical & Auto



Boddington Mechanical supplies mobile plant and light vehicle fleet maintenance, labour and parts for the Newmont Boddington fleet.

Electrical, after my previous 15 years' experience in earthmoving equipment and drill rig maintenance across the sites of BBM, Worsley Alumina, Byrnecut Mining (Mid-west) and Rio Tinto iron ore (Pilbara)."

Boddington Mechanical's current engagements see it supplying boiler makers, auto electricians and mobile plant

mechanics for labour support to Newmont, Epiroc, NRW, various OEM's/dealers, and many others companies across the State.

Mr Derrick said he and the Boddington Mechanical team would like to thank all of its clients that have supported the company over the many years, particularly the local support at the NGB site.

"We look forward to working as hard as possible to continue supporting our clients well into the future," Mr Derrick said.

"It is a pleasure to be business partners with you all and I wish us all the best in our common goal of maintaining equipment and returning to shareholders the best we can."



“ We are committed to assisting our clients with their requirements in a safe and productive manner.

Boddington Mechanical and Auto Electrical are proud to be a Western Australia company with a strong focus on providing quality service to our many clients throughout the mining industry.



We are currently employing more than 70 people and growing monthly to meet the needs of our clients.
Our services include:

- Long and short term labour hire
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- Light Vehicle Fleet Maintenance
- Rebuilds to OEM standards
 - Major component change outs
- Mid-life upgrades and component change out on hours
- Machine systems improvement programs
- Auto electrical and air conditioning
- In pit servicing and breakdowns
- Tyre supply and fitment
- Competitively priced parts and consumables
- Tilt tray and float services

TURNAROUND SUCCESS

A year on from taking the reins at Doray Minerals, managing director Leigh Junk has overseen a well-executed turnaround strategy, with the company shifting its focus to the ramp up of its new Deflector operation and extending its resource base.



All images: Doray Minerals.

CAMERON DRUMMOND

Q. What changes have you made at Doray since taking over as managing director?

When I started as managing director a little over a year ago, the company had almost \$70 million in debt and two operations that were not performing to expectation.

The growth and drive for the company in the short term had to come from its operations. For the company to be successful, Deflector had to get up and going and consistently hit targets and produce cash. The turnaround strategy put in place was to build from the operations up.

One of the changes to the activities of the company was the requirement to reduce regional exploration and concentrate exploration efforts solely on our operations. This was quite a shift for Doray, as up to that point there had always been quite a strong focus on regional exploration.

A difficult decision had to be made on Andy Well which was, in part, due to the financial position the company was in at the time.

The company could not sustain a capital investment period at Andy Well while Deflector was still ramping up and yet to reach consistent production and cash flow.

Deflector achieved steady state production in the December quarter and has been building from there since. The impressive results being achieved now have been the result of a lot of hard work from all the team.

We have executed the turnaround strategy.

The company is in the healthiest shape it has been for years with regard to cash and debt, and Deflector continues to impress and outperform.

We have been delivering on expectation this year and building a track record of achieving what we said we were going to do.

There is a real culture of backing ourselves to achieve goals and a large emphasis on team work and achieving it together. There is a lot of hard work ahead but we are on the



"The company is in the healthiest shape it has been for years with regard to cash and debt, and Deflector continues to impress and outperform."

Doray managing director Leigh Junk.

right growth path, beginning at Deflector and building from there.

Q. How has Deflector recovered since lower than expected production in mid-2017?

Each quarter this year has been an improvement on the previous and we are now producing at a rate that is exceeding all expectations of the life of mine model.

We have been processing solely underground ore at Deflector for less than a year and to be producing at these levels is a great achievement. We are ahead on our mining and processing metrics and are set to achieve or better guidance for the financial year.

To be in this position after a lower than expected start to the financial year is a fantastic result.

With what we have learned about the orebody over this time, we are really only scratching the surface of the potential for growth in both production and resource

base. I'm really looking forward to the next year of exploration in and around Deflector and what we can discover.

Q. How is development of the Da Vinci lodes tracking, and when do you expect to complete a PFS?

Da Vinci has been a really exciting discovery and we are extremely encouraged by what we have seen to date.

We are currently completing underground development through Da Vinci which has delivered additional high grade production already. This will also provide underground drilling platforms to expedite the drill out to evaluate a potential full scale mining scenario.

The high grade ore exposed in the development to date has been impressive and correlates with what was seen in the drilling.

Da Vinci is open along strike and at depth so we will continue extensional drilling from surface as well, but the current outline

of known mineralisation will be the subject of the economic assessment.

We have to draw a line in the sand and complete a mining study on the known area, initially, that we can potentially incorporate into the mine plan while we continue to drill to extend it. This will fast track any potential additional production while we look to extend our resource base and operations.

Q. What are the next moves for the Andy Well and Gnaweeda? Is there more exploration on the cards for this year?

We are currently evaluating all our options for the Andy Well project which includes Gnaweeda. There is a large resource base of more than 800,000 ounces of gold between Andy Well and Gnaweeda with all associated infrastructure in place.

We are currently assessing the best way to maximise the value for Doray from these projects. This assessment is expected to take until approximately mid-year.

Q. Final thoughts?

This has been a challenging year after starting from a rather difficult position. I am pleased to say we have navigated through that period and Doray is now in a very strong position.

The growing cash balance, combined with a debt level in June this year that will be less than a third of the size it was when I started, puts us in a position to really drive the business forward.

We have plans to increase the investment in exploration at Deflector over the next financial year to expedite more of our exciting near mine exploration strategies, and looking towards building an increased production profile and mine life.

On a personal note I love getting to site and interacting with the team, and seeing the results of the executed plans.

I'm really impressed by the way the numerous challenges have been approached, and I'm proud of what everyone has been able to accomplish together this year.

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UNSHACKLED

Timely approval for on-ground exploration at Aeris Resources' Torrens copper project was shortly followed a major restructuring of the company's debt and share capital. Coupled with strong copper prices, the miner is now ready to reignite exploration and development opportunities.

All images: Aeris Resources.

CAMERON DRUMMOND

BELEAGUED by \$136 million worth of debt in 2013, it has taken five years of restructuring to bring copper producer Aeris Resources into a growth period; ready to increase production at its Tritton copper mine in Central NSW and begin full-scale exploration work at its Torrens joint venture (JV) in South Australia.

Debt Restructure

Since 2013, Aeris has reduced its debt by \$US87m, or 64 per cent, to \$US30m.

"Around 2012 – then called Straits Resources – had a very toxic offtake agreement for its production at the time," Aeris chief executive Andre Labuschagne said.

"A bank out of Singapore financed to buy them out of that agreement for about \$87m.

"The debt had risen to about \$110m when we started to get involved, and on top of that they had a debt with Credit Suisse on the Mt Muro gold mine in Indonesia."

A new management team was put in place in 2013 to start a debt restructure of the company. Mr Labuschagne was approached to take on the role of managing director of Straits to start the debt clean-up process.

"By 2013 there was \$136m of debt, so the first thing we realised was that the Mt Muro mine was not going to be financially feasible, so we renegotiating with Credit Suisse to get out of the project to focus on our Standard Chartered debt," he said.

In 2015, Straits restructured a debt with financier SCB from \$US111m down to \$US50m and changed its name to Aeris Resources – by this time, its debt stood at \$120m.

After a period of good production results throughout 2016 and 2017, the company had further reduced debt to \$77m.

In December 2017, Special Portfolio Opportunity V (SPOV), a subsidiary of Asian investment house PAG, bought SCB's senior debt position.

In March this year, Aeris completed another overhaul of its debt and equity structuring, which saw it significantly reduce its debt and simplify its capital structure.

The restructuring transaction reduced its debt with SPOV by 53 per cent down from \$US63.3m to \$US30m.

The new senior debt facility has a term of 2 years and an interest rate of 12.5 per cent per annum.

At the same time, existing shareholders effectively doubled their holdings as share



"We will be looking for opportunities such as operating assets or assets we can bring to operation in a short period of time."

Underground at Tritton.

capital was also reduced 50 per cent, with SCB agreeing to cancel 467 million of its 560 million convertible redeemable preference shares for \$1.

A copper price agreement which was part of Aeris' 2015 debt restructure was also cancelled for \$1, providing Aeris with 100 per cent exposure to copper prices above \$8000 per tonne (t).

Mr Labuschagne said the company was in the best position it had been in for the last five years.

"With debt reduced, potential shareholder dilution reversed, and the capital structure simplified, the company is now positioned to attract renewed interest from quality investors and trade on a normalised basis, reflective of the fundamental value and growth prospects of the company," he said.

"We have reset the business to a manageable debt and are able to put money into exploration.

"We are now working on which is the best way forward to fund both debt repayments and growing the company."

Mr Labuschagne was optimistic that a buoyant copper market would enable Aeris to grow and expand.

"The general sentiment is that copper will have a significant forecast deficit over the next few years," he said.

"I think there's inherent growth, and it will be interesting to see what the role copper plays in renewable energies and electric vehicles.

"One of the biggest issues is from the supply side.

"Over the last five or ten years there hasn't been a lot of new investment in new copper projects so there is a lag in new production coming online.

"We see that as an opportunity for Aeris to get beyond our debt position and grow our company. We will be looking for opportunities such as operating assets or assets we can bring to operation in a short period of time."

Tritton

Mr Labuschagne said Aeris' first growth measure would be exploration at its Tritton operation.

Tritton is comprised of two underground mines (Tritton and Murruwumbi) that deliver to a processing facility that can treat up to 1.8 million tonnes per annum (mtpa).

Around the time of its debt restructure, Aeris locked in a swap contract at a price of \$8670 for the supply of 12,000t of copper at 1000t per month through to February 2019.

Under the terms, the contract not only protects the company from prices below \$8000 but gives Aeris upside leverage if the copper price goes above \$10,170/t.

It also leaves Tritton's excess copper production available to sell into the market at higher prices.

"Over the last five years Tritton has gone from losing \$2m per month to generating decent cash," Mr Labuschagne said.

"In the last two years we produced record production of about 30,000t of copper a year and that has allowed us to renegotiate with the banks on the debt and the way forward – if it wasn't for that turnaround the company would be very different today.

"The project is now set up and consistently delivering between 25,000t and 28,000t of copper per annum."

In FY17, Tritton produced 23,404t of copper and is targeting production of 27,000t for FY18.

Copper production for the March quarter was 6867t, an increase of 402t compared to the previous quarter. Aeris said the increase was due to a combination of improved copper recoveries and higher copper grades.

Ore mined during the quarter was 264,000t, down from 285,000t from the previous quarter, however improved mine grades of 1.98 per cent compared to 1.8 per cent helped the quarterly production increase.

On the exploration front, preparations were finalised to drill the Marlin and Galaxy anomalies and Kurrajong prospect.

Torrens

The Torrens JV is 70 per cent owned by Aeris, while Argonaut Resources, which is managing the project, holds the remaining 30 per cent.

The JV is currently exploring for iron-oxide copper-gold (IOCG) systems in the highly prospective Stuart Shelf region of South Australia, within 50km of OZ Minerals' Carrapateena project and 75km of BHP's Olympic Dam.

"Torrens has been around for a long time, but held up in the courts and native title negotiations for more than 10 years," Mr Labuschagne said.

"What is there is a very large target – larger than Olympic Dam – sitting between Olympic Dam and Carrapateena."

The project area contains multiple gravity anomalies, the largest of which has a footprint of 11km by 6.5km.

To put this in perspective, Olympic Dam's gravity anomaly has a footprint of 6km by 3.5km.

Since the early 2000s, on-ground exploration had been impeded due to three separate native title claims over the region.

In the March quarter, the Federal Court dismissed all three claims, and South Australian Minister for Aboriginal Affairs and Reconciliation approved an application by the Torrens JV to proceed with on-ground exploration activities, including a major drill program.

An airborne gravity survey was flown over the entire exploration tenement during the quarter, superseding previous data collected which dated back to the 1970s.

Aeris said the increased accuracy from the survey would better define rock density contrasts to more accurately define prospective targets for drilling.

"We are now going to kick off a 30-hole drill program to start the target-specific areas of interest," Mr Labuschagne said.

EMS attains more electrical credentials

NATIONAL

EMS Group established its electrical division in January 2017, offering consumables such as trailing cable, ventilation fans, and switchboards for hire or purchase.

Electrical services are a large and growing part of the mining, tunneling, civil construction and rail industries across Australia and the world.

Today, with more than \$5 million worth of electrical projects in the pipeline, EMS Group is continuing investment in its newest and fastest growing service.

Now boasting more than 50 specialist and multi-skilled electricians operating across most States of Australia, EMS Group's newest division has expanded to a full-service electrical offering, supporting the delivery of some of the nation's most impressive projects.

EMS Group is also investing heavily in training, skills and capability development.

The company recently attained an IPD ELSteel techno modular switchboard accreditation, allowing the company to construct quality switchboards, distribution boards and motor control centres, built to highest industry standards, meeting all type test requirements.

"With the infrastructure boom and mining activity ramping up again, the demand for skilled labour has been significant across multiple industries," EMS Group electrical manager Steve Nugent said.

"This has been part of the driving force



An EMS Group electrician working on a jumbo starter pack.

for growth."

Mr Nugent said clients are requesting specialised labour hire, project installation, management and manufacturing services.

"And EMS has responded," Mr Nugent said.

"We have a growing suite of skilled labour, electrical project and engineering capabilities, including HV.

"We are responding to exponential growth in demand for specialised labour."

In line with this goal EMS Group is proud to announce that it is growing and enhancing its switchboard manufacturing capabilities.

"Technical training and accreditation from IPD lets our clients know that our switchboards are built to the highest standard and best practices and are in accordance with all type test requirements," Mr Nugent said.

The TECHNO switchboard systems are

cost effective and faster to assemble.

Any variations that arise are easily accommodated with minimal impact.

The in-depth training EMS received covered various parts and accessories of the Elsteel modular enclosure range; design and construction methods to meet client requirements; access to the extensive type testing carried out on the TECHNO system and simplified estimating using tools such as iDraft and TMD software packages.

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TRANSITION MODE

If 2017 was a year of design for Centennial Coal, then 2018 is the year of implementation. The company is focused on operational excellence and production growth, enhancing its social licence to operate, and integrating productivity improvements and new mining systems.

All images: Centennial Coal.

CAMERON DRUMMOND

OWNED by Thai-based Banpu, Centennial Coal is one of the largest underground thermal coal producers in NSW, employing more than 1400 personnel across five operating coal mines producing more than 12 million tonnes per annum (mtpa).

It fuels 40 per cent of the State's coal-fired electricity and exports about 40 per cent of production to power stations and steel mills in Taiwan, Japan, Korea and Europe.

The Airly, Springvale and Clarence mines are a part of Centennial's Western Operations in the Sydney Basin, northwest of Sydney, producing more than 5mtpa for export out of Port Kembla.

The Mandalong and Myuna mines make up its Northern Operations in the Newcastle Basin, with more than 7mtpa exported through the Port of Newcastle.

Results

The resilient demand for coal, coupled with limited supply in the region continued to support coal prices at a high level for Banpu throughout 2017.

"The Northeast Asian 'premium' markets of Japan, Korea and Taiwan remained the most important destination markets for our coal sales, with 12.5mt headed to these countries from our mines in Indonesia and Australia in 2017, up from 11.4mt in 2016," Banpu chief executive Somruedee Chaimongkol said.

While annual coal production decreased 400,000t in FY17, revenue from Centennial's operations brought in \$882.5m, an increase of \$222.1m on FY16 figures.

Ms Chaimongkol said Centennial's EBITDA in 2017 nearly doubled from the previous year to \$287m.

"This was thanks to an increase in average sale price of 27 per cent (to \$83/t) with the majority of legacy contracts repriced, and a minimal unit cost increase, up only 6 per cent to \$53/t," Ms Chaimongkol said.

The miner delivered strong quarterly performances during the first half of FY18



Springvale has approved to extend its mine life by 13 years.

through increased coal production and higher average sale prices.

Coal sales for Q3 2017 were 8 per cent higher quarter-on-quarter (QoQ) at 3.4 mt, and improved a further 6 per cent in Q4, selling 3.61mt to domestic and international markets.

A sustained strong coal market meant average sale prices from operations (ASP) hit \$90/t in Q3, up 12 per cent QoQ and 34 per cent compared to Q3 2016.

The average sale price crept up another 4 per cent to \$93.5/t in the December quarter, however mining costs during the period were up 11 per cent due to "difficult mining conditions", Banpu told investors in its Q4 report.

Production at Mandalong was up 66 per cent to 1.6mt for the December quarter and 57 per cent YoY, after gas management issues had extended a scheduled longwall (LW) changeover in mid-October 2017, leading to lower Q3 output.

At Myuna, quarterly production was down 18 per cent, impacted by poor geological conditions and equipment availability, however it was up 19 per cent

compared to the previous corresponding period.

A LW changeover at Springvale delayed full production by six weeks after encountering a lithology zone, causing output to drop 69 per cent QoQ and 64 per cent YoY. Full production recommenced mid-December last year.

Clarence output was down 28 per cent QoQ and up 5 per cent YoY. Despite encountering an unusual fault during the quarter, a new half-yearly production record of 1.3mt was achieved in H1 FY18.

At Airly, output was down 20 per cent during the December quarter. Banpu said it would focus on development at the mine this year in preparation for narrow panel extraction mining, planned to commence in 2019.

Springvale

Centennial's 4.5mtpa Springvale underground coal mine near Lithgow is the sole supplier of the nearby Mount Piper power station, which generates up to 15 per cent of NSW's electricity needs.

As the mine's coal reserves started to deplete in 2015, Centennial gained approvals for a 13 year mine extension under the proviso that the company comply with water quality standards.

As part of that commitment, the company developed the Springvale Water Treatment Project (SWTP), which was approved by the NSW Planning and Assessment Commission (PAC).

The facility will treat the mine water from Springvale over a 15 year period and deliver water to Mount Piper for beneficial reuse via a 16km water pipeline connecting the two sites.

Water treatment specialist Veolia was contracted for the project's construction and ongoing maintenance, and is estimated to receive \$400m worth of revenue over the contract period.

The treatment facility is expected to be completed by mid-2019.

Legal challenge

A lengthy court battle over the approval for the extension was thought to have put the mine, and more than 300 jobs, in jeopardy.

In late 2015, 4Nature filed a summons in the Land and Environment Court (LEC), seeking to challenge Springvale's significant development consent granted by the PAC.

The grounds for the review were whether the PAC complied with NSW's Environmental Planning Policy, which required it to be satisfied that the proposed development would have a neutral or beneficial effect on water quality (the NorBE test) in the Sydney Drinking Water Catchment.

Representing 4Nature, the Environmental Defender's Office (EDO) claimed that the PAC applied the wrong test, and that water discharged from the mine would increase salinity in the nearby Cox's River and ultimately, the Warragamba Dam.

In September 2016 the LEC rejected 4Nature's legal challenge and dismissed the case, however the group took its challenge to the NSW Court of Appeal, which overturned the decision in August 2017.

Centennial maintained all issues were appropriately addressed during State and Federal assessment processes to secure Springvale's mine extension.

"While the court's decision is obviously disappointing, we have prepared for this outcome," Centennial Coal External Affairs executive general manager Katie Brassil said upon the outcome of the hearing.

"A range of options have been identified and we will now proceed to implement these options to seek to ensure Springvale can continue operating without disruption," Ms Brassil said.

"Our immediate focus will be ensuring Springvale can continue to operate, thereby securing the livelihood of our local community while also continuing to meet the State's electricity needs."

Springvale would not end up needing to shut its doors, as the NSW government intervened and passed legislation to keep the coal mine open two months later.

NSW Energy minister Don Harwin said the new laws allowed the mine to continue supplying the Mount Piper power station, putting downward pressure on wholesale electricity prices and avoiding possible blackouts.

CFMEU Mines and Energy South Western District president Andy Honeysett welcomed the legislation, but said delays in allowing Springvale's extension had put undue strain on the local community who relied on heavily on employment from the mine and power station.

"It's been a very tense wait for the people of Lithgow, not only for the mining and power workers and their families but for the rest of the community which relies on the continuation of local customers for their businesses," Mr Honeysett said.

"Regional communities rely on employment in key industries like mining



"It was timely to step back, recognise our strengths, face up to our weaknesses and to develop strategic initiatives to ensure sustainable success – in safety and health, environment, community engagement and financially."

Centennial chief executive Mike Cairney.

and energy to provide income to other sectors like retail and hospitality. The decision to allow the extension of the mine comes as a relief for many people."

Sustainability

Over the last two years, Centennial continued to make progress towards its 2020 sustainability targets and identified new initiatives to lift efficiencies.

It successfully implemented its Step Change Productivity Initiative, aimed

at improving efficiencies across process monitoring, process reporting and review, process mapping, cutting rates, utilisation, engineering support, Centennial Continuous Improvement Model (CCIM) projects, and audit and reporting.

Mr Cairney said another target to rehabilitate 50 per cent of all available land also remained on track.

"As at the end of last year, 131 hectares of the forecast 257 hectares of the identified available and suitable land has been rehabilitated," Mr Cairney said in April.

"Our closed Charbon Mine carried

out considerable rehabilitation in 2017 (99 hectares), with further progressive rehabilitation underway this year."

To maintain Centennial's reserve base, Mr Cairney pointed out that while that target was progressing well, a more appropriate indicator of sustainability needed to be developed as the company seeks to diversify into an energy company.

"As a large industrial energy user, Centennial has not been immune to the significant increase in electricity supply costs," Mr Cairney said.

"As a result, Centennial is undertaking a feasibility assessment of solar generation for self-consumption.

"Centennial holds significant land holdings and has substantial existing electricity reticulation systems; both of which form a solid basis for the establishment of solar systems.

"Centennial is progressing a solar installation project at Awaba Colliery (closed in 2011) and also evaluating one at Airly mine."

Mr Cairney said that while 2017 was a year of design, 2018 would be a year of implementation.

"It was timely to step back, recognise our strengths, face up to our weaknesses and to develop strategic initiatives to ensure sustainable success – in safety and health, environment, community engagement and financially," Mr Cairney said.

"The strategic initiatives we identified in 2017 included a renewed focus on health and safety, enhancing our social licence to operate, productivity improvements and new mining systems, operational excellence, production growth, automation and digital transformation and improved exploration standards.

"We are in the process of resourcing and implementing these initiatives."



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DISCOVERY AND DELIVERY

The March quarter was a mixed bag for Independence Group, but the miner's medium to long term fundamentals are sound. The flagship Nova operation continues to ramp up and generate good cash flow, while a \$50 million exploration program and downstream processing studies could deliver massive cash flow generation in the years to come.

All images: Independence Group.

REUBEN ADAMS

INDEPENDENCE Group (IGO) is transitioning into a cash-generative business, as growing free cash flow from its operations – especially Nova – results in an ever-shrinking debt pile.

Building cash reserves is an important part of the IGO strategy.

It gives the company flexibility for potential acquisitions, or development options should a \$30m exploration program on its highly prospective 14,000sqkm Fraser Range landholding unearth 'the new Nova'.

To this end, IGO has been systematically attacking its debt, which totalled \$164m at the end of FY17.

By the end of the March 2018 quarter this had more than halved to \$73m and, if this was sustained, the miner could potentially be debt free before the end of the calendar year.

While March quarter results were a bit of a mixed bag for IGO, highlights included a 14 per cent quarter-on-quarter boost to EBITDA to \$73.7m, and a massive 387 per cent bump in underlying free cash flow to \$56.5m.

March Quarter Focus

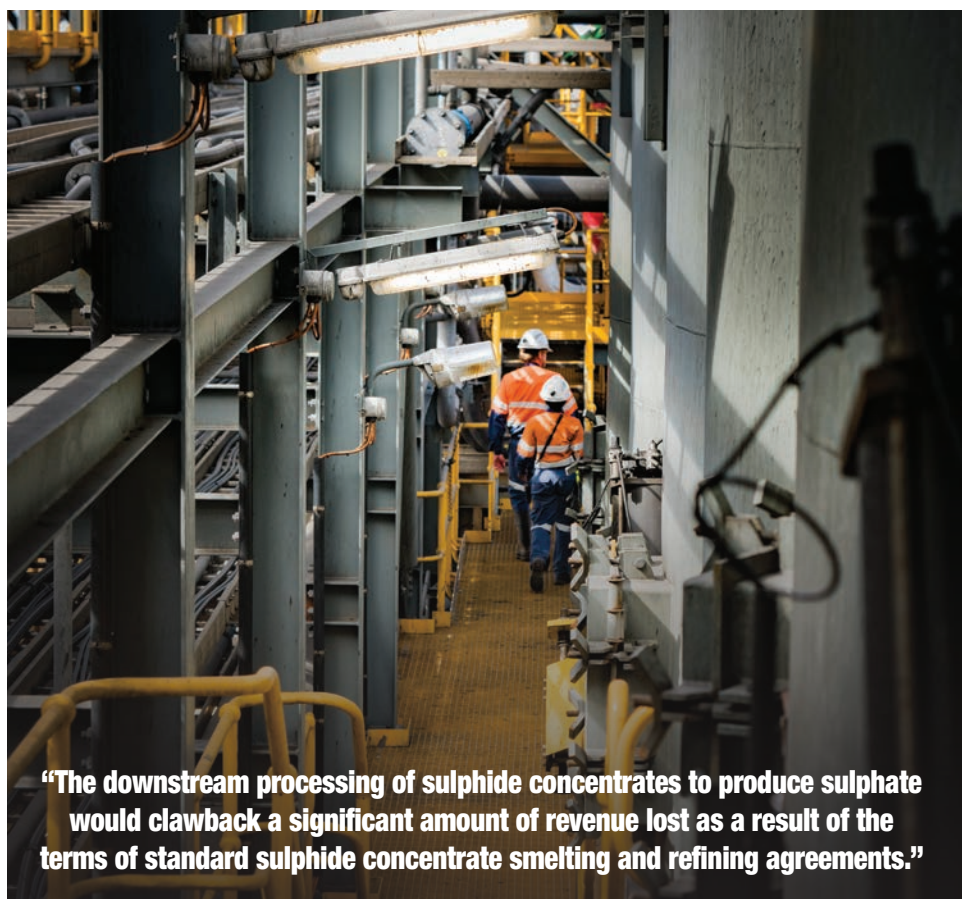
At Long nickel mine, near Kambalda, it's the end of an era; after almost 40 years the operation will close, with suspension of mining scheduled for the end of May.

But exploration will continue, IGO managing director and chief executive Peter Bradford said.

"We undertook an EM survey at Long North, to test for potential extensions of the Gibb and Long deposits and are reinterpreting historical seismic data with new and improved technologies that we are using with the Nova survey and this is still on-going," Mr Bradford said.

Jaguar, 300km north of Kalgoorlie, disappointed with a lower than expected mined tonnage and grade in the March quarter. But the news isn't all bad.

Higher grade stopes became available at Jaguar in late March, which should result in higher metal production in the final quarter of FY18.



"The downstream processing of sulphide concentrates to produce sulphate would clawback a significant amount of revenue lost as a result of the terms of standard sulphide concentrate smelting and refining agreements."

IGO also progressed a number of Life of Mine (LOM) scheduling scenarios during the quarter, including Bentley Deep's, the proposed Triumph Project, a potential re-entry of the Jaguar Mine, and the depth potential of the Teutonic Bore deposit.

"Many of these options have upside potential, but it is important that the business case remains robust to support the investment that would be required over the mid to longer term," Mr Bradford said.

"We are also undertaking multiple exploration activities at Jaguar with ongoing drilling at Bentayga and surface drilling of several base metals and gold targets."

About 250m south of the Bentley Decline, the Bentayga Lens was discovered mid-2017 by exploratory underground drill testing.

Significant new drill results in 2018 has seen IGO shift priorities towards Bentayga's potential early development.

To define the likely mineral resource

for Bentayga, a 240m underground development drive from the Bentley Decline kicked off in March and was 70 per cent complete by the end of the quarter.

The company stated that this drill drive would readily convert to a mining access should an ore reserve be defined.

Tropicana (30 per cent IGO) – which poured its 2 millionth ounce in January – also produced a softer quarter, but was still well placed to achieve full year guidance.

Gold production in the quarter of 103,603 ounces brought year-to-date production to 352,887oz (100 per cent basis).

Construction has started on the installation of the second 6 megawatt (MW) ball mill, which will enable processing throughput to be matched to the increased mining rate, as well as improving gold recovery by up to 3 per cent to about 92 per cent.

The installation is expected to be completed by the end of the calendar year.

The Boston Shaker Underground Concept Study was also completed during the quarter and, as a result, the JV has approved acceleration of a Pre-Feasibility Study (PFS) due for completion by the end of the calendar year.

Nova: Adding Value

Having just completed its third full quarter of commercial production, Mr Bradford said Nova was proving it could achieve – and even beat – nameplate mining and processing rates and deliver improved metallurgical recoveries.

Nova development may be behind schedule (it is now expected to end FY18 towards the low end of primary metal production guidance) but with March quarter sales of \$95m expected to be surpassed next quarter IGO remains well placed.

That's without mentioning the operation's massive exploration upside, and the potential to add significant value through downstream processing in the medium term.

Mr Bradford said the focus for the final quarter of FY18 was de-risking the Nova resource model, ongoing improvement in mining rates, and the delivery of planned higher grade ore.

"Overall the Nova team has delivered a solid result so far," he said.

"Nickel production and costs have been tracking in line with expectations during the operation's start of commercial production, and we are pleased with the results."

IGO was "cautiously optimistic" that the nameplate 1.5 million tonne per annum (mtpa) production rate – delivered in the March quarter – could be maintained, if not improved, as Nova transitions to mining larger stopes, Mr Bradford said.

"We expect mined grades to continue to increase, generating a strong fourth quarter of production," he said.

The process plant was also operating to expectation, demonstrating its capacity to deliver above nameplate throughput.

Metallurgical recoveries were also steadily improving and performing in line with, or better than, design.

(CONTINUED ON PAGE 40)

Providing global mineral processing solutions

NATIONAL

GR Engineering Services (GRES) is a market leading ASX-listed process design, engineering and construction company providing safe, quality, cost competitive and timely engineering solutions to the global mineral processing industry.

GRES designed and constructed the Nova Nickel Plant and non-process infrastructure for Independence Group in 2016.

Independence Group has established a successful operation and GRES is proud to support the project through engineering improvements.

GRES has recently completed the Mt Morgans gold project for Dacian Gold with the 2.5mtpa CIL plant producing first gold in April 2018.

GRES is well advanced on the construction of the 2.5 mtpa Dalgara gold project for Gascoyne Resources which is ahead of schedule for completion in Q2 of 2018.

The innovative engineering solutions developed by GRES enable its clients to achieve project success at the earliest opportunity.

GRES has an established track record in the provision of high-quality technical and feasibility study work for a broad range of clients.

GRES has successfully completed the process and engineering designs and construction for projects of various scale and covering a diverse range of mineral commodities and geographic locations.



GRES is a proud construction partner of Independence Group's Nova Nickel Plant.

It has delivered processing facilities and infrastructure for gold, base metals, mineral sands, tin, tungsten and iron ore projects for a range of clients in Australia

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GRES also has a presence in the hydrocarbons industry via its wholly owned subsidiary, Upstream Production Solutions,

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



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(CONTINUED FROM PAGE 38)

The Nova resource model is being de-risked, with a grade control campaign at Nova and Bollinger to be completed by the end of the financial year.

"Over the last few months we completed the grade control drilling at Nova Main and are now completing drilling at Bollinger, Conductor 5 and Nova Upper," Mr Bradford said.

"We are also currently undertaking the resource and reserve estimation process with the targeted completion of this work scheduled for July 2018."

Downstream Processing: Adding Value

IGO is already deep into studies aimed at using Nova as a hub for downstream processing of nickel sulphate for the burgeoning battery market.

A number of analysts have nominated nickel among their best commodity picks over the next two to five years due to the rapid rise of electric vehicle (EV) use.

The view echoes a consensus positive outlook from miners, who have been quick to study the value-adding benefits of downstream processing.

In April last year, Western Areas green lit its Mill Recovery Enhancement Project (MREP), which would create a product for the EV battery supply chain from a specific cut of the live tailings stream that was previously discarded.

BHP Nickel West wants to become the world's biggest exporter of nickel sulphate by initially producing 100,000t a year by April 2019, using existing infrastructure at its Kwinana facility. A proposed stage two expansion to 200,000t a year would leverage off the initial investment in stage one.

Alpha Fine Chemicals has also completed

its pre-feasibility study on an Esperance Nickel Sulphate Plant in WA, with a final investment decision pending this year.

IGO, with the unique metals mix in its Nova concentrate and growing interest from the EV battery manufacturers for reliable sources of nickel and cobalt sulphate, completed a scoping study last year.

"The downstream processing of sulphide concentrates to produce sulphate would clawback a significant amount of revenue lost as a result of the terms of standard sulphide concentrate smelting and refining agreements," Mr Bradford said.

At Nova, IGO has the unique benefit of having a strong cobalt credit in its nickel concentrate.

With the cobalt price more than tripling over the last two years, it is another financial driver to evaluate downstream processing, in addition to the increased payability the miner would receive for its nickel production.

The metallurgical test work was progressing well and on schedule to fit with IGO's plan of completing a PFS by the end of the 2018 calendar year.

Mr Bradford said it was too early in the work program to discuss details on the kind of processing options IGO was investigating.

"IGO is looking to leverage significant benefit from improving nickel market dynamics and improved nickel price in line with the expected market demand and growth from the Electric Vehicle Battery and Energy Storage trend," he said.

"These are exciting times for IGO and, as we charge forward into the fourth quarter, we will continue our focus on discovery and the delivery of strong financial and operational performance to solidify IGO's strong position as a world-class base metals producer aligned to the growing trend in energy storage metals," Mr Bradford said.

Royalties paid to Nova traditional land owners

WA

INDEPENDENCE Group (IGO) has made the first royalty payment to the Ngadju Charitable Trust, in accordance with the 2014 land access agreement for the Nova nickel-copper-cobalt operation.

The trust will fund programs in education and scholarships, health and medicine, elder support, emergency medical accommodation, sport, recreation, and social development.

"IGO greatly values our relationship with, and acknowledges, the Ngadju people as the traditional owners of the land that includes the Nova Operation, and we applaud their collective efforts to improve their socio-economic circumstances," IGO managing director and chief executive Peter Bradford said.

"The success of IGO's relationship with the Ngadju can be attributed, in large part, to the efforts of the joint Ngadju and IGO consultative committee, known as the Implementation Committee, which meets regularly to ensure the lines of communication stay open and we work collaboratively with each other."

IGO, an active participant in the local community surrounding Nova, is particularly focused on encouraging opportunities for Aboriginal employment and education.

The 2014 land access agreement provides for training, business support,



preferential employment and royalty payments "that will total many millions of dollars over the life of the mine", IGO stated.

Nova currently employs 21 people of Ngadju heritage at the operation, an estimated 5 per cent of the total workforce.

The company also sponsors an annual scholarship for Indigenous students through the Western Australian Mining Club.



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PEARL OF THE NORTH

Aching for that next getaway but unsure where to go? Before you settle on another trip to Bali, consider Broome – the gateway to WA’s Kimberley where rust-red earth meets the ocean, and so much more.



All images: Tourism Western Australia.

ELIZABETH FABRI

FOR Broome, the wet season is now well and truly over – leaving six months of uninterrupted blue skies, balmy nights, and the opportunity to encounter some of the world’s most historic wonders (hello dinosaur footprints!).

The Kimberley’s dry season, between May and October, is the most popular time to visit, and with a calendar packed full of coveted events over the next couple of months, there are plenty of reasons to hop aboard a flight to get amongst the action.

Broome is an adventure lover’s playground only two and a half hours from Perth by air; and just a hop skip and a jump — or luxury flight — from WA’s famed Kimberley landscapes.

But its rich history as a pearl lugging town is what really put Broome on the map.

Founded in the 1880s as a pearling port, by the early 1900s the town was a hive of activity with more than 300 luggers seeking their fortunes in the waters of Roebuck Bay.

The boom, likened to Australia’s gold rush, brought significant tourism to the region, and a melting pot of new cultures, and cuisines which can still be enjoyed

there today. Think Indian, Malay, and Japanese – delish!

However, during World War II economic activity in the town took a dive when foreign labour was sent to civilian internment camps, and later in the 1950s when the discovery of plastic reduced demand for the Pinctada Maxima mother of pearl shells.

But Broome’s identity as a pearling town didn’t end there.

Cultured pearling techniques introduced by the Japanese saw the region flourish to become the world-capital for South Sea pearls; the most sought-after commercially harvested cultured pearls, used in jewellery.

Now, visitors to the town can peruse the pearl showrooms to view these locally sourced beauties, or if history is what you’re seeking, book in a pearl luggers tour.

Then take a stroll through Chinatown (known by locals as old-Broome) to soak up the old-world charm of the square weatherboard buildings in town, before beginning a 2.8km self-guided heritage walk along the foreshore of Roebuck Bay to 13 points of historical significance, including the original Streeter’s Jetty and Old Jetty at Town Beach.

(CONTINUED OVER)



A display of Broome pearls.



(CONTINUED OVER)

Gantheaume Point, where dinosaur footprints can be found.



(CONTINUED FROM PAGE 41)

Cable Beach, Broome.

For the beach goers, the first stop on your itinerary will, of course, be Cable Beach.

The 22km stretch of white sandy beach is just ready to sink your toes into, and if you're wanting to get the true Broome experience, you'll book in a camel ride.

Then there's Town Beach, where you can view the natural phenomenon Staircase to the Moon, an optical illusion which occurs three nights a month between March and October, when a full moon rises across

exposed tidal flats.

And don't forget Gantheaume Point, where you can search for 130 million-year-old dinosaur footprints on the rocks at tides below 2.16 metres (sturdy shoes are essential).

Nature lovers can also spot whales, turtles and the rare, adorable snubfin dolphins, affectionately known as the snubbies, at Roebuck Bay.

There's also plenty of places to cast a line

for some recreational fishing in pursuit of the Kimberley's famous Barramundi.

By night, leave the catch of the day in the freezer, and explore Broome's large selection of eateries, bars and breweries, or resort-style restaurants, followed by a cinema-experience unlike no other at the town's very own outdoor movies, Sun Pictures, which is the oldest alfresco cinema in the world (more than 100 years old).

And if you visit in peak season, you'll

also get to enjoy the night markets in town and events like Broome Cup (August), and the Rhythm & Ride Rodeo (September).

Time to get packing!

Broome is serviced twice daily by direct flights from Perth, and seasonal direct flights from Melbourne, Sydney and Brisbane. This month, the town will also welcome its first international flight in almost two decades (Singapore-Broome).

Treasure hunting in the North West

WA

A FAMILY escape which ticks the box for all ages is hard to find.

But not in this hidden treasure nestled among one of the last pristine marine wilderness frontiers in the world.

Cygnnet Bay Pearl Farm is a holiday experience that offers guests a remote, yet accessible escape.

Here, adventure and relaxation exist side-by-side.

A truly unique destination, where a glittering jewellery boutique selling genuine Australian South Sea Pearls, can be found at the end of an isolated dirt road 200km from Broome.

Entering the Farm gates, at the end of the winding road is a hidden oasis.

The welcoming homestead overlooks a crystal infinity pool, where cocktails can be sipped while soaking in the magnificent bay views.

At Cygnnet Bay Pearl Farm, guests are invited to stay in a vast array of accommodation options, ranging from the humble Pearlers' Shacks, to glamping Safari Tents or the luxurious Master Pearler's Retreat with its own private beach.

Yet alongside the serenity, comes an opportunity for adventure as guests are allowed a rare opportunity to experience the world's largest tropical tidal movements with a range of Sea Safari tours that showcase the magnificent



Image: Saltywings.

An aerial view of the Cygnnet Bay Pearl Farm restaurant and pool.

wonder of this remote part of the world.

Cygnnet Bay managing director James Brown delights in the opportunity to share his home and this incredible Kimberley marine environment.

"Our core business for three generations is producing the very rare and valuable Australian South Sea Pearl, and it's a great pleasure to allow our guests to understand more about these pearls while experiencing a truly special part of the

world," Mr Brown said.

"As a truly unique experience, guests are invited to hand-pick a loose pearl, which has been harvested before your eyes to be created into a very personal piece of jewellery."

As one of only a handful of pearl farmers left culturing the magnificent Australian South Sea pearl today, it's little wonder that selecting a locally grown pearl is such a rare offering.

A visit to Cygnnet Bay Pearl Farm is an opportunity to entirely immerse yourself in the great story that is the Australian Pearl, whether it's a day trip to the pearl farm with a dip in the infinity pool, an à la carte lunch overlooking the bay, or an overnight stay on the Peninsula, it offers something to delight the whole family.

More information can be found by emailing cygnnetbaypearlfarm.com.au or calling (08) 9192 4283.

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The Kimberley Festival of Performing Arts

NORTHERN WA

KNOWN for his roles in *Drift* and *McLeod's Daughters*, Myles Pollard has channelled his 20 years' of acting experience into workshops for kids.

As part of this year's Perform Act Dance WA Kimberley Festival of Arts (PADWAK), Mr Pollard will be running Acting with Camera workshops for kids in the region.

"When I heard PADWA was putting this event together I was keen to be involved. I think a lot of kids in the region are craving more creative arts," Mr Pollard said.

"Unfortunately kids are becoming a lot more detached socially and more obsessed with devices like iPads and game consoles and as a result are less communicative, less able to express and more reluctant to deal with people directly," he said.

"The creative arts helps kids become more effective communicators, more self-aware and much more personally and socially confident."

Workshops in regional areas can also have fantastic benefits for indigenous students in improving truancy issues, behaviour and engagement.

"These kids are natural storytellers and performers. It's just about giving them the opportunity to realise that they are good at it which builds confidence," Mr Pollard said.

"I was blown away by the creative talent I saw whilst teaching in the North West, in towns like Alice Springs and Newman. Performing really inspired kids to attend school because they found something that they loved to do that gave them a sense of belonging, pride and plenty of laughs. The arts has a big role to play in communities in helping kids enjoy school," he said.

Mr Pollard said the acting for Camera workshops not only improved social skills and engagement at school, but could also inspire young kids to potentially pursue the arts as a career.

"I can't wait to see how the acting with Camera workshops are received! I think there's a lot of potential up there in terms of acting ability and I'd love to see some kids fly!" he said.

"Who knows what could be around the corner if they got exposed to Acting at a young age and where it might lead them?"

All student are encouraged to take a class, even if they are nervous and have no prior experience, as the classes could be the confidence booster kids in remote areas need.

"The worst thing would be not to have a crack because you're too nervous, because everyone gets nervous...even me! You learn



Australian actor Myles Pollard.

that nerves are a great thing when you can control them," Mr Pollard said.

"I hope this festival opens doors to kids personally, socially, creatively and imaginatively."

"I think there's a real need for these opportunities and for me personally, it's exciting, being a bit of a homecoming since I grew up in the North West myself," he said.

PADWA director Beej Francis said the festival workshops encouraged personal growth, self-esteem and confidence through performing arts.

"Our aim is to reach more students in regional areas and give them the same opportunities that usually only big cities present," Ms Francis said.

"The basis for doing so is the fact that the Kimberley region has one of the highest incidences of suicide with young people in Australia (and in fact the world), alarming rates of addiction, and domestic violence.

"PADWA with your help, want to be an integral part in bringing programs to regional areas like the Kimberley which give all kids hope and a future to look forward to.

"PADWA has partnered with some major brands in this exciting and inspiring community event and wish to thank them for their support."

The 2018 partners include: Broome Civic Centre, Goolarri Media, Matsos, Seashells Broome, The Kununurra Country Club, Lake Argyle, Artopia Gallery, and The Ord Valley Muster.



Musical theatre personality Rachael Beck.

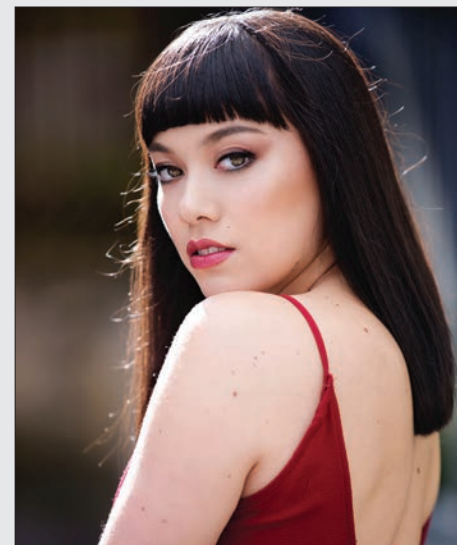


Radar Dance and Conditioning Technique.

"PADWA is inviting you to come on board and not only support the community and Kimberley kids, but to also receive some fabulous incentives for taking part in this star studded event," Ms Francis said.

PADWA runs masterclasses with industry professionals in the areas of acting, dancing, singing and music Australia-wide.

Its stable of artists available for festivals include popular Australian personalities from the Australian Ballet; actors from prominent TV series; and musical theatre personalities including Queenie van de zandt and Rachael Beck, who rose to fame



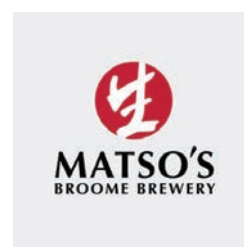
Yukino McHugh, from *So You Think You Can Dance*.

from big box office hits like *Cats*, *Les Mis*, and *Beauty and the Beast*.

"We also have dancers onboard such as Yukino McHugh, from *So You Think You Can Dance* fame, and international RADAR technique teachers participating," Ms Francis said.

To partner with PADWA for this event, its upcoming Pilbara event earmarked for October 2018, or for next year's Kimberley event contact Ms Francis on: 0421 977 148.

PADWAK runs from May 10-20 in Broome & Kununurra, WA, and is open to all ages and levels. To book tickets visit: www.trybooking.com/TSXQ



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WA

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MASBATE GOLD PROJECT:

Reducing downtime through mill head replacement

CASE STUDY

THE Masbate Gold Project is located on Masbate Island in the Republic of the Philippines, 360km southeast of Manila, the country's capital. Acquired by B2Gold in 2013, the mine's gold deposits are found on a nearby volcanic belt measuring 7km wide. Anticipated annual production in 2017 stands at 5100kg to 5250kg of gold, making it the Philippines' largest operating gold project.

Mill head design causing excessive downtime

The Masbate Gold Project's operations are comprised of a large conventional open pit mine feeding ore to a process plant consisting of crushing, grinding and a carbon-in-leach (CIL) process step.

Crushing is performed in a single stage using a jaw crusher. The grinding circuit consists of a SAG mill and two parallel ball mills, each in a closed circuit with hydrocyclones.

In 2015, the mine began having issues with bolt breakage on one of their ball mill heads. The breakage originated from the Trunnion to Head connection and worsened with time.

Masbate enlisted several engineering firms to provide advice on the breakage issue, however they were unable to resolve the problem due to the specific design of the mill head.

With bolts at the Trunnion to Head connection continually breaking and resulting in unwanted downtime and lost production, the mine decided to act by replacing the mill head rather than continue to suffer downtime on the mill.

Results: Higher availability and less service stoppages

In May of 2016, Metso was awarded the contract to manufacture the replacement head, this time with an integral trunnion to replace the bolted joint.

The service contract was then later won by Metso's Surabaya, Indonesia Field Services department.

When it came time to install the new Mill Head, Metso Surabaya sent two service engineers and lead mechanical fitters to the site to work in conjunction with Masbate's own mechanical fitters. They were responsible for carrying out the installation and commissioning.

The Metso team provided specialized skills and worked alongside the Masbate maintenance team to complete the head change out project on schedule, within

budget and without safety incidents. The combined effort minimized lost production.

Since the installation, the mine has not had any issues with the newly installed head, allowing them to improve the mill's availability by reducing unplanned service stoppages.

As a result, Metso has been awarded a second identical mill head order at the mine site.

Grinding mill expertise

As an OEM supplier for grinding mills with over 3000 global installations worldwide, Metso has access to a vast amount of knowledge through its engineered services groups.

With the existing head coming from a third-party supplier, Metso engineers worked in conjunction with the third party's engineering group using general arrangement drawings to reference some key information such as weights and general head characteristics for the 5.3m by 7.8m ball mill. Designing the head with an integral trunnion required considerable reverse engineering of the existing parts while adhering to the strict tolerances needed to replace the existing head.

"I believe the dedication and attention to detail that we've shown, and given, has really helped cement our good working relationship," ETO Sales and Services for Asia Pacific regional product manager Matt Wesson said.

"This is reflected, in one way, by us being trusted to further expand on our supply of Wears and Spares on site, as well as ongoing Field Services work and audit opportunities that we never had previously."

Another key factor in ensuring that the installation went smoothly was the provision of a complete installation crew flown in from Surabaya, who worked alongside the mine's own crews throughout the installation process.

Senior Maintenance Advisor Jason Ives summed up the experience of working with Metso on the project.

"The Engineering support and prompt responses Masbate Gold Project received from Metso during the entire process from assessment through to delivery was excellent," he said.

"The utilisation of Metso's Field Services team from Surabaya was also an excellent choice for the installation of the new head; the team is extremely professional with a good attitude to job completion and safety."



Make mine a Combination

NATIONAL

FOR more than 30 years, the Broons BH-1830 Combination Roller has represented the backbone of gravel road maintenance across Australia.

Used extensively by local government and earthmoving contractors around the nation, nothing comes close to the efficiency and convenience of this legendary roller, which is now also available for use in the mining sector for use on LV and mine access roads.

Long life gravel pavements require a perfect mix of stone and fines to bind together for high wear resilience and to ensure a safe running surface.

With a smooth steel roll drum for high compaction pressure and 11 smooth tread compactor tyres to finish off, the Broons Combination Roller is the ultimate gravel road roller.

Well suited to towing behind a grader, its 12 tonne ballasted weight makes it ideal for maintenance grading.

Not only does this versatile roller deliver perfectly constructed pavements, the road rated smooth tread compactor tyres also double up for quick movement between work sites eliminating the need for a float.

Additionally, clients can option solid fill tyres to avoid punctures and prevent laborious road side changes, not to mention the OH&S risks of such work.

The optional electric/hydraulic disc brake option provides failsafe independent braking from the tow vehicle.



Maintain LV roads with the Broons BH-1830 Combination roller.

Speaking of safety, the change between roll drum and tyres is hydraulically and seamlessly carried out for the cabin keeping the operator safe and the work flowing.

As the longest continuous manufacturer of rollers in Australia, the team at Broons has designed a long list of more than 20 options to suit its Combination Roller,

including a grid roll drum to fracture rocks, gooseneck drawbar for extra clearance, sign rack, tyre scrapers, a selection of tow hitches, and more.

Proudly manufactured, sold and serviced in Australia, the Broons BH-1830 Combination Roller comes with an industry topping 10 year structural warranty,

guaranteeing trouble free ownership; a truly efficient roller to maintain gravel road infrastructure.

More information can be found by calling (08) 8268 1988, emailing info@broons.com, or downloading a brochure at www.broons.com/combination.

Six inch pump launched

WA

A NEW six inch diesel drive tailings pump has been introduced by Australian Pump Industries.

Known as the MQ600TD, the big pump delivers flows of up to 6000 lpm, is capable of heads as high as 46 metres, and can be skid or trailer mounted depending on site requirements.

The pump is designed to handle a wide range of solids in suspension found in mines and quarries, and has excellent self-priming characteristics due to the huge integrated priming tank, and heavy duty cast iron body.

That priming tank enables the unit to prime from as low as 7.6 metres, which provides a vertical lift ideal for mining and construction applications.

A large front mounted clean-out port is incorporated in the design, enabling the impeller and volute to be cleared in the event of a blockage in a matter of minutes.

Best of all, the action can be carried out without disconnecting pipework and hoses.

The big pumps are being used in a wide



The big Aussie MQ600TD 6 inch arrives on a mine site, sentenced to hard labour.

range of applications including pumping highly corrosive liquids and tailings in dams as well as being used in salt harvesting applications.

“With glass coated both inside and outside of the pump, as well as the coating of the impeller, it provides resistance to highly corrosive liquids,” Aussie Pumps

chief engineer John Hales said.

“The results have been amazing, even in the most corrosive applications.

“We’re told by customers that they even outlast stainless steel pumps that are far more expensive.”

The pump is powered by a heavy

duty 60hp Deutz air cooled diesel engine and is fitted to a sturdy steel skid base incorporating 152 litre fuel tank, which enables a run time of 11 hours.

Further information on the new Aussie six inch pump is available from Australian Pump Industries or authorised distributors throughout Australia.

Quality Pumping Solutions

NATIONAL

TRU-FLO Pumping Systems is one of the world leaders in supplying dewatering pump and pontoon package solutions.

The family-owned and operated business entered the pumping industry as Bathurst Irrigation during the winery boom of the 1990s.

Originally focused in agriculture, the company has grown to service global mining, oil and gas, civil and food markets.

Tru-Flo shows particular leadership in underground and open-cut mining as its equipment is manufactured to withstand harsh Australian and international environments.

The company's unique Run-Dry pump delivers one of the fastest priming capabilities on the market with industry-leading efficiencies.

Tru-Flo's pump range is fully customisable, built to the highest quality and performance standards and can be configured to suit a range of applications, including tailings return, dewatering, leachate and CHPP supply water pumps; as well as to underground or fire water supply and water evaporation projects.

The range is capable of pumping against high head situations, large quantities of solids, and slurries; often encountered in mine dewatering.



More information can be found at www.truflopumps.com.au.

During Tru-Flo's manufacturing process, safety and quality assurance are always top of mind.

Now with more than 70 personnel,

Tru-Flo has become a dominating force in the industry.

However, the same family owned business qualities exist, with the desire to give something different.

With offices strategically placed around the world, Tru-Flo will continue to be one of the market leaders in dewatering pumps and equipment for the mining industry.

NEPEAN Conveyors materials handling partner

NATIONAL

IN 1991, NEPEAN Conveyors refurbished its first pulley; since then the company has amassed the knowledge and experience to manufacture and overhaul engineered pulleys for underground, overland, plant and port applications.

NEPEAN Conveyors understands the importance of reliability in the mining environment.

Operational readiness, reliability and the working life of any conveying system is all dependent on the system being appropriately equipped, serviced and maintained.

The company partners with its customers to not only supply products that are individually designed, but to offer rationalisation solutions through its conveyor auditing services which help minimise site inventory.

NEPEAN Conveyors has been proudly ISO 9001:2015 certified for more than 20 years.

The company's Quality Management System (QMS) controls every aspect from design to dispatch, ensuring a quality product is produced on every occasion.

Robust design software built to Australia Standards allows NEPEAN

Conveyors to rapidly engineer pulleys, regardless of the application.

The solid engineering capability, combined with technological advances such as Finite Element Analysis, allows NEPEAN Conveyors to optimise the design for pulleys under extreme operational conditions and provide the best-value solution, every time.

NEPEAN Conveyors does not compromise on quality; however, it understands the importance of being globally competitive and, as such, has developed proven global and local supply chain networks.

The company has formed strategic partnerships with reputable OEMs to ensure only quality and trusted components are used.

'Centre of Excellence' is not just a buzz word at NEPEAN Conveyors.

Constant investment ensures that the company's pulley components are manufactured and assembled to the highest manufacturing standards.

By keeping all of these processes in house, NEPEAN Conveyors ensures quick turnaround of new and refurbished pulleys.

Vibration Analysis and load testing equipment is one of its latest strategic



More information can be found at: www.nepeanconveyors.com.

investments along with a new CNC lathe with a 13 tonne machining capacity, which is driven by High Speed Machining (HSM) software that guarantees components are efficiently machined to the highest precision.

Because fitting bearings, components and direct bond ceramic lagging demand specific atmospheric conditions, NEPEAN Conveyors is able to replicate these conditions in its pulley assembly and lagging cleanrooms.

The company is able to perform root cause analysis and design reviews on customers' existing pulley fleet.

NEPEAN Conveyors' OEM certified workforce will confidently, and competently, identify any failure modes and rectify accordingly to prolong the asset.

The leading cause of premature pulley failure is inadequate onsite storage.

Extreme weather conditions such as high temperature, heavy rainfall and dust can lead to grease degradation, contamination and water ingress, greatly reducing the service life of the asset.

Pallet racking solutions, onsite storage facilities and preventative maintenance ensure that stock pulleys are available and ready for service on demand.

Through NEPEAN Conveyors' pulley asset management system, customers can log in and access real time information on the asset.

Critical information such as general assembly drawings, lubrication requirements past and future service information are available at the click of a mouse.

The combination of engineering, quality, sourcing, manufacturing excellence supported by its pulley assets management system makes NEPEAN Conveyors the obvious choice.

Survive the safety blitz

NATIONAL

SAFETY blitzes are always happening across the resources industry.

Safework NSW is currently running a forklift safety blitz in an effort to reduce injuries and fatalities around the State.

It may be the only official mobile plant safety blitz that's occurring in Australia right now.

But here's the hard truth companies already know.

Health and safety inspectors can turn up without warning, any time. They don't need a safety blitz to do so.

And if companies are not meeting the required safety and licensing laws, then they will get struck with heavy fines, and be in serious trouble.

However, even after companies have devised traffic management plans, painted lines and set up bollards, accidents can still happen.

It is only natural that people tire, daydream and get distracted, or disobey procedure and take shortcuts.

With safety inspectors able to turn up at a mining operation at any moment, an accident is the last thing a site manager needs.

This is where the BodyGuard i-Tag Pedestrian Safety Warning System comes in.

It is made of three components; a personal tag worn by pedestrians or



More information can be found by calling (02) 4355 4554 or emailing sales@orbitcoms.com.

placed in no-go zones; a sensor unit attached to the vehicle; and a cab alert unit which warns the driver when they're about to hit someone or enter an area they shouldn't.

If a driver is daydreaming, falling asleep, distracted, about to hit someone or veer into a no go zone, they get a loud warning in a human voice.

It's a chance for them to hit the brakes before destroying property, hurting or

even killing someone.

The BodyGuard i-Tag Pedestrian Safety Warning System keeps people and property safe from collisions, and it will keep a safety inspector from hurting a mining business with huge penalties.

Immersive Technologies launches LX6

NATIONAL

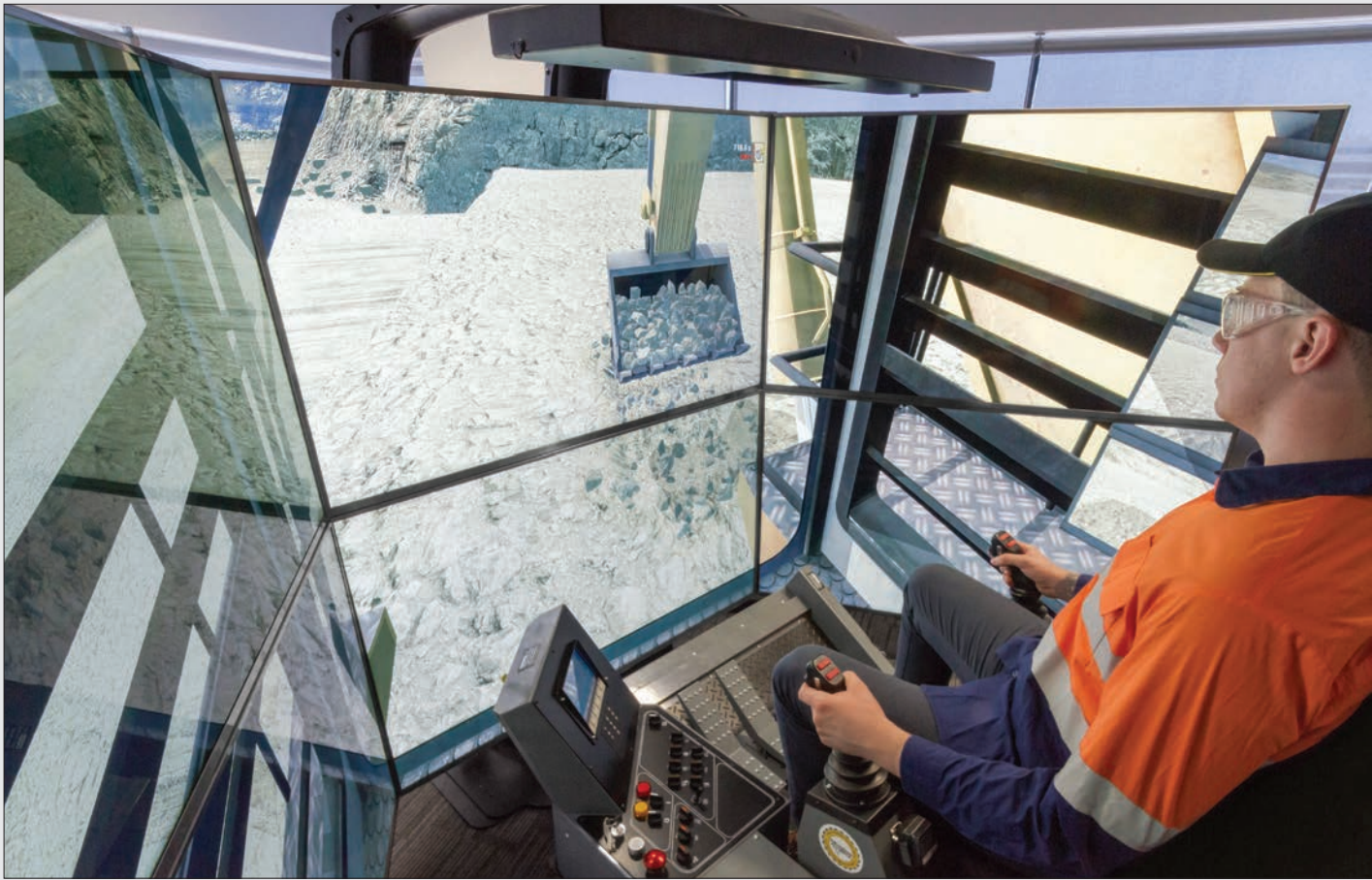
SURFACE and underground mining equipment supplier Immersive Technologies has launched the latest addition to its medium fidelity simulator range, the LX6.

The brand new medium fidelity simulator platform offers the same value for early stage training as the high-fidelity simulators such as the PRO4, and is ideal for machine and site familiarisation, emergency response training, and compliance training.

Compatible with a wide range of equipment modules or Conversion Kits® available from Immersive Technologies, the LX6 allows sites to expand their training throughput and extend the utilisation of existing simulator equipment Conversion Kits®.

The deployment of medium fidelity simulators such as the LX3 and now the LX6, has become a popular complement to high-fidelity simulators such as the PRO4 and IM360.

This combination allows mining operations to free up their high-fidelity simulators for later stage and business improvement focused training, while utilising medium fidelity platforms for early stage and compliance focused training.



The LX6 shares the same underlying technology as the PRO4 and IM360 but with a smaller footprint platform.

The result is a solution that provides the required training throughput capacity, while being cost-effective.

"Through our industry leading technology and extensive mining experience, we continue to focus on driving customer safety and profitability," Immersive Technologies product manager Ravitha Sukumaran said.

"LX6 is no different and provides a cost-effective way to train, assess and evaluate personnel in a safe and efficient manner, minimising impact to production by reducing the amount of in-field training time."

The wide horizontal field of view on the LX6 allows truck trainees to safely transition through intersections and

become familiar with a site.

It also allows shovel and excavator operators to have a clear view when spotting trucks.

The large vertical field of view offers great ground visibility when digging, dozing or grading.

More information can be found at: www.immersivetechologies.com.

Congratulations Melrose!

On the purchase of your new Link-Belt TCC-1400

With a 59.5m Boom the Link-Belt TCC-1400
127 Tonne Telescopic Crawler Crane is the Class Leader

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innovative solution to big
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Link-Belt
C R A N E S

Telescopic crane market on the rise

NATIONAL

GLOBAL demand continues to grow for telescopic crawler cranes.

Mining and construction managers are increasingly turning to the telescopic crane market for a number of reasons; to benefit from the crane's compact size, ease of use, and boom length, which can extend in excess of 59.5m.

The Baden Davis Crane Connection is an Australian supplier of high-quality telescopic crawler cranes, and has seen a shift in the industry from conventional all terrain cranes to the new telescopic market.

While specialising in a large range of cranes from the TIDD PC25 to truck terrain cranes, rough terrain cranes and lattice boom trucks, its new 127 metric tonne TCC-1400 model is widely sought after.

The TCC-1400 model, manufactured by US-company Link-Belt, boasts the longest boom length for a telecrawler in this tonnage class, and comprises a six-section power, pin and latch boom

which measures 59.5m, and an on-board three-piece bi-fold lattice fly giving the crane a maximum tip height of 78.9m.

It also incorporates Teflon wear pucks to eliminate the need for boom grease.

The boom, fabricated from ultra-high-strength steel formed in Link-Belt's own facility, offers outstanding telescoping load capability.

Melrose Cranes and Rigging managing director Gregg Melrose, who recently purchased the crane from Baden Davis Crane Connection, said the TCC-1400 model was one of the most unique and high-quality models on the market.

"There's similar size cranes around the world up to 100 tonnes, but there is nothing bigger with the boom length that this model has got," Mr Melrose said.

"I believe it sets the benchmark, and that's why I bought it.

"It's bigger than the opposition."

Mr Melrose said with greater restrictions on height and space in the Sydney construction industry, the telescopic crawler market was growing.



The Link-Belt 127 metric tonne TCC-1400 crane.

"It's quicker to put together. It's extremely fast to get on site and put together and take off site," he said.

More information on the TCC-1400 model can be found at: www.craneconnection.com.au.

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PROFILES FOR JUNE 2018

Aerial Surveying
Asset Management
Cooling Towers
Dust Control
Energy Efficiency
Fire Safety
Geophysical Technology
Hire & Rental
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Magnets & Magnet Technology
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BOOKING DEADLINE: May 18th 2018

BRAD FRANCIS

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Machinery Annual Compliance sparks recruitment drive



CES has begun a new annual inspection program for crane compliance.

NATIONAL

CRANE Engineering Services (CES) was established in 2016 to meet the growing voice of Australian crane owners and provide an alternative solution to meeting their compliance with major inspection requirements found in various legislation, regulations, codes of practice and standards.

CES has continued to listen to crane owners and a wide range of industry leaders across the country, and has

expanded from major inspections into the arena of annual inspections for all types of cranes, with the introduction of the Machinery Annual Compliance (MAC) program.

The MAC program focuses intensively on the ability for continued safe use of the crane for a 12-month period which meets all required guidelines, giving crane owners peace of mind that their machines comply with the industry-wide 12-month annual inspection requirements.

CES acknowledges that crane owners recognise the importance of safety with

their machines, and, by providing an alternative program to the industry, gives all relevant stakeholders – including crane hire customers – a fair and level playing field.

After all, crane safety is in everybody's best interests.

The CES MAC program focuses heavily on the crane being safe for continued safe use.

Road access issues are heavily scrutinised on cranes with pick and carry capabilities.

For cranes without, road access issues are noted for owners to rectify in accordance with their individual State road law requirements.

The CES MAC program has begun recruiting competent assessors who will operate as third-party inspectors of cranes (they have to meet strict experience requirements) to enable crane owners further choice with meeting their annual inspection obligations.

More information can be sought via email at info@craneengineeringservices.com.au.

MACHINERY ANNUAL COMPLIANCE

Do you have crane - material handling - access equipment industry experience? Are you a *competent person?

Apply for the Machinery Annual Compliance Program as an assessor now.

The Machinery Annual Compliance Program focuses intensively on the ability for continued safe use of the crane and machinery for a 12-month period, as a part of the annual inspection obligations in accordance with Australian Standards.

CRANE ENGINEERING SERVICES



Apply for the Machinery Annual Compliance Program as an assessor.
Applications now open Australia wide.

*Competent person refers to a person who has acquired through training, qualification, experience or a combination of these, the knowledge and skill enabling that person to correctly perform inspections and assessments.

10/25 Year Major Inspection & Assessment:
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Custom switchboard solutions

NATIONAL

POWER distribution systems built for mining applications need to be robust in design and quick to manufacture.

This is an area Victorian-based DaRa Switchboards prides itself on offering its clients; with almost 10 years' experience pioneering electrical switchboards that meet high electrical standards, client budgets, and project deadlines.

“Our mission is to relentlessly revolutionise switchboard design, manufacture and speed of delivery to energise Australian mines, industries and cities,” DaRa Switchboards managing director Shanaka Unantenne said.

With a deep understanding on the importance of the latest technology, the team have the capability to manufacture any type of switchboard, from a small load centre to 3200A motor control centre.

“Our mining duty grade switchboards are used in many mines in WA, including BHP’s Nelson Point facility,” Mr Unantenne said.

“We are also currently manufacturing switchboards for part of BHP’s Mulla Mulla workers' village to support Mining Area C and match BHP’s highest standard in electrical infrastructure.”

Mr Unantenne said while the



Stainless steel heavy duty switchboards for Mulla Mulla Village getting built.

investment in Australian manufacturing has been in decline, Dara Switchboards has expanded its operation in the last

12 months to two new purpose-built assembly plants specialised in producing switchboards in record time.

More information on the company’s services can be found at: www.electricalswitchboards.com.au.





Customised Switchboard Specialist

Any Switchboard for Any Mine

We understand that every mine is unique and we match that up with tailor made heavy duty switchboards for every mining application

- Temporary Power Boards
- Distribution Boards

- Control Panels
- Main Switchboards
- Motor Control Centers

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Send your switchboard inquiries to
sales@dara-switchboards.com.au

or call **1300DARASW**

Safety shouldn't wait for accidents to happen

NATIONAL

A COMPANY chief executive's nightmare scenario: a phone call from police and work regulators saying they are sending investigators to determine why and how one of their employees died on their worksite earlier that day.

The George Rechnitzer and Associates (GRA) team, Dr George Rechnitzer, Dr Raphael Grzebieta and Mr Keith Simmons, are internationally recognised experts in vehicle and road safety, mobile structures and investigating major incidents, and have had numerous discussions with chief executives, company directors and safety managers of major corporations about such scenarios.

The comment often made is: "So you think you can help us reduce our fatality and injury risks? We don't see how you can improve on what we already know and do."

Yet when the GRA team's report reviewing a company's safety and legal exposure risk is submitted, there is surprise all round.

These directors and managers acknowledge the risks and the cost-effective solutions recommended by the GRA team to reduce them - that they were previously oblivious to.

How does the GRA team do it?

They have more than 75 combined years professional and high level research experience in relevant fields, such as forensic crash investigation and reconstruction, biomechanics and crash injury causation, vehicle crashworthiness, rollover risk, roadside barriers, mechanical engineering,



GRA team members carrying out vehicle crashworthiness inspection.

including impact loading, crash and injury data analysis, fleet management and complex computer simulations.

The team advise a number of standards committees and have led research and professional work teams with extensive research publications in all these fields.

GRA investigates crashes, analyses data, conducts road and fleet safety reviews and more, to identify weaknesses in business equipment and workplace practices, and identify effective improvements.

The GRA team use the international best practice Safe System Approach to provide evidence based, scientific safety advice.

Safety need not be expensive, but the lack of it is, and that can lead to major legal and financial consequences.

Equipment damage, insurance premiums, product and productivity losses, investigations and legal fees and liability are just some of the costs to a business from incidents involving mobile structures, road crashes and road safety related workplace

injuries – let alone the huge human cost.

Coronial inquests into fatalities and criminal negligence charges are not unheard of.

Fleet safety and safer mobile systems are an investment in business success and in personnel and community wellbeing.

GRA can be contacted for expert advice to identify key safety risk exposure and recommend improved safety measures, and help make zero harm in the workplace a reality.

Operational safety shouldn't happen by accident.

Our world-leading expert team has helped major organisations such as BHP, Pan Aust, Cargill, & Hancock (HNRG) improve their fleet safety management, pinpointing improvements across:

- Vehicles
- Operations
- Equipment
- Personnel
- Training
- Procedures
- Management
- Safety culture
- Road Infrastructure

"No one should be killed or seriously injured while working for you."

Don't wait until its too late. Call to discuss how we can help you on **0418 884 174**.



George Rechnitzer
& ASSOCIATES PTY LTD

Commitment to excellence

NATIONAL

IXL Metal Castings (IXLMC) is a member of the IXL Group, a business which has been servicing miners' needs since the 1850s Victorian gold rush.

Since then, miners' needs have evolved in line with the technological developments of the times.

The IXLMC philosophy is a simple formula where collaboration and innovation equate to customer success.

The basis of the formula is the drive to provide service by gaining an understanding of customer needs through collaboration, while remaining relevant as a supplier through innovations that provide tangible economic value and generate successful outcomes.

The IXL Group and IXLMC have established a MOU partnership arrangement with Deakin University to specifically develop iron alloy materials in the NiHard and HiChrome range to improve wear resistance and product performance in various high wear mining applications.

IXLMC has developed a range of cast wear parts for the standard NiHard 32mm liner plates and various 75mm, 100mm and 150mm wear billet sizes.

The development includes the elimination of bolts through the introduction of the IXL Insert Liner where the stud is flash welded to the casting.

IXLMC also has a number of customer success stories for feed chute liners in HiChrome range which can be shared.



More information can be found at: www.ixl.com.au.

Let IXL Metal Castings assist you in improving key asset Safety, Productivity and Performance!



Where Collaboration + Innovation = **Customer Solutions**

- NiHard Liner Plates
- NiHard Wear Billets
- HiChrome Chute Liners
- NiResist castings
- Iron alloy castings



Ask about the IXL Insert Liner range which eliminates bolts from standard Liner Plates and Wear Billets.

Western Australia

John Butter

Client Support, Business Development Manger

P +61 8 9417 6675 | M 0408 259 934

john.butter@ixl.com.au

P.O. Box 601 | Kwinana | WA | 6166

Eastern Australia:

Sean Botswell

Business Development Manager

P +61 3 5225 2272 | M 0400 496 729

sean.botswell@ixl.com.au

1-15 Wood Street | Geelong | Vic 3220



Metal Castings

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QuikCAST



MIC IP fusion 9000i increases productivity

NATIONAL

WHETHER clients require cameras to protect assets and people, or to monitor production processes, the MIC family has been one of the standout choices for industrial applications.

With the introduction of MIC fusion, the levels of situational awareness, and therefore decision making, are taken to the next level.

The new MIC IP fusion 9000i fuses the metadata of the camera's built-in optical and thermal imager, providing users with full situational awareness – regardless of which video stream is being watched.

If an event is detected, but is not necessarily visible in the optical video stream, an alarm is triggered anyway, and the user can simply click the alarm overlay box to see the thermal video (in addition to the optical) related to that event.

Using built-in Intelligent Video Analytics an operator is alerted, or the camera's Intelligent Tracking feature is triggered, the moment a moving object or person is detected while the camera is panning, tilting or zooming.

Once Intelligent Tracking is activated, it ensures that moving objects are automatically tracked.

Image quality

MIC fusion delivers exceptional video images – regardless of lighting conditions, time-of-day or object movement.

The camera offers Bosch's starlight



The latest Bosch MIC IP camera features metadata fusion to help users focus on 'invisible' things that need attention.

technology combined with a 1080p resolution and frame rate of 60 frames/s, enabling the capture of highly detailed colour images in scenes with minimum light (down to 0.0077 lux).

Perfect exposure of moving objects in unevenly lit scenes is safeguarded by the camera's High Dynamic Range of 120 dB.

When foggy or other low-contrast scenes are viewed, visibility is improved by the Intelligent Defog feature.

An integrated motorised silicone wiper keeps the glass clean while the window-defrosting function allows capture of high quality video, no matter how cold it gets.

These self-cleaning capabilities and the NEMA-TS2 rating ensure the camera is ideal for challenging environments such as

mines, oil or gas sites, as well as sea ports.

The MIC IP fusion 9000i enables early object detection of up to up to 4,517m away.

Images can be captured through smoke, in complete darkness or when objects or people are obscured by foliage.

Intelligent bitrate management and data security

Intelligent Dynamic Noise Reduction and intelligent streaming, combined with H.265 video compression, can reduce bitrate by up to 80 per cent.

This helps to keep video data manageable, while substantially reducing network strain and storage requirements, without compromising video quality.

Like all Bosch network cameras, the

camera offers technology such as a built-in Trusted Platform Module to keep video data secure.

Easy installation

Configuring and calibrating video analytics has never been easier and can be done in very little time.

Users can simply enter the height of the camera and the rest of the calibration is carried out by the video analytics itself, based on information derived from the camera's positioning sensors.

The optional VIDEOJET connect 7000 supports High Power over Ethernet to connect multiple MIC IP cameras, which makes it an ideal configuration for installations with long perimeters.

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FEATURES
FOR
JUNE 2018

Avona Metals
BHP Nickel West
BHP South Flank Mine
Blackham Resources
BMA's Caval Ridge Mine
Bounty Mining
FMG
GeoAnalysis Conference 2018
Greenbushes Mine
KCGM Superpit
Meteorological Services
Millenium Minerals
Mining Tasmania
Port Waratah Coal Services
Queensland Mining and Engineering Exhibition (QME) 2018
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MIC IP fusion 9000i



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Punishing winds, dust or smoke, relentless rain, fog or extreme temperatures either side of zero – no matter how severe the conditions get, with MIC IP fusion 9000i your surveillance operation always goes on, day and night. Featuring Intelligent Video Analytics to enhance decision-making in extreme environments, MIC fusion provides:

- Metadata fusion** – Combines optical and thermal images for environments with limited vision – so you don't miss a thing
- Exceptional early object detection** – Detect objects up to 4.5 km away – ideal for monitoring long perimeters, remotely-controlled objects and conveyor-belt processing
- Analytics while moving** – Identify and automatically track objects even while the camera is moving – tilt, pan or zoom

So no matter how tough the conditions, ruggedized MIC IP fusion 9000i cameras will protect your people, assets, and production processes 24/7.

Call Bosch Security on **13000 BOSCH (26724)** today to arrange a product demonstration or email marcom@au.bosch.com for more information.



Reliable alerts,
even in extreme
weather conditions



Video Analytics
extremely resistant
against shaking



Video content
analysis over
large distances

Built for the expert, by the experts

NATIONAL

THE new advanced T1K IR camera from FLIR is built for advanced thermography users and consultants in both the mining and power utility industries.

Whether it be used for looking at pipe lining wear, high and low voltage electrical issues or mechanical applications on a mine site, the T1K will make inspections and surveys easier and quicker, with maximum efficiency, versatility and safety.

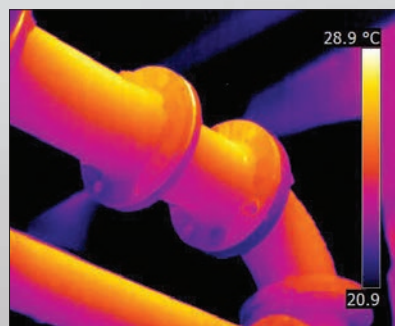
One issue mining and power utility customers face today is trying to use an IR camera which only has an LCD display outside in sunny conditions.

The T1K has a high-resolution viewfinder which displays the same information as on the LCD screen, making any inspection easy to see where issues may reside.

The new OSX Precision HDIR optical system provides unsurpassed image clarity, detail, and temperature accuracy from the standard 28 degrees, wide angle and telephoto lenses.

The Precision HDIR optical system provides the ability to pinpoint the smallest anomalies from farther away than ever before, allowing personnel to stand back away from possible dangers of haul packs and other mining machinery.

Four programmable buttons and two programmable measurement functions



FLIR's T1K IR advanced thermography camera.

are backed by the best protection for any infrared camera, with a two-year manufacturer's warranty, five-year

battery warranty and 10-year detector warranty.

A demo of the FLIR T1K or any FLIR

camera can be arranged by calling FLIR on 1300 729 987 or visiting: www.flir.com.au.

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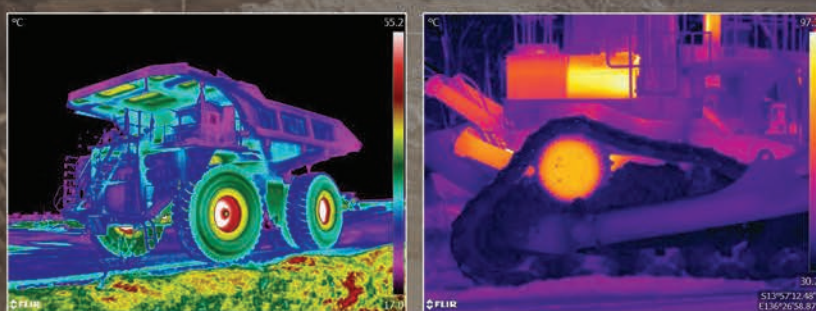
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SOUTH AUSTRALIA

COCKALEECHIE Industries has more than 25 years of shed engineering, fabrication, and repair experience throughout the Eyre Peninsula.

The company's competent and enthusiastic workforce offer a range of options designed to meet the harsh Australian environment, using components of high-quality, strength and excellence.

"We can custom design high-quality agricultural, commercial and industrial sheds, and steel frame homes for all purposes using BlueScope steel, which is renowned on the market for its long-lasting finish and value for money," Cockaleeche Industries director Nick Laube said.

"We specialise in heavy industrial and agricultural sheds, and can manufacture wide span sheds for machinery or anything else our customers want."

Cockaleeche Industries tailors all of its shed designs to suit the client's individual requirements and budget.

"We can also coordinate council



Cockaleeche Industries custom sheds are built using quality BlueScope steel.

planning and approval, as well as cement floors, electrical and lighting," Mr Laube said.

Cockaleeche Industries' products are engineered and fabricated on site to ensure a quality standard.

"Our aim is to offer the best product and services, exceeding customer expectations," he said.

"We are hoping to expand ourselves further into the mining industry to provide our materials and structures."

Mining companies can contact Cody

Pilgrim on 0448 269 629 or Nick Laube on 0428 762 500 for an obligation-free quote.

More information can be found at: www.cockaleecheindustries.com.au or by finding Cockaleeche Industries on Facebook.



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COCKALEECHIE INDUSTRIES
Engineering and Fabrication

Superior range of steel structures

NATIONAL

FOUNDED on core principles of 'rock-hard' common sense, the Bison Constructions team understand that minerals, crushed rock, and precious stone all need protection from spoil and erosion.

The company is a specialist in designing and building a superior range of steel structures for commercial, industrial and rural markets.

It also has a variety of options available to prevent steel corrosion, and encourages clients to get in touch to discuss the substance they are proposing to cover.

For example, Bison Constructions could build a mezzanine towering above the work area housing an office or platform where the team can comfortably view the operation.

Bison can also install a roof to support machinery such as monorail cranes for those workshops which need handy lifting mechanisms.

Not one to shy away from a challenging project, the company takes on all client



Photography: Col Ellis.

Bison Constructions create robust steel buildings for the harshest environments.

projects, big or small.

"Maybe you need to suspend conveyors off the Bison structure. No problem; our robust columns and strong loadbearing trusses will stand the test of time," Bison Constructions sales consultant Cameron Bissett said.

"Consider building an entire roof at 'gut' height.

"This significantly reduces build times and creates a cost-effective project stress free."

Bison Construction is of the view that the days of fitting machinery around the shed is over, with its design team now instead fitting a shed around client's machinery.

"Our wide bay designs and girder trusses create unobstructed spaces, and can cover masses of product/resources with ease," Mr Bissett said.

The strength of Bison's columns will also handle 'swing out' gantry's, giving further solutions to a remote work site.

The Bison system can cope with

uneven, out of level surfaces, unequal bay spacing, and different roof levels.

"If it's what you need – tell us – we design structures for you, not ourselves," Mr Bissett said.

"Seeing is believing when Bison call in the cranes and effortlessly lift multiple tonnes of roof anywhere, on time."

Height constraints were also not an issue for Bison, with the team capable of constructing robust structures in excess of 12 metres.

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A partner of choice for steel sheds

WA/NT

ESTABLISHED in 2009, AUSPAN Group is a WA leader in the design and construction of steel frame sheds and buildings.

The company offers a unique 'one-stop-shop' for all facets of steel shed construction, from concept design and budgeting through to complete project delivery.

The team have the capacity and capability to provide all shed structures across WA and the Northern Territory, and have full design and construction capability in house, three offices across WA, and a fabrication facility in both Perth and Gnowangerup.

Since inception, AUSPAN has carried out more than 650 design and construct shed projects ranging across all industries, project sizes and site conditions.

AUSPAN's philosophy of providing an effortless building experience, while delivering on its 'unbeatable lead-time guarantee' sees the company as the partner of choice for a growing number of building contractors and end user clients.

As a leader in the field, AUSPAN offers a simplified project process, while also reducing overall capital expenditure.

The team can achieve this by bringing a range of design processes and trades to the table consolidated through a proven project delivery system.



AUSPAN offers a unique 'one-stop-shop' for all facets of steel shed construction.

AUSPAN invites any project personnel to contact them to arrange a meeting (online, site, or at an AUSPAN office) to discuss project requirements.

In this initial briefing, the company

can determine the practical aspects of the customised scope requirements to ensure that the particular project can be delivered as simply, smoothly, and cost effectively as possible.

More information and a video testimonial for a recent project completed at Iluka's North Capel facility can be found at: www.auspangroup.com.au.



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Innovation in engineering

WA

WHEN time is such a precious commodity, it shouldn't be wasted hunting down numerous contractors to perform a series of jobs for a project.

And when time means money, the advantages of utilising one contractor are twofold.

That, in a nutshell, is the unique selling point of Regal Engineering and Lineboring – being able to perform a complete range of services for a business.

In the mining and maintenance space, Regal delivers solutions on time-critical projects to suit every requirement, from start to finish.

From major project designs, installation, planned and emergency shutdowns to mechanical upgrades, the Regal team offers 24/7 support and solutions.

“With office and workshop facilities in Perth, Kalgoorlie and Port Hedland, we are well established to offer our complete range of services across WA,” Regal Engineering director Brett Royle said.

One of these services included Regal's long-established lineboring department specialising in on and offsite lineboring repairs, heavy welding repairs, precision machining and general fitting services.

Lineboring involves ID welding of bores machining back to manufacturers tolerances, repairing faces and fitting new bushes to bring equipment back to better than brand new.



More information on Regal Engineering and Lineboring can be found at: www.regalengineering.com.au.

Regal's lineboring department is made up of a team of experienced professionals in the field that have the knowledge and skills to give clients confidence it will be done right the first time.

“Above ground and below, we have the

ability to operate in any conditions,” Mr Royle said.

“We have five mobile units across WA, with no job too big or too small.”

Regal can complete repairs on bucket,

sticks, and H-links on a range of excavators from between 60 and 800 tonne.

Some of Regal's recent lineboring jobs include a full refurbishment on CAT2900 loader frames (front and rear), and the refurbishment of WA900 rear trunnions.

Get the Complete Regal Experience

Regal Engineering & Line Boring is dedicated to providing excellence in engineering by integrating experience, efficiencies, quality and safety into every project we are given.



The Regal Experience



OUR DIVISIONS:

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- Heavy Earthmoving Repair & Maintenance
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Supply Partners: AURY TALON VICTAULIC

Bringing projects online, on schedule

NATIONAL

CMI Technical Services is a mining services company that specialises in the maintenance of fixed and mobile plant across mines in Australia and overseas.

From modest beginnings, CMI Technical Services has grown into a company with a solid reputation of delivering clients a purposeful service with decisive advice on what is widely considered the heart of any processing plant; the mill.

In fact, the company's name is derived from just this; crusher and mill installations, and technical services.

"Our highly experienced team has a broad range of operational and maintenance experience that not only applies to grinding mills and crushing plant, but includes expertise in CIL, flotation, thickeners, beneficiation, gold room and wash plants to suit diverse commodities such as gold, copper, iron ore, coal, bauxite, nickel, zinc, and manganese," CMI Technical Services general manager Tito Chacone said.



CMI has contracts in Australia, the Middle East, Africa and Vietnam.

Some of its recent projects include a mill installation in Burkina Faso, consistent mine coverage in Saudi Arabia, and lineboring jobs across Australia, which have delivered on time production targets and repeat business.

"We currently have lineboring trucks

serving WA and the Hunter Valley, NSW ready to go and quote with time sensitive clients," Mr Chacone said.

"We have a fully mobile BB7100 Climax system set up in a 20 foot container that is site ready and able to reach a boring distance of between 260.4mm and 1479.6mm."

In addition, CMI Technical Services can also offer construction management, procurement, commissioning planning and management, asset management, condition monitoring, and training and development.

More information can be found at: www.cmitech.com.au.

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GET IN TOUCH

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✉ taylor.lochhead@cmitech.com.au

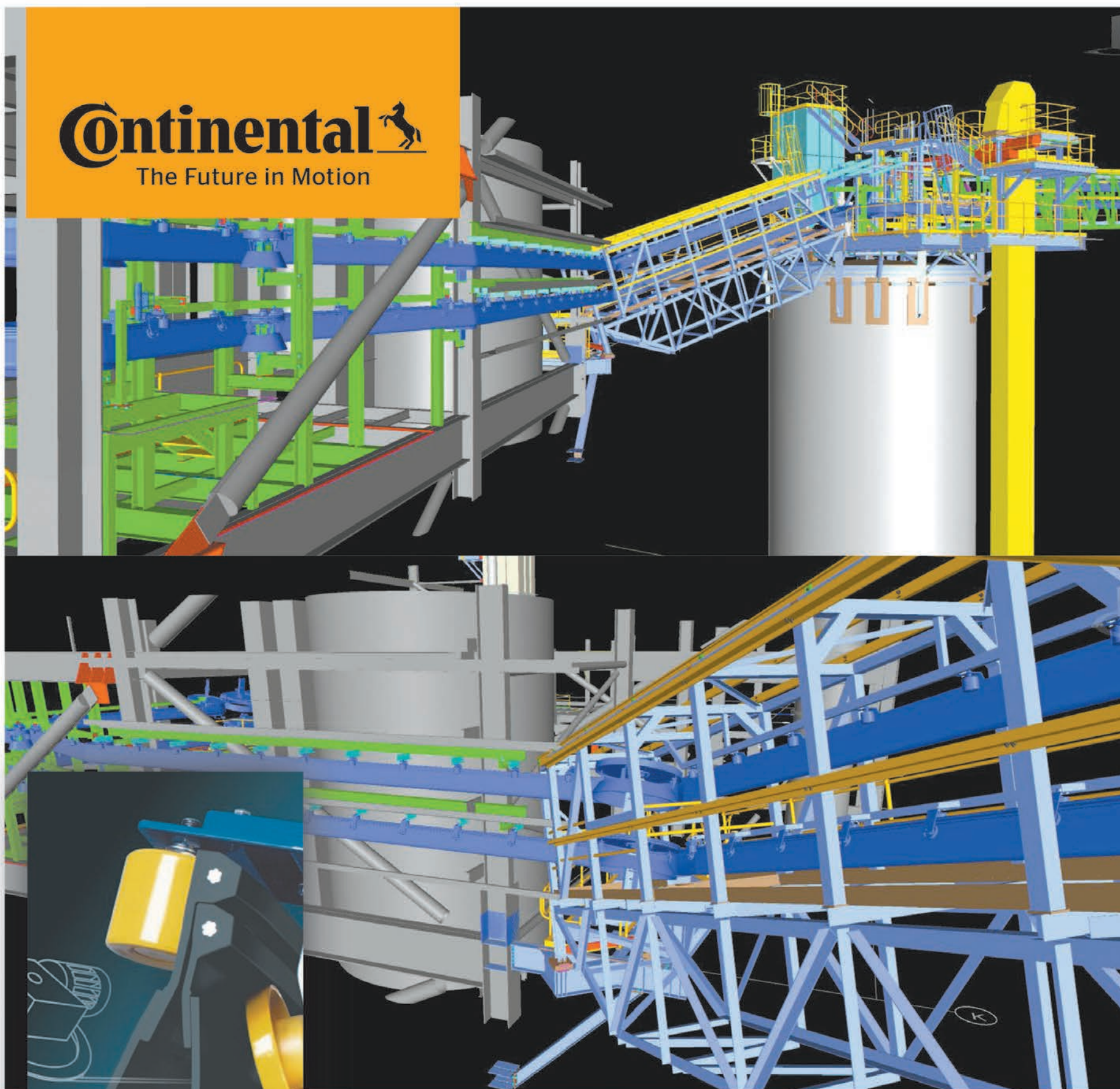
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CMI
TECHNICAL SERVICES



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Completed **safely**, on time, on budget

Conveying caustic material with zero dust and spillage

Project Scope Standard conveyor belt and pneumatic conveying systems had proven inadequate for the job at Sibelco QMAG's magnesia products processing plant where any dust and spillage was unacceptable and extremely tight routing was absolutely essential.

Key Data Sibelco QMAG's Rockhampton QLD facility is involved in the mining, beneficiation and production of deadburned, electrofused and calcined magnesia products. Raw magnesite is fed into furnaces where it is heated by natural gas to 1000°C to produce magnesia (MgO) or caustic calcined magnesium oxide (CCM) products. ContiTech recommended their SICON belt which is a closed, endless conveyor belt suitable for all types of bulk material. The blue in the pix shows its versatility including turns, lifts and declines. Approximately 300 m of SICON conveyor belting safely conveys 50t/ph of caustic calcined magnesia from plant to silos with zero dust or spillage. Because of its high flexibility the conveying route can be designed with radii of less than a metre, eliminating transfer points at corners and curves. Inclinations up to 35° are possible. The belt opens up only at loading and discharge areas and is also closed on the return trip. Therefore even sensitive material remains protected and pollution can be avoided. Several feeding and discharge areas can be installed along the conveying track and the belt can be used as two-way conveyor system, loaded in both directions, and can run through several paths back and forward. The belt is lightweight and flexible, is self-centring between guide and support rollers and is also self-cleaning.

Summary "The intricacies associated with this CCM material and challenges with our plant location requirements proved too difficult for the conventional conveying systems we tried. But the SICON system is performing beautifully - we've had virtually no issues or problems at all" *Paul Wilson, Manager Engineering Services, for Sibelco QMAG*

ContiTech

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Our covered Industrial Barrows ensure load security and are superior in quality and reliability compared to imported models. Each Industrial Barrow comes with a 12-month warranty. All of the tarpaulin sections are easily replaced or changed, giving you the option to have the tarpaulin cover or curtains branded with your company logo.

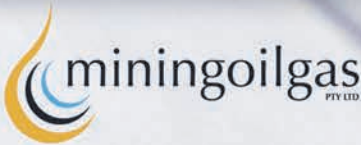
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Living life to the full

WA

PEOPLE who do spontaneous acts of bravery and kindness often downplay suggestions of being superheroes and remark that 'they just reacted to the situation and anyone else would do the same', according to Holy Cross College vice principal Peter Collins.

"True or not, we all have the gifts of the Spirit, which we need to nurture and develop and learn, and accept great responsibility to do good," he said.

"As ordinary people, we too can be superheroes."

Holy Cross College believes in developing the whole of the child – from age three to Year 12 – to be engaged, challenged and to progress so they can contribute meaningfully to the world with confidence.

Based around four pillars – Learning, Inter-Relationships, Faith and Enrichment – the college aims to create a 'LIFE' time of opportunities for their students, treating themselves and others with dignity and compassion, achieving their personal best, and being stewards of the world.

Mr Collins invites prospective families to attend a college tour on Wednesday 13 June where students lead tour groups around the amazing contemporary,



Holy Cross College is a Catholic, co-educational college in Ellenbrook, WA.

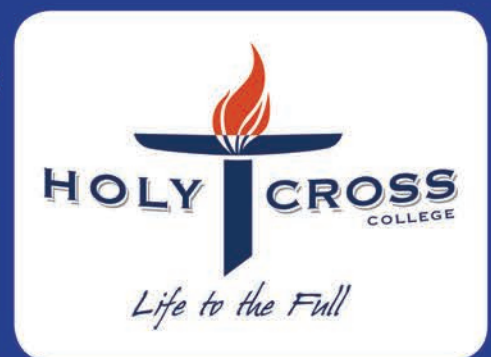
architecturally designed, purpose-built college facilities.

"Holy Cross College welcomes your

completed Expression of Interest Forms for Pre-Kindergarten through to Year Twelve," Mr Collins said.

More information on the school facilities and College Prospectus can be found at: www.holycross.wa.edu.au.

Creating a LIFEtime of opportunities



Pre-Kindergarten to Year 12 Catholic Co-Educational College
www.holycross.wa.edu.au **Ellenbrook, WA**

Data logger drives efficiency

NATIONAL

ELECTRODATA Group is an Australian based company providing data recording solutions and related software services.

The company's strategy is to invest in research and development to take advantage of the latest technologies and to deliver low maintenance products.

The end result is value for money to the customer.

Electrodata has recently developed a data logger that can be configured to record a wide range of inputs including: analogue, digital, voice, video, GPS, roll, pitch, yaw, compass bearing, wind speed, wind direction, temperature, pressure and driver ID.

This logger may be installed in heavy machinery, locomotives or marine vessels to record a comprehensive range of data.

Such a record is vital for monitoring

safe driving skills, analysing any safety incident including the support of court presentations, or for scheduling maintenance-related services.

Electrodata has also just released a

new feature to its range of voice recording solutions.

The new feature has enabled continuous monitoring to ensure full product functionality and direct follow

up responsibility by Electrodata's service division if required.

This minimises the need for customer resources to monitor and manage service related calls.



Electrodata's vehicle logger 'live view' featuring a camera, GPS, and two way radio audio recording capabilities.

Whether recording communications for safety reasons or logging data to ensure that valuable assets are operated safely, Electrodata can provide an affordable solution tailored to your needs. This solution can often be virtualised to minimise costs and take advantage of your surplus computer resources.

AUSTRALIAN TECHNOLOGY

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Digital communication systems essential

NSW/QLD

A TAILORED communication system is no longer a luxury trend for multinational miners.

Effective wireless, two-way communication systems are now crucial for companies in the resources sector to stay in control and keep staff instantly connected.

With technology constantly shifting and two-way radio taking an evolutionary step into digital communications, Newcastle-based Gencom Wireless Solutions has helped businesses across the sector stay at the forefront of new communication technologies.

Gencom managing director Martin McLeod said traditional analog networks were inflexible and generally unable to meet the growing demands of customers.

"Digital technology offers an expandable platform which caters for the ever-changing mining environment very easily," Mr McLeod said.

"An onsite, wide area radio network is the only option for users who need to reach a large number of staff quickly and cost effectively."

Gencom has deployed turnkey two-way radio systems varying from simple analogue single frequency systems to sophisticated mission critical, multi-site networks to major mines throughout NSW and QLD.

Gencom has partnered with the world's leading technology manufacturers,



Gencom is a leading supplier of two way radios.

including Damm, Sepura, as well as being recognised as a Motorola Platinum partner.

"We have completed several major projects in the past 12 months, including the supply and installation of a replacement voice radio network for a

major coal mine in Muswellbrook," Mr McLeod said.

"The new Motorola Mototrbo digital network we installed provides better coverage, better audio quality and includes advanced features such as

GPS, emergency management and Wi-Fi programming capabilities."

The benefits of a digital radio network are many, and the technology has gained traction in the mining sector where it's now proving to be critical for success.

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All images: MMG.

MMG DUGALD RIVER GENERAL MANAGER PIERRE MALAN

First zinc concentrate production began in November last year at the \$US570 million Dugald River mine. Since then, the MMG team and its contractors have been working at warp speed to reach the next milestone; commercial production. **Elizabeth Fabri** spoke with the Dugald River general manager **Pierre Malan** about how a “leap of faith” during the downturn enabled the project to be achieved ahead of schedule and under budget.

Q. How is ramp up progressing and how close you are to reaching commercial production?

The project has been going really well. With commissioning ahead of schedule last year, we are, overall, still tracking under budget and ahead of schedule.

Late last year we started production of zinc concentrate, which was very pleasing ahead of schedule, and so far in 2018 we have been able to commission our plant.

We've also been able to progress the production of our lead concentrate, and shortly will be looking at shipping our first lead concentrate out of the Port of Townsville.

Overall, we've been focusing on ramping up both throughput and recovery, and happy to report that the ramp up on both those metrics have also been progressing ahead of schedule. In combination with that we have been working hard at ramping up the mine, and all production from the mine is in line with our plan and our schedule that will see us able to sustainably feed the processing plant.

Q. Are you confident commercial production be achieved in the first half of this year?

You never want to jinx something like that and call it too early, but on the basis of the year-to-date performance we're most definitely on track to achieve commercial production this half.

Q. What strategies were put in place to deliver the project under budget and ahead of schedule?

We haven't done too much reflection, but what we have done is try and make sure



we can learn from this experience so we can repeat it with projects going forward. There are a few things that stood out for me that I'm happy to share.

Firstly, I think having the right people, and arguably the best people, working on the project and on the team has been a significant contributor to this success we have had to date.

In projects like this there are so many variables; things change, things happen, and you cannot plan for everything.

So what you need is the right people on the ground in decision making positions to respond appropriately when those things happen, or when those changes occur. I believe that's one of the strengths we had.

The other thing in our favour was the timing of the project; being able to develop a mine in a counter cyclical fashion when others had significantly cut back on capital expenditure due to a metal price downturn.

That enabled us to get access to some of the best people and some of the best contractors that were fit for purpose for our project.

Together with that you have an opportunity to get [contractors] at a good price.

The competitive environment for contracting during a down cycle is much different to the middle of a boom, where contractors are generally committed to other mining projects that could potentially be offering more money than we would be willing to.

That timing aspect and the access to the people and contractors as a result of that was important.

Lastly, the support we had from our major shareholder China Minmetals certainly contributed to the success of the project and, to a large extent, enabled us to finance this project at a time when metal prices were down and when others were struggling.

Q. In a speech last year, MMG CEO Jerry Jiao described the decision to proceed with Dugald River several years ago as a leap of faith". Has this been a key pillar to your success, when others in the industry were more cautious?

It was important.

A leap of faith would certainly be one way to express it because at that specific point in time metal prices were extremely low. However, we were able to present a business case to the major shareholder that was clearly convincing, otherwise they wouldn't have come to the party.

We used a lot of very solid market fundamentals driving supply and demand and resultant price at the time to justify why that price was not a long term price, and therefore why it was appropriate to proceed with this project at that point in time.

It's great that our major shareholder and the Chinese banks were able to understand the position we held and were convinced. Now, despite not being in commercial production yet, we're able to demonstrate the thinking was sound and it wasn't a gamble.

Q. How have the new laws banning 100 per cent fly-in, fly-out workforces in QLD impacted operations and your procurement plans? Do you support the new laws?

We are certainly supportive of the law, and I'd have to say the law hasn't had any impact on our operation and we're not expecting it to have any impact going forward.

We have always stated that our preference is to employ locally, and we are committed to the local community and local Indigenous population.

(CONTINUED OVER)

(CONTINUED FROM PAGE 69)



Dugald River is 65km north-west of Cloncurry, Queensland.

We are doing everything in our power to preference local employment and also to facilitate the relocation of people into the region.

So while this law, which came into existence well after our local employment plans were already in place, doesn't really have any impact on us, we do fundamentally agree with it –demonstrated by the fact that we have been following the labour practices proposed by the law long before it was ever even conceived.

Q. Late last year, Cloncurry Mayor Greg Campbell said only two Dugald River staff at the time were locals and "more needed to be done to improve that figure". How do you respond to this?

At the time, the Cloncurry Mayor may not have had all the information at his disposal to comment fully on local employment at Dugald River.

We have a contract mining arrangement with Barmenco as well as other large contracting partners on site, like ESS, performing works for us.

Irrespective of whether a person working at Dugald River is employed by MMG directly or through a contractor, they are still Dugald River people and therefore should be counted into our overall employee numbers.

When you include contractors, as we should for a contractor mining operation, it's clear that the number of locals both from Cloncurry and from Mt Isa are well in excess of that number quoted by the Mayor.

Overall about 9 per cent of our workforce is employed locally from within the Mt Isa, Cloncurry region.

That would be somewhere in the order of close to 30 people at this point in time, and there is very strong plans in place to continue to grow that number through

apprenticeships, traineeships, and ongoing training plans and recruitment strategies to help push that number as high as we can get it sustainably down the track.

Q. Do you think local procurement is a challenge when some of the required skillsets are just not available?

Yes, it's a challenge but it's not a unique challenge; it is something that is part-and-parcel of our industry.

We are not only comfortable that we can compete with other mines in the region for skills, but that we can contribute to [upskilling] through training and development of locals and by assisting people to come into the local area through relocation.

Q. You've mentioned that Dugald River will initially be a follower in the technology space. Do you see more opportunity to get involved in new technologies/innovations?

The opportunity is certainly there, but we are not anticipating changing our strategy of being a follower.

We believe it's appropriate for MMG and Dugald River to minimise risk and cost by allowing others to do the expensive and time consuming R&D work in the technology space.

We will be keeping an eye on that, and then implementing technology once proven it's suitable at our site.

At this stage our focus remains on making sure that when we do put infrastructure in place, that infrastructure is compatible with future technology trends so we can capitalise on those developments as they get proven and commercialised by others.



Dugald River will process about 1.7 million tonnes of ore per annum to produce 170,000t of zinc concentrate.



Total Annual Membership (Adult)	Country Club \$300	Limited PAYG \$900	Mid Week Social \$2000	Saturday & Wednesday \$2500	Premium Unlimited \$3500	Coporate \$9999
7 day access to Club facilities (includes member's lounge, pool, gym and tennis courts), invitation to social and member's only special events	✓	✓	✓	✓	✓	✓
Concession applicant U18, spouse or immediate family member (in addition to at least one full membership per family)	\$150	\$445	\$1050	\$1325	\$1835	N/A
Saturday & Wednesday competition rounds	X	Limited (12)	X	✓	✓	✓
PAYG additional cost to member	\$85	\$85	\$85	0	0	0
Sunday, Monday, Tuesday, Thursday & Friday rounds	X	Limited (12)	✓	X	✓	✓
PAYG additional cost to member	\$50	\$35	0	\$35	0	0
Partner FOC round in same cart at same time after 2pm (7 days)	X	X	✓	✓	✓	✓
PAYG additional cost to member	\$50	\$35	0	0	0	0
Electric Golf Cart	X	✓	✓	✓	✓	✓
PAYG additional cost to member	\$35	0	0	0	0	0
Golf Club Store (clubs cleaned and secured)	X	X	X	X	✓	X
PAYG additional cost to member	N/A	\$500	\$500	\$500	0	\$500
Driving Range (one per round played)	X	X	X	X	✓	✓
PAYG additional cost to member	7	7	7	7	0	0
Official AGU handicap	X	X	✓	✓	✓	✓
PAYG additional cost to member	N/A	\$95	0	0	0	0
Official AGU Golf Link number	X	X	✓	✓	✓	✓
PAYG additional cost to member	N/A	\$35	0	0	0	0
10% off Villa accommodation	✓	✓	✓	✓	✓	✓
10% discount at Cypress Lakes Bistro & Bar	✓	✓	✓	✓	✓	✓
10% discount at The Restaurant @ Cypress Lakes	✓	✓	✓	✓	✓	✓
10% discount on Pro Shop merchandise	✓	✓	✓	✓	✓	✓
F&B credit	✓	✓	✓	✓	✓	X
F&B credit value	\$30	\$90	\$200	\$250	\$350	0

HYDRAULIC PUMPS

- Electric and Air Powered
- Electric, Air and Gas Powered
- Hand Pumps
- Foot Pumps
- Battery Powered Pumps
- Vanguard Pumps
- Synchronised Lifting Systems
- Assembled to Specification
- Polyurethane Rubber Hoses
- Non-conductive Hoses
- Manifolds and Remotes
- Valves, gauges and Accessories

HYDRAULIC CYLINDERS

- General Purpose
- Threaded End
- Aluminium
- Low Profile
- Shorty
- Centre Hole
- Centre Hole Spring Return
- Pulling
- Double Acting
- High Tonnage
- Locking Collar
- Pancake Cylinder
- Tilt Saddles
- Swivel Caps
- Cribbing Blocks
- Support Bases
- Body Clevis

JACKS

- Post Tensioning Jacks
- Toe Jacks
- Bottle Jacks
- Inflatable Jacks
- Sidewinder Jacks

HYDRAULIC & MECHANICAL TOOLS

- Bead Breaker
- Spreader
- Pry Bars
- Pullers
- High Tonnage Bearing Pullers
- Portable Punches
- Slide Hammers

BOLTING TOOLS

- Square Drive Wrenches
- Hex Drive Cassette Wrenches
- Subsea and Topside Tensioners
- Nut Splitters
- Torque Wrench Pumps

WORKSHOP EQUIPMENT

- H Frame Presses
- Horizontal Presses
- C Frame Presses
- Roll Bed Presses
- Mobile Floor Cranes

SERVICES

- Hydraulic Safety Training
- Maintenance and Repair Training

WARRANTY

- Lifetime Warranty on Materials and Workmanship

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