

THE AUSTRALIAN MINING REVIEW

PP100007123

JULY 2018

australianminingreview.com.au

A product of Publications & Exhibitions Australia Pty Ltd

COMMODITY FOCUS:
NICKEL

NEWS
p16



LITHIUM RUSH

MINING IN THE
GOLDFIELDS
p18



WALTER RICHARDS
HAVILAH RESOURCES
IN THE SPOTLIGHT
p62



MAJOR COMMODITIES SNAPSHOT p4



DIVERSIFIED

The Atlas Iron takeover may be officially off the table, but MinRes has completed an 11th hour purchase of Cliff's Koolyanobbing operations and is boosting investment in a range of battery metals opportunities.

MINERAL RESOURCES p22

Image: Mineral Resources.



GET RUNNING, STAY RUNNING
WITH THE BEST VALUE
SKILLED LABOUR AND
EQUIPMENT SOLUTIONS



Contact us for an obligation free proposal

emsgroup.com.au/amr

What stories matter to you?



reuben@miningoilgas.com.au

NEWS 1

Commodities Snapshot	4
The Contractors	10
Explorers on the Move	12
Technology & Innovation	14
Commodity Focus: Nickel	16

FEATURES

Mining in the Goldfields	18
Mineral Resources	22
Sandfire Resources	26
Port Hedland & Karratha: World Class Mining Services	29
Capricorn Metals	32
QME 2018	34
Mining in Victoria	40
Image Resources: Boonanarring	44
Kwinana: A Downstream Hub	46

INDUSTRY FOCUS

Companies Gearing Up	48
Dewatering Services	53
Industrial Workwear & PPE	54
Optimising Efficiency	56
Rock Fall Barriers & Protection Systems	57
Shotcreting	58
Water Coolers, Dispensers & Ice	59
Wear Resistance	60

**IN THE SPOTLIGHT:**
HAVILAH RESOURCES
WALTER RICHARDS
p62JUST THE
START

Capricorn Metals p32

INDUSTRY
REBOUND

QME 2018 p34

GOOD AS
GOLD

Mining in Victoria p40

PUBLISHED BY

ABN 28 112 572 433

GENERAL MANAGER

Brad Francis

brad@miningoilgas.com.au

MANAGING EDITOR

Reuben Adams

reuben@miningoilgas.com.au

JOURNALISTS

Elizabeth Fabri

elizabeth@miningoilgas.com.au

Jessica Cummins

jess@miningoilgas.com.au

GRAPHIC DESIGNER

Charlotte Lufino

charlotte@miningoilgas.com.au

SALES EXECUTIVES

Penny West

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.au

For all other emails to staff, the standard convention is, first name (only) @miningoilgas.com.au

The Australian Mining Review is a free publication to all mine sites and mining companies in Australia. Its value is \$11 an issue. (Includes GST, postage and handling).

The copyright is vested in the Proprietors of The Australian Mining Review; neither whole nor any part of this issue may be reproduced without permission. The views expressed in this publication are not necessarily those of Miningoilgas Pty Ltd and its staff, but are those of the respective author who accepts sole responsibility and liability for them.

NOTICE TO ADVERTISERS:

The Trade Practices Act, 1974 came into force on the 1st October 1974. All advertisers and advertising agents are directed to carefully study the provisions of the Act, which contain strict regulations on advertising.

It can be an offence for anyone to engage, in trade or commerce, in conduct deemed "misleading or deceptive". Specifically s53 of the Act contains prohibitions from doing any of the following in connection with the promotion, by any means, of the supply or use of goods or services:

(a) falsely represent that goods are of a particular standard, quality, value, grade, composition, style or model or have had a particular history or particular previous use; (b) falsely represent that goods are new; (c) represent that goods or services have sponsorship, approval, performance characteristics, accessories, uses or benefits they do not have; (d) represent that the corporation has a sponsorship, approval or affiliation it does not have; (e) make a false or misleading representation with respect to the price of goods or services; (f) make a false or misleading representation concerning the need for any goods or services; or (g) make a false or misleading representation concerning the existence, exclusion or effect of any condition, warranty, guarantee, right or remedy.

PENALTIES:

For an individual — \$10,000 or six months imprisonment

For a corporation — \$50,000. It is not possible for this company to ensure that advertisements published in this newspaper comply with the Act and the responsibility must, therefore, be on the person, company or advertising agency submitting the advertising for publication. In case of doubt, consult your lawyer.

YOUR 12 MONTH HARD COPY SUBSCRIPTION TO
THE AUSTRALIAN MINING REVIEW

+ Original commentary and analysis + Interviews + News

+ In-depth company and project profiles + Cutting edge technology, products and services

Just \$120 + GST for 12 issues (Australia only)

CONTACT US TODAY ✉ brad@miningoilgas.com.au ☎ [08] 6314 0303

THE RIGHT PARTNER FOR QUARRYING AND MINING APPLICATIONS



Come and see us at Stand A738 at the QME!

**Contact our
team for fast,
friendly advice.
We'd love to
hear from you.**

Phone:
+61 (8) 9248 1588
Email:
sales.aus@rosta.com

ROSTA 
www.rostaaustralia.com.au



TSURUMI

**Extreme conditions reveal
TRUE VALUE**

**Deep well dewatering
through to slurry pumps**

- Cast iron, 316 stainless & Titanium
- Heads to 200m
- 1000v options
- Japan's largest manufacturer
- 3 year warranty



Aussie Pumps

**FREE selection guide
02 8865 3500**

AUSTRALIAN PUMP INDUSTRIES PTY LTD
info@aussiepumps.com.au
www.aussiepumps.com.au

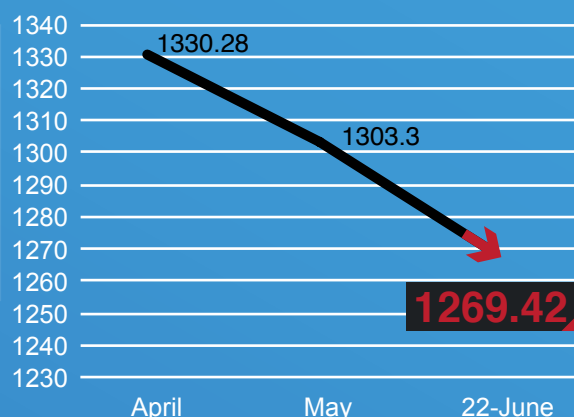
MAJOR COMMODITIES

SNAPSHOT

GOLD

\$US/oz

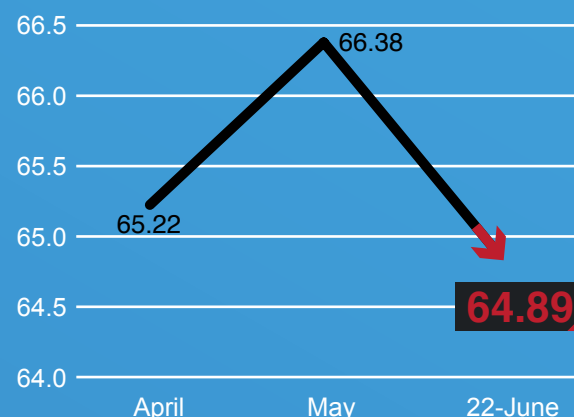
Gold prices are hovering near-six month lows as higher US interest rates make the precious metal less attractive.



IRON ORE

\$US/t
62% Fe CFR China

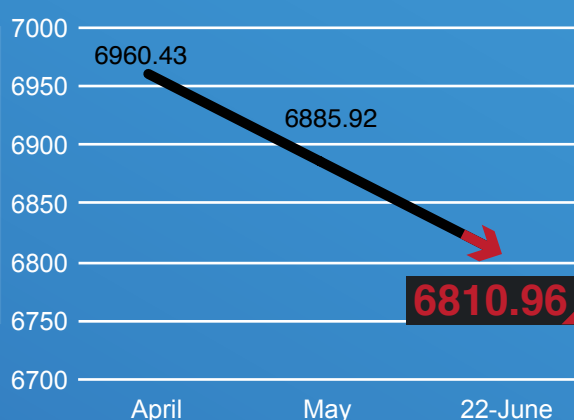
Iron ore remained flat in June, continuing to float around or just below \$US65/t.



COPPER

\$US/t
LME Price

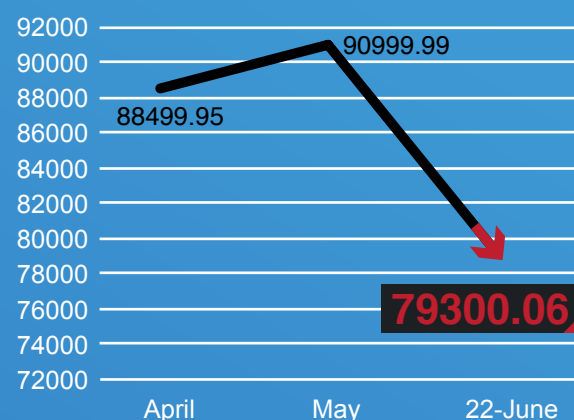
Copper prices softened in June on the back of escalating trade tensions between the US and China, and a rise in inventories.



COBALT

\$US/t
LME Price

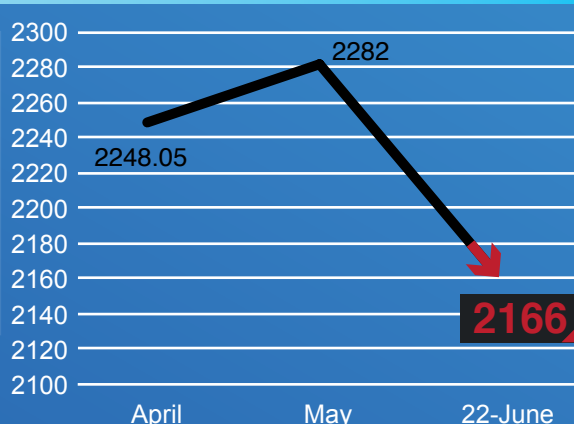
Cobalt spot prices saw a slump in June as new supply started to come online in the Democratic Republic of Congo (DRC).



ALUMINIUM

\$US/t
LME Price

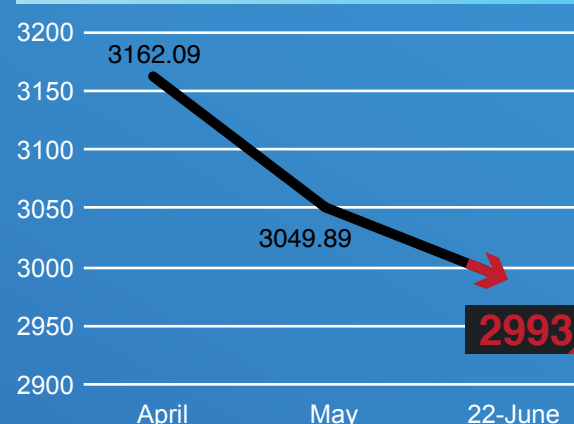
The aluminium market has taken a turn, with prices falling since Donald Trump's decision to place tariffs on Canada, Mexico and the EU.



ZINC

\$US/t
LME Price

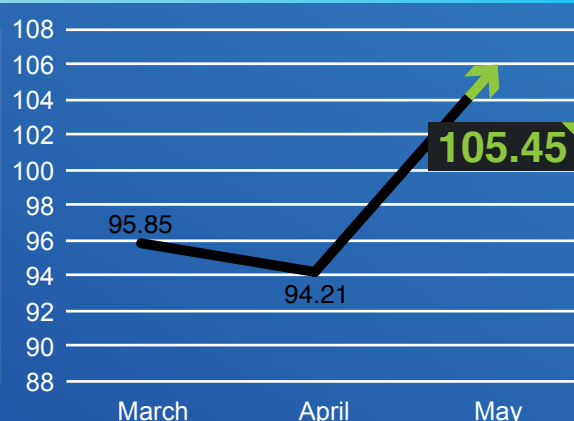
Zinc prices have hit 10-month lows as global supply ramps up. Zinc stocks in London Metal Exchange warehouses are up 87 per cent since March this year.



COAL

\$US/t
Australian Thermal

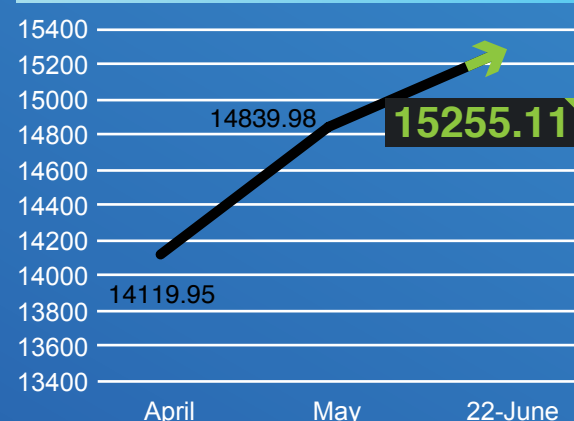
Increased demand from Asia has strengthened Australian coal prices. Analysts predict the Asian seaborne market for thermal coal to grow by 54 per cent by 2030.



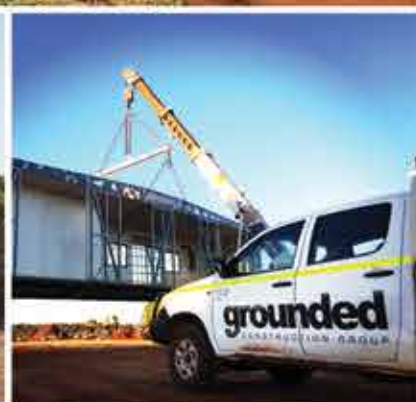
NICKEL

\$US/t
LME Price

Nickel was the best performer of the month, with prices continuing a steady climb amid growing demand for the battery metal.



ANY VILLAGE, ANYTIME, ANYWHERE



- MINING CAMP CONSTRUCTION
- PORTABLE BUILDING INSTALLATION
- MODULAR HOUSING
- REFURBISHMENT
- RELOCATION & DEMOBILISATION
- INTERNAL & EXTERNAL MAINTENANCE



Grounded Construction Group is your remote community construction specialist.

We offer services that reach from civil scope through to commissioning of entire camps and every construction activity in between.

We provide our clients with everything from landscaping, construction, concreting, fencing and maintenance right through to hydraulic and electrical install and commissioning. We pride ourselves on delivering industry leading results – for captains of industry like Rio Tinto, FMG, Iluka Resources & Roy Hill. These are repeat customers of ours due to on time, on budget and safe project execution.

☎ 08 9321 3398 ✉ paul.natoli@groundedgroup.com.au

📍 Suite 7, Level 3, 1111 Hay Street, West Perth, WA 6005

IN BRIEF

First concentrate at Pilgangoora

LITHIUM

PILBARA Minerals has produced first concentrate at its Pilgangoora lithium-tantalum mine in the WA Pilbara, marking the company's transition from developer to producer.

Pilbara Minerals managing director and chief executive Ken Brinsden said the company targeted the delivery of its first shipment of spodumene concentrate in August and is completing remaining logistics, including ramping up the plant's overall production capacity.

"This is a great result, which marks the culmination of the incredible hard work our entire team has put in to transform the amazing resource at Pilgangoora into a globally significant lithium raw materials production base," Mr Brinsden said.

Stanmore Coal to acquire Wotonga South

COAL

STANMORE Coal has inked a deal to buy the Wotonga South coking coal deposit and associated tenements from Peabody Australia subsidiary Millennium Coal for \$30 million plus royalties.

The project is adjacent to Stanmore's Isaac Plains project in QLD, and will enable the miner to develop an open cut mining operation with an eight to 10 year mine life.

"With the acquisition and permitting of Isaac Plains East and now the acquisition of Wotonga South, Stanmore can cement its 'capital light' approach utilising our regional advantage and infrastructure," Stanmore Coal managing director Dan Clifford said.

Spitfire and Excelsior to merge

GOLD

SPITFIRE Materials and Excelsior Gold will merge to consolidate the companies' neighbouring gold projects in North Kalgoorlie.

The new gold company will have a combined indicated and inferred mineral resource inventory of more than 2.1 million ounces, with the aim of becoming a mid-tier gold producer.

Spitfire managing director John Young said the merger was "a game-changing transaction for both companies".

"The combination of our respective WA gold assets gives us the critical mass to pursue a near-term development strategy based on the establishment of a new production hub near the world-class mining centre of Kalgoorlie."

The Pilbara's new boom

SOUTH FLANK (BHP)	ELIWANA (FMG)	KOODAIDERI (RIO TINTO)
<ul style="list-style-type: none"> Capital cost: \$US3.4 billion Construction to begin July. Production in 2021 Mine life: 25 years + 80mtpa Will increase WAIO's average iron grade from 61 per cent to 62 per cent. Jobs: 2500 during construction, 600 operational roles 	<ul style="list-style-type: none"> Capital cost: \$US1.275 billion Construction starts soon, Production in December 2020 30mtpa with capacity for up to 50mtpa Underpins the introduction of a 60% iron grade product Mine life: ~ 24 years Jobs: 1900 during construction, 500 operational roles 	<ul style="list-style-type: none"> Capital cost: ~ \$US2 billion If approved could start construction in 2019, with production in 2021 Work is progressing on the feasibility study Jobs: 1600 during construction, 600 operational roles

Image: FMG.

ELIZABETH FABRI WA

THE Pilbara is gearing up for a new wave of developments as two of the three planned iron ore projects have approvals to begin construction.

Both Fortescue Metals Group (FMG) and BHP have green lit their respective \$US1.275 billion Eliwana, and \$US3.4 billion South Flank projects, which will replace production from mines nearing the end of their lives.

Rio Tinto's Koodaideri project was not far off either, with a decision expected later this year at the conclusion of a feasibility study.

The mine approvals have signalled confidence for the Pilbara region and WA

jobs, with major contractors now circling to get in on the action.

However, with all three projects expected to be under development in the same region at the same time, questions have risen how the companies will cope with rising cost pressures and potential skill shortages amid competition to secure top-tier contractors, workers and equipment.

BHP has already appointed CPB Contractors to undertake bulk earthworks, concrete and underground services; Monadelphous to undertake enabling works; Fluor to complete project and construction management services; Decmil to complete village construction; and Clough to complete engineering, procurement and construction (EPC) work and progress non-process infrastructure.

"We have got a bit of a head start in terms

of actually being able to get on to the tools relative to some of the other projects ... we started work on this project after the board sanctioned some interim funding last year," BHP Minerals Australia president Mike Henry told the *Australian Financial Review*.

"I think we are going to see a bit of pressure in the market as a result of multiple projects being pursued at the same time, [but] I think we are pretty well positioned in the timing of our full sanction."

FMG and Rio Tinto were expected to announce additional contracts in the coming year, however contractors like NRW Holdings have already expressed interest.

In a statement to the ASX, NRW said its WA civil business was "well placed to participate in the upcoming major iron ore replacement and sustaining tonnes projects".

Mining investment on the rise



Andrew Woodmore, Simon Klimt, Roger Leaning and Peter Nicholson.

Image: Energy Mines and Money 2018.

JESSICA CUMMINS NATIONAL

CAPITAL is flowing back into the energy and mining sectors, according to leading investment groups.

Royal Stream Investments chief executive Simon Klimt, Morgans Corporate Advisory director Roger Leaning and Resource Capital Funds managing director Peter Nicholson addressed a 400-strong crowd at the 2018 Energy Mines and Money conference in Brisbane last month.

The consensus was that there is significant capital looking for a home in mining and energy projects.

Mr Nicholson pointed out the growth in opportunities to gain private equity backing for resources projects. He cautioned that while it could be harder to attract, it was usually a longer-term investment.

"I'm seeing the emergence of more funds out there, which should create opportunity and confidence in the sector," he said.

Mr Klimt said it was good to see investment across the sector developing, particularly around debt capital finance.

"Another trend is that speciality resource debt funds are providing debt capital before banks are willing to invest," he said.

"It's a better match for the risk profile of explorers and developers."

Explorers or medium-term producers were still struggling to get traction, but those in latter development stages were generating significant investor interest, Mr Klimt said.

On the topic of new opportunities, he said the market was well positioned to take advantage of the frontier of new energy but warned companies to communicate value and risks to investors.

"As an industry, particularly new energy including battery minerals, we need to work harder to educate investors on the value of the industry, as well as explaining the risks of a rapidly changing technology," he said.

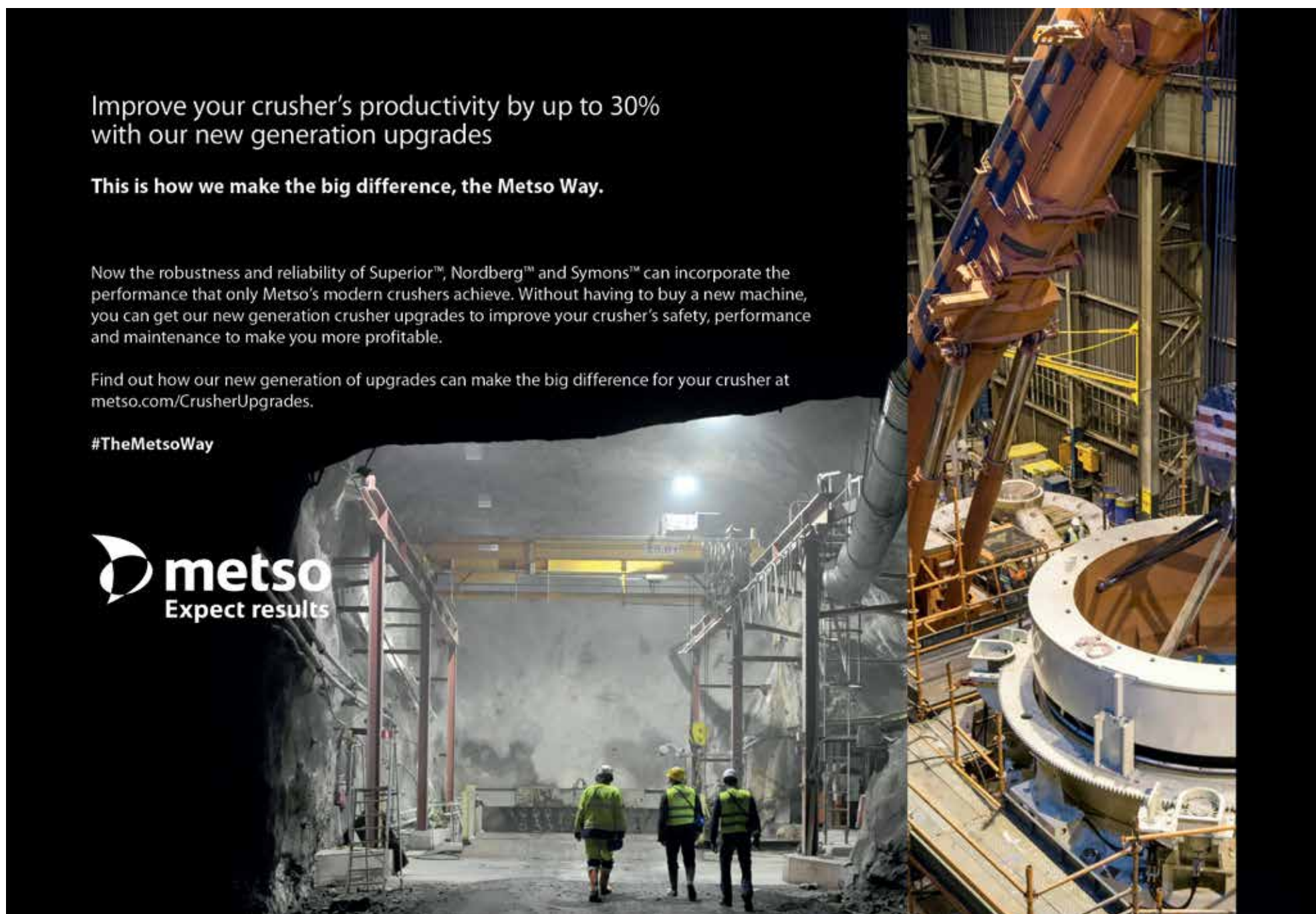
Improve your crusher's productivity by up to 30%
with our new generation upgrades

This is how we make the big difference, the Metso Way.

Now the robustness and reliability of Superior™, Nordberg™ and Symons™ can incorporate the performance that only Metso's modern crushers achieve. Without having to buy a new machine, you can get our new generation crusher upgrades to improve your crusher's safety, performance and maintenance to make you more profitable.

Find out how our new generation of upgrades can make the big difference for your crusher at metso.com/CrusherUpgrades.

#TheMetsoWay



HIGH CAPACITY | HEAVY DUTY MINING PUMPS



- Water cart filling
- Mine dewatering
- Slurry pumping
- Dust suppression
- Hydro mining
- Flood recovery
- Process water supply
- Evaporation projects

FREECALL 1800 813 677

WWW.TRUFLOPUMPS.COM.AU

South32 acquires Arizona Mining

ELIZABETH FABRI
US

SOUTH32 will spend \$US1.3 billion on the remaining 83 per cent interest in Toronto-listed Arizona Mining, owner of the Hermosa high-grade base metals project in Arizona.

13km north of the US/ Mexico border, Hermosa comprises the near-term Taylor zinc-lead-silver deposit, which has an initial eight year life; the Central silver-manganese-zinc-oxide deposit; and a land package prospective for polymetallic and copper mineralisation.

In a preliminary economic assessment earlier this year, Arizona confirmed Taylor as a long life, low cost project which could deliver a very high internal rate of return in investment.

South32 chief executive Graham Kerr said obtaining sole ownership of the company would allow it to develop “one of the most exciting base metal projects in the industry”.

The deal is subject to Arizona Mining shareholder approval, and is expected to close in the September quarter.

Exploration grants awarded

ELIZABETH FABRI
NT

FIFTEEN projects will receive a share of more than \$1.27 million in funding as part of the Northern Territory Government’s latest Geophysics and Drilling Collaboration funding round.

The program, which forms part of the Government’s \$26m *Resourcing the Territory* initiative, awarded grants to 12 different companies, including Prodigy Gold, Marindi Metals, MMG Exploration, Todd River Resources, Walhallow Creek, Vista Gold, PNX Metals, Red Metal, Independence Group, Gempart, Lagoon Creek Resources, and Northern Cobalt.

NT Resources minister Ken Vowles said changes to the program this year resulted in a record number of applications across commodities such as gold, zinc, copper, nickel and cobalt.

“Improvements were made based on feedback from explorers,” Mr Vowles said.

“They include 33 per cent more funding overall, an increase in funding for diamond drilling programs from \$100,000 to \$125,000 per project, and up to \$10,000 per project in additional funding to support service and supply by Territory-based companies.”

“God’s Gift” to miners



Image: Supplied.

Evolution Mining executive chairman Jake Klein.

JESSICA CUMMINS
NATIONAL

OPPORTUNITIES for mining companies in Australia could not be better, Evolution Mining executive chairman Jake Klein told a packed forum at the *Energy Mines and Money* conference last month.

Citing a favourable investment profile, supportive Government and an abundance of natural resources, Mr Klein said Australia outrivalled other regions as an attractive mining investment destination.

“The Australian gold industry stacks up against its global peers. Australia is God’s gift to miners – it is mining friendly,” he said.

“Half of our production comes from Queensland, it is a great place to mine.”

Evolution has a history of counter-cyclical investments in acquisitions and exploration.

By following this strategy, the miner has established a suite of six quality, Australian-based owner-operated assets, as well as an economic interest in Glencore’s Ernest Henry operation.

“I encourage peers to invest in the down cycle. Currently boards and management teams become paralysed when times are difficult,” Mr Klein said.

When asked if he would consider further investment opportunities outside Evolution’s current asset base, he said the

miner was currently focused on creating efficiencies from existing operations.

“You can make good money from investing in gold, the challenge is not diluting your returns by pursuing growth for growth’s sake. It has been tried and tested and largely failed,” he said.

“Mining isn’t always a scaleable industry. It’s hard to create synergies across operations located in different parts of the world.

“Size does not matter – quality ounces do. I want to be disciplined across six straight assets,” he said.

Evolution favoured operating assets located in Australia but “could handle one additional jurisdiction”, Mr Klein said.

Rogetta moves forward

ELIZABETH FABRI
TASMANIA

PRIVATELY owned Forward Mining has received the green light to begin construction at its flagship \$100 million Rogetta iron ore mine in northern Tasmania.

The mine, 27km south of Burnie, now has approval to begin under national environment law, subject to strict conditions that nationally significant species such as the Tasmanian devil and endangered wedge-tailed eagle are protected and supported.

The company will now proceed with final design work, with tenders to be awarded by the end of this year.

The project will produce at a rate of up to 1 million tonnes per annum (mtpa) for about seven to eight years to yield about 5.5 million tonnes of ore over its mine life.

Federal Environment and Energy minister Josh Frydenberg said Rogetta would create up to 200 jobs during construction and 100 permanent positions during the operational phase.

“The project is an example of a development that is both economically beneficial and environmentally sustainable,” Mr Frydenberg said.

“The sale of its products will bring in export revenues of up to \$90-100 million each year.”

Forward Mining also owns exploration tenements in the broader region, and is in the process of exploration drilling at the Rogetta East and Rogetta South deposits.



Rogetta is in northern Tasmania, near Burnie.

Haul road solutions

www.broons.com > info@broons.com > (08) 8268 1988

Automation & Remote Operation with BoomSafe™

BoomSafe™
PROTECTED

*Automated movement sequences,
collision prevention and true
remote multi-operation capability
with simple maintenance and
customisation.*

*For local Radio Control or Remote
Operation.*

SPEED, PRECISION AND UPTIME

With BoomSafe your site maintenance staff can set up and modify commands for common or difficult boom movements via the intuitive touchscreen and operators can execute the automated movements with a single button press. If maintenance is required any BoomSafe components can be replaced onsite in minutes using hand tools.

SAFETY

The TRS BoomSafe Automated Collision Prevention system supervises and authorises all commands from the local Radio Control or Remote Operation System to avoid damage to the boom and surrounding infrastructure.

EFFICIENCY

You can remotely control all your rockbreaker boom systems from a single workstation and integrate BoomSafe with other sensor systems on site, such as perimeter safety gates. In addition, you can set it up to operate other plant equipment, i.e. opening and closing a crusher cover. BoomSafe is available factory fitted on new Boom Systems or can be retro-fitted to your existing boom of any brand without making changes to hydraulic components.

Contact us today to discuss how BoomSafe's functionality can be customised to meet your boom automation requirements.

IN BRIEF

CPB wins \$260m South Flank work

WA

CIMIC subsidiary CPB Contractors has secured a \$260 million contract to undertake bulk earthworks, concrete and underground services at BHP's South Flank project in WA.

Construction will begin in July, and is scheduled to be complete in September 2020.

CIMIC Group chief executive Michael Wright said it was a "privilege to again be working with BHP" and its procurement strategy will focus on opportunities for Indigenous enterprises and local businesses.

"CIMIC Group has delivered significant resources infrastructure projects for the major mining clients in the iron ore industry, with our team continuing to contribute to Australian mining across all sectors," Mr Wright said.

Heron hands out Woodlawn contracts

NSW

HERON Resources has awarded a road and rail services contract to Crawfords Freightlines for its Woodlawn zinc-copper project under construction in NSW.

The project is due to begin commissioning in the fourth quarter of 2018 with mineral concentrates to be exported via Port Kembla and Port Botany.

Heron said it initially planned to move the containers entirely by road haulage to the ports, but has since identified an "attractive and cost-effective" opportunity to utilise a rail yard in Goulburn, 50km from the mine, to undertake a transfer from road to rail.

Heron said the system would significantly reduce operating risks associated with concentrate movements to port.

NRW Holdings wins \$93m extension

QLD

NRW Holdings' subsidiary Golding Contractors will begin production at Stanmore Coal's Isaac Plains East project this July as part of a \$93 million contract extension.

The contract extension until June 2019, will involve drill and blast, clear and grub and top soil removal; a truck and excavator fleet; dragline; overburden removal; coal mining; coal handling and preparation including train loadout; and mine rehabilitation.

NRW chief executive and managing director Jules Pemberton said he was "extremely pleased" Golding will continue its productive partnership with Stanmore Coal.

"I look forward to working with Stanmore Coal to sustain this relationship longer term," Mr Pemberton said.

MACA announces new work



MACA has continued to make strong progress on the bulk earthworks at the Gruyere JV project.

Image: Gold Fields Australia.

ELIZABETH FABRI WA/VIC

MACA and its subsidiary MACA Interquip have added more than \$60 million to its order book via new contracts across mining and infrastructure projects in WA and Victoria.

In the civil space, MACA has secured a new earthworks contract to build evaporating ponds for Western Areas' Cosmos nickel project, and has confirmed a \$12m variation to the bulk earthworks contract with the Gruyere Joint Venture between Gold Fields and Gold Road Resources.

The company also picked up a \$30m

design and construct contract with the WA Main Roads Authority for the Coongan Gorge realignment, and a \$6m contract, through its Victorian infrastructure business, for an intersection upgrade for VicRoads.

MACA Interquip has also nabbed a \$6m structural, mechanical and piping contract at the Anglo Gold Ashanti majority owned Tropicana gold project.

MACA managing director Chris Tuckwell said the Tropicana works relate to a secondary mill upgrade at the plant, and would employ about 25 employees at peak manning.

"The works are expected to be completed in the second half of the 2018 calendar year," Mr Tuckwell said.

The contracts add to MACA's already packed order book including a \$100m contract at Ramelius Resources' Mt Magnet gold; a two-year \$85m open pit mining contract for Pilbara Minerals' Pilgangoora lithium-tantalum project; major work at Blackham Resources' Matilda mine, and more.

It also follows news announced days prior that MACA and Beadell Resources had mutually agreed to terminate its mining services contract at Tucano in Brazil.

The termination agreement comprised a payment plan for money owed to MACA and a mutual deed of release from all claims by either party in relation to the Tucano open pit mining services contract.

Rocky's Reward win for Thiess

JESSICA CUMMINS WA

CIMIC subsidiary Thiess has a fresh contract at the BHP Nickel West Rocky's Reward nickel mine, 400km north of Kalgoorlie in WA, where it has provided mining services since 2015.

The new \$225 million, 34 month contract incorporates a further cutback at the Rocky's Reward pit and works at a satellite pit.

The mining services include mine planning and engineering, drilling and blasting, mining of overburden and ore, and rehandling services to the Leinster processing facility.

CIMIC Group chief executive Michael Wright said the company was pleased to continue its support at Rocky's Reward, delivering value through mining expertise and its experience in planning and scheduling mining around existing underground workings.

CIMIC Group executive Mining and Mineral Processing and Thiess managing director Douglas Thompson said the contract recognised Thiess's ability to bring the right equipment and people to projects.

"We delivered strongly in production and safety and Rocky's Reward and we



Rocky Reward mine.

Image: CIMIC Group Limited.

continue to look forward to providing opportunities for local jobs and suppliers."

A member of the BHP Billiton Group, Nickel West is a fully integrated nickel

business comprising the Mt Keith, Cliffs, and Leinster mines, the Kalgoorlie smelter, the Kambalda concentrator and the Kwinana refinery.

THE RAIL EQUIPMENT

Specialists



Melville Equipment is a specialist supplier of Railway maintenance equipment. We offer in-house design and manufacturing to help our customers improve their production.

Since 1982, Melville have been offering small track maintenance solutions for the insertion and removal of track fasteners as well as welding equipment, overhead wiring, ballast regulating and track geometry.

Our product offering has now grown to include battery operated equipment and are distributors for international brands which include: Rail Products UK (MEWP and Cranes), Knox Kershaw, Abtus, Permaquip, Rotabroach, Weigh Well track measuring equipment, Enerpac, Sola Track gauges, MK Tools

ballast tyne.

Melville Equipment now exports to several Asian countries, UK, USA, and Canada among others and are continuing to extend our reaches to continue as an Australian Manufacturing.

Our reliable, purpose built equipment will help you efficiently maintain your railway assets.



Impact ramps up exploration

ELIZABETH FABRI
WA/NSW/QLD

JUNIOR explorer Impact Minerals will undertake further exploration work across four of its Australian base metals and gold projects.

Follow up drilling programs will initially begin at Impact's Commonwealth gold-silver-base metal project in NSW and the Clermont gold project in QLD.

Exploration will then continue at the Mulga Tank gold and nickel project in WA, and Blackridge conglomerate gold project in QLD around September and October.

At Clermont, drilling will be undertaken across five targets to test previous high-grade intercepts and anomalies, once Land Access Agreement negotiations are completed.

Impact said drilling at Clermont to date showed strong similarities to the high-grade, low sulphidation-style Pajingo gold deposit, 250km to the northwest.

At Mulga Tank, the company had also identified a "significant number" of gold and nickel targets for follow up work.

Meanwhile at Blackridge, the company will take the first bulk samples from several places along the mineralised unconformity between the gold-bearing sedimentary units and the underlying basement.

The announcement comes less than a month after Impact entered an option to earn a 95 per cent interest in Blackridge from Rock Solid Holdings.

New exploration ground unlocked

JESSICA CUMMINS
QLD

THE Palaszczuk Government has earmarked more than 44,000 square kilometres of land for exploration to unlock the next round of resources projects.

Speaking from the Energy, Mines and Money Conference in Brisbane today, minister for Natural Resources, Mines and Energy Dr Anthony Lynham said it was the largest amount of land released under the State's exploration program and showed the Government's commitment to creating a stronger economy by encouraging private sector investment and the jobs that follow.

Dr Lynham said the Palaszczuk Government was offering 43,250 km² for investors looking to invest in petroleum and gas exploration.

"This is made up of 29 areas which is more than double the previous release to help ensure future energy security as we transition to a renewable energy future," Dr Lynham said.

"For coal explorers we are releasing 10 areas covering 1140 km² of land in the Bowen and Eromanga basins."

He said nine areas for coal explorers were in the Bowen Basin, which contains almost all of the state's metallurgical coal reserves.

JMEI round 2 a success

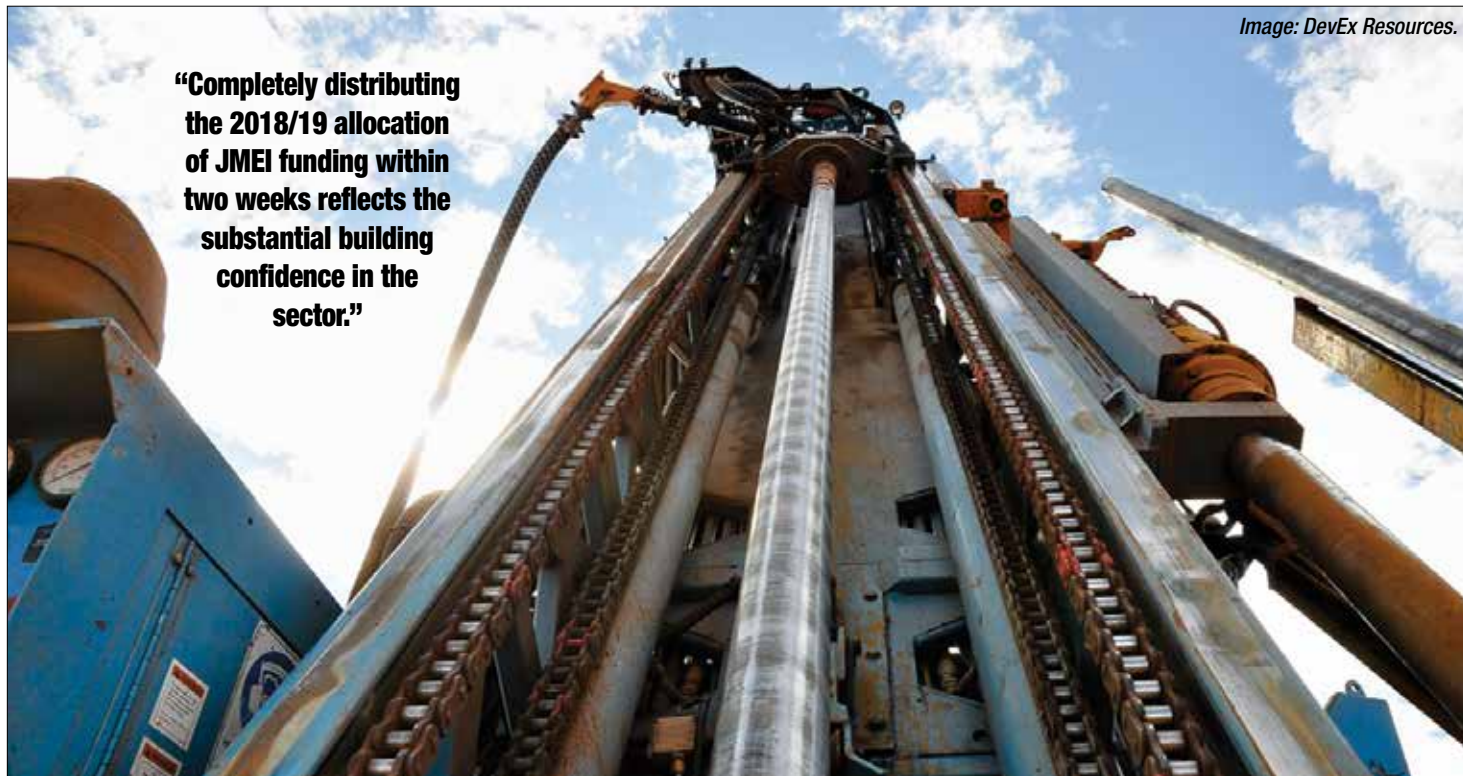


Image: DevEx Resources.

"Completely distributing the 2018/19 allocation of JMEI funding within two weeks reflects the substantial building confidence in the sector."

46 companies successfully received available credits for the 2018/19 JMEI.

ELIZABETH FABRI
NATIONAL

RIVERSGOLD, Minotaur Exploration, St George Mining, Emmerson, and DevEx Resources were just some of the companies to secure funding as part of the Government's four year, \$100 million Junior Minerals Exploration Incentive (JMEI).

The JMEI, successfully passed by the Senate in March, provides a tax incentive to invest in small exploration companies undertaking greenfields minerals exploration in Australia.

It replaces the former Exploration Development Incentive (EDI), and allows mineral exploration companies (with no mining income) to raise capital, and renounce and pass future tax deductions to their Australian resident investors.

46 companies applied for their share in \$31.5 million for the 2018/19 income year, up from 23 companies a year prior.

Association of Mining and Exploration Companies (AMEC) chief executive Warren Pearce said the number of explorer applications justified the Federal Government's decision to redesign the EDI.

"AMEC had called for key improvements

to the EDI over a number of years, and last year the Government decided to relaunch it as the JMEI including the improvements we had campaigned for," Mr Pearce said.

"Completely distributing the 2018/19 allocation of JMEI funding within two weeks reflects the substantial building confidence in the sector.

"This means more greenfield exploration, which increases the chances of finding the next mine, and therefore more jobs and more revenues for local businesses."

The next round of the JMEI will open on 1 June 2019.

Drilling underway at Zackly



Image: Polar X Limited.

Core drilling rig set-up on first drill hole in the 2018 Zackly resource extension drilling program.

JESSICA CUMMINS
ALASKA

ASX listed explorer and developer Polar X has begun drilling its Zackly copper-gold prospect at the Alaska Range project to rapidly grow the existing JORC resource and kick start feasibility studies.

Polar X will drill about 5000m of HQ diameter core in 23 holes designed to expand the known high-grade Zackly copper-gold skarn deposit along strike and at depth.

The currently delineated Zackly inferred resource occurs over a strike length of 1km and already contains an estimated 41,000t of copper, 213,000oz of gold and 1.5moz silver from surface.

The Caribou Dome deposit, also part of the Alaska Range project, has a JORC Resource of 2.8mt at 3.1 per cent copper, for 85,500t of contained copper.

The company aims to rapidly accumulate sufficient copper gold inventory between Zackly and Caribou Dome to support feasibility studies on a combined operation or one or more standalone operations.

Valuations
Common Valuation Applications
Insolvency, Insurance, Company
Accounts, Finance, Asset
Registers, Litigation, Merges and
Acquisitions, Taxation.

Buy and Sell Through AUCTIONS, TENDERS & EXPRESSION OF INTEREST



WELSHPOOL • KARRATHA • KALGOORLIE

Oil & Gas Industry • Mining, Earthmoving Plant & Machinery • Vehicles, Trucks, Passenger & Light Commercials • Catering, Delicatessen & Hotel Equipment • Timber, Hardware & Building Supplies • Information Technology • Office Furniture & White Goods • Insurance & Liquidation

- ✓ Site inspection of the assets and consultation on sale methods.
- ✓ Removal of assets from designated locations and delivery to our showrooms.
- ✓ Consignment of assets including asset numbers and serial numbers for accurate reconciliation.
- ✓ Correct and detailed identification of assets.
- ✓ Regular auction opportunities ensuring assets are given the best prospect to sell.
- ✓ Professional, comprehensive marketing campaigns isolating the target market designed in-house.
- ✓ Facilities to present the assets for auction in a highly secure and visible manner.
- ✓ Immediate and strong market connections for a huge range of assets.

UPCOMING SALES

900 PERSON ACCOMMODATION CAMP ONLINE AUCTION

Ends: Wednesday 11th July at 4pm

Location: Onslow, WA

Contact: Frank Lee 0411 649 601

FOLLOWING COMPLETION OF A MAJOR O&G CONSTRUCTION PROJECT, WE HAVE BEEN INSTRUCTED TO SELL A COMPLETE ACCOMMODATION CAMP LOCATED IN ONSLOW WA.

Items Include Accommodation Buildings (4 Room With Ensuite), Dry Mess, Wet Mess, Recreation Rooms, Administration Buildings, Gymnasium, Laundries, Toilet/Ablution Units And Sundry Accommodation Plant And Equipment. All Buildings Were Installed In 2012.

The Camp Will Be Sold As One Lot. Buyers Will Be Responsible For All Dismantling And Removal Cost.

VEHICLES, TRUCKS, EARTHMOVING, PLANT, MACHINERY & MINING SPARES AUCTION

Live On Site: Saturday 21st July at 10am

Location: Karratha, WA

Contact: Dave Crofts 0418 945 349

AUCTIONS ITEMS INCLUDE: Mining & Commercial Vehicles, Passenger Vehicles, Trucks, Buses, Trailers, Boats, Earthmoving, Plant & Equipment, Mining Spares & Equipment, Transportable Building, Containers & Sundry Items.

DRILLING AUSTRALIA PTY LTD LIQUIDATION

Location: Onslow, WA

Contact: Frank Lee 0411 649 601

UNDER INSTRUCTIONS FROM THE LIQUIDATOR IN THE MATTER OF DRILLING AUSTRALIA PTY LTD (IN LIQUIDATION) WE SHALL SELL VIA:

TRADITIONAL AUCTION

30 Percy Road, Broadwood, Kalgoorlie WA

LIGHT VEHICLES, WORKSHOP EQUIPMENT, SPARES AND OFFICE EQUIPMENT To Be Sold By Traditional Auction:

On Site Wednesday 11th July at 10am

ONLINE TENDER

Offers Will Be Invited For The Purchase And Removal Of Various **DRILL RIGS & SUPPORT TRUCKS** To Be Sold By Online Tender.

ITEMS INCLUDE: 2012 Schramm T68SWS Drill Rig On 2012 Mercedes Actros 8x8 Carrier, 2008 Hydco 350RC Drill Rig On Mercedes 4144 Actros 8x8 Carrier, Schramm 450RC Drill Rig Mounted On 2015 Iveco Astra 8x8 Carrier, Hydco 350RC Drill Rig On 1985 International T Line Carrier, Various Support Trucks, Booster Compressors And Equipment.

Tender Closes Thursday 12th July at 4pm



HEAD OFFICE: 453 Orrong Rd, Welshpool +61 (0) 8 9258 3037
KALGOORLIE: Lot 5, Great Eastern Hwy, Kalgoorlie +61 (0) 8 9091 6555
KARRATHA: Lot 109, Bedrock Turn, Gap Ridge Estate, Karratha +61 (0) 429 085 606

www.auctions.com.au

IN BRIEF

Propeller raises \$US10m for drone tech

NSW

SYDNEY and US-based tech company Propeller has raised \$US10 million to accelerate the development of its cloud-based analytics platform that visualises drone survey data.

Propeller co-founder Rory San Miguel said the investment brings Propeller's total funding to \$14 million since launching in 2014.

"The construction and mining industries are starting to see how powerful drone-mapping and analytics tools really are — they're quickly becoming the industry standard," Propeller co-founder Rory San Miguel said.

"The new financial support will help us expand our team, move into new markets, and execute our vision faster and more broadly."

IPL partners with FMG

WA

INCITEC Pivot (IPL) will soon commence an explosives products and services supply contract for Fortescue Metals Group (FMG) where it will utilise its subsidiary Dyno Nobel's latest proprietary technology.

The technologies deployed will include Dyno Nobel's Differential Energy/Delta E, which delivers the right amount of energy to different layers of rock within a blast, to produce better fragmentation and reduce mining costs.

Dyno's DigiShot Plus.4G electronic initiation system will also be used to reduce mine operation downtime.

IPL managing director and chief executive Jeanne Johns said the partnership provided a platform for Dyno to showcase the effectiveness of its innovations through results for FMG.

Cave mining study begins

QLD

AUSTRALIAN research body Mining3 has joined forces with The University of Queensland and a group of mining companies and suppliers to develop new and improved cave mining methods.

The study 'Cave Mining 2040' will focus on the future of cave mining to ensure it remains a viable and automated option for miners, with key solutions that will reduce lead times and capital investment.

Study areas will include total deposit knowledge; cave engineering; cave establishment; mine design for new and emerging technologies; high stresses and major seismicity; macro-block design and sequencing optimisation; sublevel caving; and open automation platform.

Robotics Roadmap launched



Image: Rio Tinto.

ELIZABETH FABRI
NATIONAL

AUSTRALIA'S mining sector has an opportunity to cement itself as a world-leader in the robotic space, according to new research by The Australian Centre for Robotic Vision.

Its newly launched *Robotics Roadmap* revealed mining was already ahead of other sectors, but the path to commercialisation was a key barrier in transitioning robotics from the R&D phase to market-ready product.

Driverless trucks and drones were already deployed across major operations, delivering productivity efficiencies, improved safety, and cost savings.

However, other areas to be unlocked included robots for mining in hazardous and remote geographic areas; using robots to mine on-demand when resources were

required; developing independently aware robotic systems to reduce reliance on a control room; 3D printing of mine infrastructure, and more.

The Australian Centre for Robotic Vision chief operating officer Dr Sue Keay said the roadmap was a critical step towards a national strategy to invest in robotic technology.

"With Australia currently ranked as 18th in the world for global automation by the International Federation of Robotics, it's time we start understanding robots as everyday problem solvers rather than scientific fantasy," Dr Keay said.

"Australia has a talented pool of robotics leaders and researchers who are working on some incredibly exciting projects.

"We have an opportunity to take a collaborative, multi-sector approach to education, funding and legislation to benefit industries and lead the way in the

development of robotic technology that can solve real global challenges."

After a year-long national consultation process, the centre identified a series of recommendations.

These included tax incentives to help transition high capex technologies to markets in and outside of Australia; encouraging global tech giants to invest in Australia; and equipping all Australians with Industry 4.0 relevant skills through education with the addition of micro-credentials to university programs.

It also called on Government to develop ethical, legal and regulatory frameworks to create certainty for the industry; support infrastructure for robots; appropriate safety standards; form robotics technology clusters; and improve public awareness of robot benefits.

The full report can be found at: www.roboticvision.org.

Hazer advances pilot plant

JESSICA CUMMINS
WA

ASX-listed Hazer is making big strides toward commercialisation of its Hazer process; a low cost, low emission hydrogen and graphite production process which uses iron ore as a catalyst.

In late June the company successfully produced graphite and hydrogen in a US-based Rotary Tube reactor (RTR); providing another potential pathway to Hazer process commercialisation.

An average production rate of ca. 7.5 kg/day (unpurified graphite and hydrogen content) was achieved over the course of testing; the largest production rate of the Hazer Process to date.

The company stated that the trial provided an alternative scale up option to accelerate the company's pathway to a commercial sized plant.

Early in the month Hazer Group and Mineral Resources (MinRes) commenced joint development of a pilot plant, which is on track for commissioning in the September quarter 2018 at MinRes' Kwinana facilities in WA.

The three-stage development pathway



Image: Hazer Group Limited.

Hazer's pre-pilot plant.

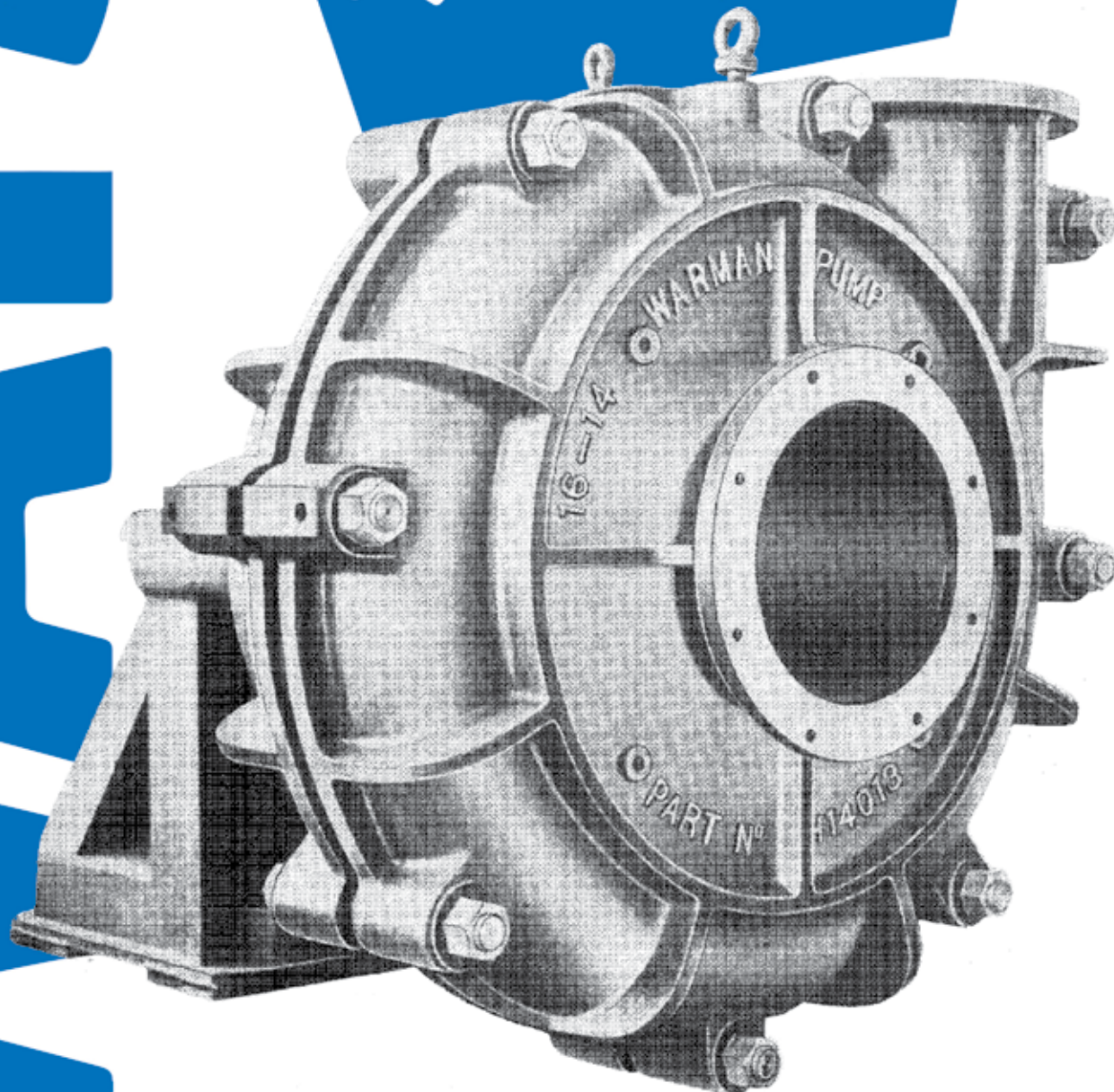
proposes a 1 tonne per annum stage 1 pilot plant, 1000tpa stage 2 commercial scale plant, and a stage 3 large-scale, 10,000tpa-plus commercial plant.

Under terms of the agreement, MinRes is providing all the capital required for the

staged development project for graphite production — suitable for high value applications including lithium ion batteries — and Hazer has given MinRes access to the existing IP portfolio, as well as tech assistance and support.

ALWAYS

Warman



80 YEARS OF THE VERY BEST

In 1938, Charles Warman came up with an idea that would totally revolutionise the mining industry. As soon as Warman's pumps came on to the scene, they became the very best you could buy. If it wasn't Warman, you were wasting your time.

Over the course of 80 years, Warman pumps spread across the globe driven by the ethos to always innovate. Soon, Warman became a global brand with a bigger influence than even the forward-thinking Charles Warman could ever have imagined. All over the world, Warman is known as the very best.

It's always been Warman, and it always will be.

To find out more visit www.alwayswarman.weir

WEIR
Minerals
www.minerals.weir

ALWAYS *Warman* SINCE 1938

NICK OF TIME

Ask any analyst for their best performing commodities of the year, and nickel will be on the list. The base metal is enjoying a stellar year – its price has increased 75 per cent in the last 12 months – as it is reinvented as a commodity of the future.

Image: BHP Nickel West.

ELIZABETH FABRI

AT the end of June, nickel was hovering around the \$US15,000 per tonne mark; a sizable increase from the \$US8931 it was fetching a year prior.

And if forecasts are anything to go by, demand for the metal is expected to increase by a further 50 per cent to 3 million metric tonnes by 2030, in line with rising demand for battery metals in electric vehicles.

According to Deloitte Client and Markets partner Tim Richards, the nickel industry was morphing into two clear supply chains; one supplying the stainless steel sector, and the other to be used in super alloys and lithium batteries.

"The International Energy Agency forecasts that the number of electric vehicles is expected to reach 125 million by 2030, compared to just 3.1 million in 2017," Mr Richards said.

And lithium batteries used in Tesla electric vehicles comprise 85 per cent nickel.

Global market fundamentals were clearly looking strong, but where does Australia's supply fit in?

Australian Producers

In the last 12 months, there has been some big changes across the Australian nickel landscape.

Independence Group's (IGO) Nova hasn't even been in production for a year, but already IGO is deep into studies aimed at using the asset as a hub for downstream processing of nickel sulphate for the burgeoning battery market.

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.

In May, IGO flagged its new focus on battery metals – including nickel – selling its Jaguar zinc-copper operation for \$73.2m.

BHP Nickel West has also been busy increasing its nickel output by 10 per cent in the March quarter compared to 2017. The diversified mining giant is expanding its business as a supplier of battery minerals at its nickel refinery in WA, planning to start producing nickel sulphate in 2019.

But, in recent weeks media has speculated BHP could be looking to take advantage of strong prices by placing Nickel West on the market once again; a move that will enable it to return its focus to its key commodities, such as iron ore.

JUNIORS TO WATCH

MINCOR RESOURCES

Gold miner Mincor Resources owns a portfolio of projects in the Kambalda region, with 99,200t of contained nickel in resource and 28,200t of nickel in reserves.

Detailed feasibility studies have been completed at Durkin North and Miitel/Burnett, and the company also had a significant nickel discovery at its Cassini project.

In a May presentation, the company said it was positioning itself "for a new nickel era" with a pathway to build high-grade nickel sulphide reserves.

PANORAMIC RESOURCES

Panoramic's Lanfranchi nickel project near Kambalda remains on care and maintenance, but the company was now completing pre-production activities at its Savannah project in the Kimberley, WA.

Panoramic Resources said an updated feasibility study completed last October, confirmed a "financially robust project with a long mine life, modest pre-production capital and competitive operating cash costs".

The mine was expected to have a life

of 8.3 years, with annual production of 10,800t nickel, 6100t copper, and 800t cobalt.

POSEIDON NICKEL

Poseidon Nickel was another Goldfields hopeful.

The junior owns six independent nickel sulphide mines and two concentrators, including the established high-grade Silver Swan mine, Black Swan and Windarra project.

The company's vision is to redevelop its existing mines, recommission processing plants and restart production.

Poseidon has already started preparation for the restart of Silver Swan, with all regulatory approvals secured.

ARDEA RESOURCES

In June, Ardea Resources announced it had engaged engineering firm Simulus to undertake a pilot plant trial for its flagship Goongarrie nickel cobalt project under development near Kalgoorlie.

Ardea chair Katina Law said the research and development program was an important step in the development of Goongarrie, and would produce nickel sulphate under operating conditions that mimicked a commercial operation.

Once developed, the project is expected to have a 25 year mine life and produce 41,500tpa of nickel sulphate.

AUSTRALIAN MINES

Australian Mines is advancing its flagship Sconi project in Greenvale, QLD.

The project, while not yet developed, has already secured a binding offtake agreement with Korean industrial conglomerate SK Innovation for the sale and purchase of up to 60,000t of nickel sulphate per year, and 12,000t cobalt per year for an initial contract period of seven years.

The company was now in the process of securing project financing, and all going well could hit the start button on construction in February 2019.

Meanwhile, Western Areas – which operates the Flying Fox and Spotted Quoll nickel mines in WA – has green lit a \$32 million early works program for its undeveloped Odysseus project at Cosmos, WA, to fast track the project to become its third producing mine.

"We have taken this decision to commence early works, prior to the release of the DFS, due to our confidence in the overall project and just as importantly, our confidence in the nickel sulphide market," Western Areas managing director Dan Lougher said.

"The demand for Class 1 nickel sulphides in the battery and electric vehicle (EV) market is forecast to grow substantially over coming years.

"We believe that Odysseus is one of a very few select nickel sulphide projects that will be coming into production in a timeframe that will enable it to deliver into that growing demand profile, which we are seeing validated by the strong inbound interest from potential offtake parties and project investors.



Independence Group's Nova mine.

Image: IGO.

OLD AGE **VALUES,** NEW AGE **TECHNOLOGIES**

OUR SERVICES

- Field Service and Workshop repairs
- Workshop pre-assembly and installations
- Work teams for small expansion projects
- Thermal Imaging of Rotating components, Electrical components and switchboard, Piping and Valves
- Vibration analysis
- Laser alignment – Shaft, Bore and Geometric
- Non-Destructive Testing (Crack Detection) via Magnetic Particle Testing and Eddy Current Array
- Crusher rebuilds and installs
- Mill Installs and maintenance
- Line boring, Bore welding, Bore facing and alignment



cmitech.com.au

GET IN TOUCH

Taylor Lochhead

West Coast area manager

☎ 0448 844 274

✉ taylor.lochhead@cmitech.com.au

Tito Chacon

General manager, Australia

☎ 0437019239

✉ tito.chacon@cmitech.com.au



CMI
TECHNICAL SERVICES

supreme drill pipe

DRILL PIPE IS OUR SPECIALITY

**BLAST HOLE • RAB
REVERSE CIRCULATION
UNDERGROUND • DIRECTIONAL**

• BECO	• AWJ	• ARD
• API Reg	• BWJ	• ARDX
• API IF	• NWJ	• PWT
• CHD76	• Mayhew	• HWT

SWIVELS AND ADAPTORS IN STOCK NOW!

M: 0402 106 432
E: sales@supremedrillpipe.com.au
W: www.supremedrillpipe.com.au
BRISBANE • AUSTRALIA

SPECIAL FEATURES

MINING IN THE GOLDFIELDS

LITHIUM RUSH

Gold and nickel have been the lifeblood of WA's Goldfields region for 125 years. But this is about to change – newcomer lithium is taking a seat at the table as demand for battery metals signals new opportunities in downstream processing.



Mt Marion mine.
Image: Neometals.

ELIZABETH FABRI

NEOMETALS' plan to build a 10,000 tonnes per annum lithium hydroxide production facility moved a step closer early June after it inked a deal to sub-lease a site in West Kalgoorlie.

The proposed 40 hectare property is 5km from Kalgoorlie, and only 70km from its Mt Marion lithium operation, which is jointly owned with majority partner Mineral Resources.

The site's proximity is a huge shot in the arm for Kalgoorlie and its people, with more than 300 construction jobs and 100 operational positions up for grabs.

"This is one of the biggest economic shake ups for the City in a long period," Kalgoorlie-Boulder Chamber of Commerce and Industry chief executive Simone de Been said.

The project marks a new era for the region, as it moves beyond mining into value-added materials.

Neometals chief executive Chris Reed said the company had been investigating sites for some time and the Kalgoorlie location made "a lot of sense".

"Kalgoorlie is not only very close to our Mt Marion operation and all the services that a first-class mining town brings, but it also provides a cost advantage owing to the removal of transport, shipping and taxes," Mr Reed said.

"Reducing transport reduces the environmental footprint which supports margins, but it's also a critical consideration for the end users who must account for the full life cycle of the materials they consume.

"Add to that Kalgoorlie's land availability, leasing rates, access to power/water/gas/ and a willing local workforce, and the location becomes very compelling."

A final investment decision on plant construction was expected in the June quarter of 2019.

Downstream Processing Push

On the same day as Neometals' announcement, the City of Kalgoorlie-Boulder and the Kalgoorlie-Boulder Chamber of Commerce and Industry's (KBCCI) held the inaugural *Kalgoorlie Boulder Economic Development Conference* in Perth.

Mr Reed presented at the event, but was not the only one spreading the Goldfields lithium buzz.

Keynote speaker Bulls N' Bears managing director Matt Birney's speech was all about the opportunities in lithium downstream processing.

"Lithium represents the most profound business opportunity of our generation, not just for Kalgoorlie-Boulder and the Goldfields but for the State of WA," Mr Birney told delegates.

"WA has the largest lithium deposits in the world today – lithium is generally found where greenstone mineralisation meets granite mineralisation and that is how you describe the Goldfields region.

"If you think all of the big lithium mines have been found, then think again."

Lithium mines in the Goldfields region included the Mineral Resources' and Neometals' Mt Marion project, Tawana Resources' Bald Hill mine near Kambalda, Galaxy Resources' Mt Cattlin project north of Ravensthorpe, as well as Kidman Resources' Mt Holland mine near Southern Cross, which is due to enter production next year.

Mr Birney said WA was just at the beginning of the lithium cycle, with another 100 years' worth of opportunities in the Goldfields alone.

However, he warned the industry must learn from past mistakes, particularly in iron ore.

"We don't want to just dig this stuff up and ship it to the Chinese where they are making incrementally higher margins than we do," he said.

"We actually have an opportunity to set the play for the lithium industry, and I say Kalgoorlie-Boulder is uniquely positioned to do just that.

"We must look at downstream processing opportunities for lithium rather than dig it out of the ground, maybe upgrade it slightly, then send it to China."

Mr Birney congratulated Neometals on its decision to build a plant in Kalgoorlie, and urged other companies to follow.

"Kidman Resources are investigating building a downstream battery metals processing plant in Kwinana," he said.

"Why are they building their plant in Kwinana? What are the economic metrics? Kidman's deposit is in the Goldfields; why would they take it out of the Goldfields and process it at Kwinana?"

Industry Support

CSIRO Mineral Resources program director Chris Vernon and CPC Engineering chief executive Glen Weir threw their support behind the idea.

"I think Kalgoorlie-Boulder is an excellent place for processing battery minerals," Mr Vernon said.

"You've got the raw materials, and trust me; the science behind making those high-purity materials is not that much of a challenge.

"We're going to hop on board, we think it's going to be the best thing since sliced bread and it's going to be great for Kalgoorlie-Boulder."

Mr Weir added that labour and haulage costs were generally the biggest challenges, so for a mine close to Kalgoorlie it would be beneficial to process and refine it locally.

"Obviously you have to do the sums, but I think there would be a great opportunity," Mr Weir said.

Mr Weir said CPC Engineering had recently worked very closely with Lithium

Australia on a potential large scale pilot plant in Kambalda.

"There is great opportunities there to prove that technology on a large scale, and to use that to assist downstream processing," he said.

Building a Knowledge Economy

A technology and innovation hub was also an emerging opportunity in Kalgoorlie.

With so many mines at its doorstep as well as Curtin University's WA School of Mines, it made sense to cement Kalgoorlie as a centre of excellence in hard rock processing and engineering training.

Building a knowledge economy was one of the key elements of the region's Growth Plan, and included investment in facilities, research, marketing, additional educational opportunities and increased engagement with industry.

City of Kalgoorlie-Boulder executive manager economy and growth Alex Wiese said there was a lot of great work happening with the WA School of Mines, CRC ORE and the CSIRO.

"We'll actually see great advances and commercial prototypes being tested in the Goldfields in operation conditions, which we hope will lead to a whole range of different efficiencies, improved cost structures for mines, and huge growth in resources in the Goldfields," Mr Wiese said.

"We are also looking to try and address the bigger picture around power.

"I think there is some really exciting things on the horizon and the City is actively engaged with businesses at all levels and research, and I think part of that success (if you look at international evidence) is trying to partner research capacity with industry, and we're very keen to see that happen not only at a mining level but at a METS level."

(CONTINUED ON PAGE 20)

Thrifty expands Kalgoorlie operations

WA

WITH more than 3000 vehicles and a branch network of 17 locations across the state, Thrifty WA is a 100 per cent WA-owned and operated vehicle rental business, forming part of the national and international Thrifty brand – a combination of local knowledge and global strength.

Thrifty WA has a large range of vehicles available for hire; from cars, trucks, buses to 4WDs, utes, vans and full mine equipped vehicles.

This year, the company is proud to celebrate 40 years servicing the metropolitan, country and regional areas of WA.

Thrifty's philosophy of providing bespoke vehicle solutions is still the primary focus of the company and the reason it has remained a trusted name throughout WA.

An upturn in mining activity gave Thrifty the final nudge it needed to expand its Kalgoorlie-Boulder operations.

The multimillion dollar expansion to a new location at the Kalgoorlie Airport is set to be up and running by mid-August this year.

The new facility will allow the business to bring its new arms of service — retail car sales, external mechanical services and vehicle leasing — to the region.

"The strengthening of the resources part of the economy has given us the confidence to steadily build our operations State-wide



Thrifty WA is expanding its Kalgoorlie operations to service the growing Goldfields mining sector.

and the Goldfields has lots of opportunity at the moment and more coming," Group general manager David Hendry said.

"We are diversifying our company; we are very much Thrifty vehicle rentals but we also offer complete fleet management

solutions – from long term leasing to mechanical servicing and repairs, with tyres, batteries and windscreens; plus we sell cars, trucks, four wheels drives and more.

"The new facility is designed to do the

whole lot. And it's an opportunity to grow; the Goldfields at the moment is growing and we want to be able to grow with it, so a bigger, more efficient and state-of-the-art facility here gives us the capability to do that."



Driving Western Australia
For 40 Years

- 100% WA Owned and Operated
- Complete Fleet Management Solutions
- Mechanical Servicing & Repairs
- Long Term Leasing
- Large Diverse Rental Fleet
- Cars, Utes, Trucks, Vans, 4WDs & Buses
- Fit for Purpose Mine Equipped Vehicles
- Local on the Ground Service and Support



Call: 136 139 thriftywa.com.au afsgroup.com.au

(CONTINUED FROM PAGE 18)

“Lithium represents the most profound business opportunity of our generation, not just for Kalgoorlie-Boulder and the Goldfields, but for the State of WA.”

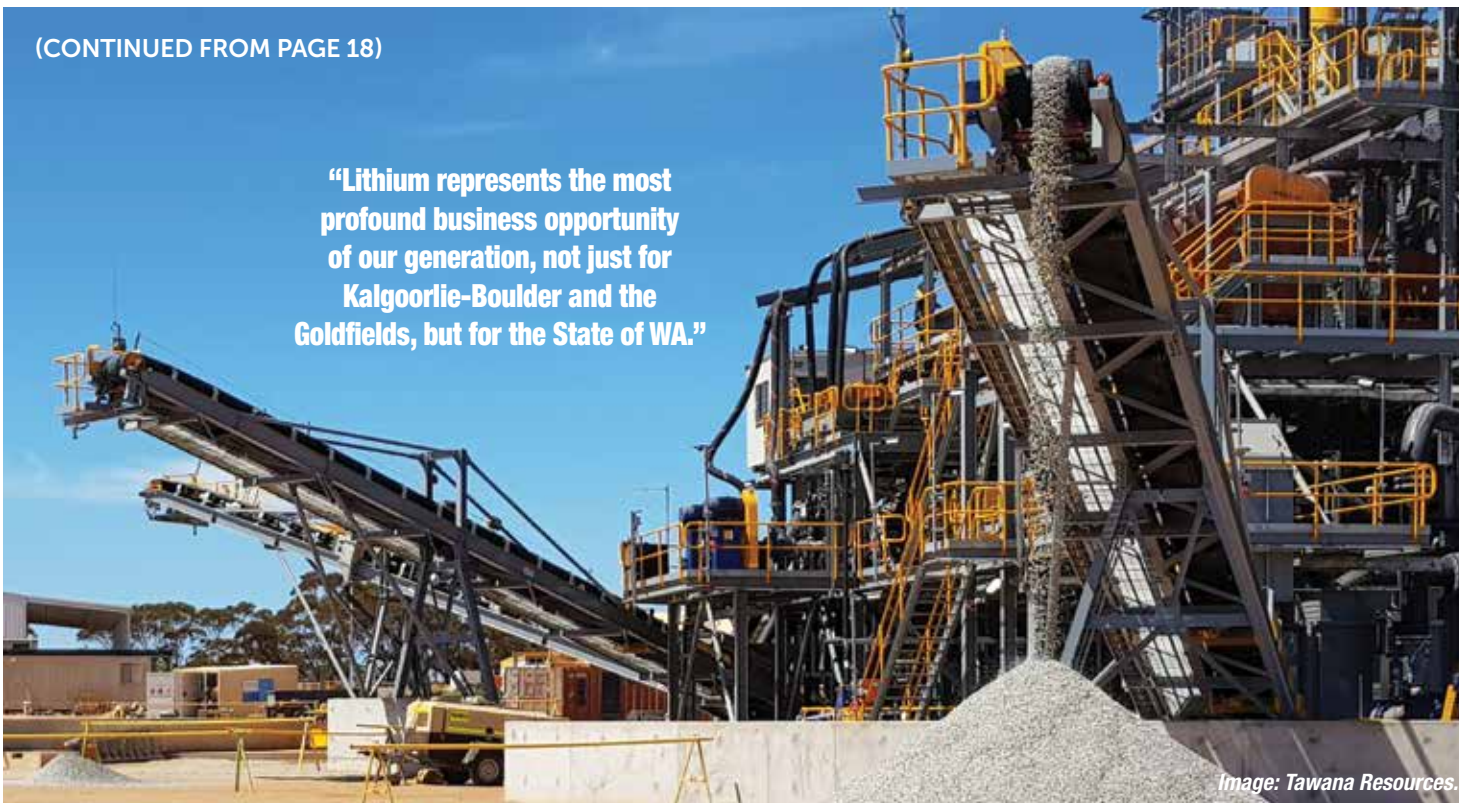


Image: Tawana Resources.

Engineering's Mr Weir said Kalgoorlie had been a centre for many years for technological advances but in recent years it has been difficult to retain the skilled people in Kalgoorlie.

“The mining industry owes a lot to the School of Mines and the quality of people that have come out of there,” Mr Weir said.

“That excellence is still there, but...it's more a question these days of how do we attract people to Kalgoorlie?”

A Residential Workforce

Mr Weir said coming from someone who had lived in Kalgoorlie, it was “one of the best

places you could ever live”.

“The culture is fantastic; what we have to do is let the rest of the world know about it,” he said.

City of Kalgoorlie-Boulder's Mr Wiese said there was a focus group currently working with the City to develop a tourism strategy – particularly around Aboriginal cultural experiences and a new 120 bed resort that will be built at the Golf Course – to entice more people to visit the region.

An \$8 million Kalgoorlie City Centre project was also underway to revitalise the town.

Then there was the issue of enabling people to get access to the Goldfields at the right price.

“We certainly have a very strong self-drive

market (people that are four wheel driving and caravanning across Australia), but I think we would unlock enormous potential if we can get airfares around \$200 consistently between Kalgoorlie and Perth, or Kalgoorlie and Melbourne,” Mr Wiese said.

KCCI's Ms de Been said the chamber recently held a Kalgoorlie Jobs Expo in Perth to showcase what the region had to offer, and all the vacant positions available.

“It is an exciting time for the Goldfields, there is certainly a lot happening,” she said.

“Gold and nickel prices are up and all the talk is currently on lithium.

“The town is buzzing with new opportunities.”

Diggers & Dealers weeks away

WA

THERE is just weeks until more than 2000 mining professionals touch down in Kalgoorlie for the 27th annual Diggers and Dealers Mining Forum.

It's a sight to see; watching the streets of Kalgoorlie come to life by day in and around the Goldfields Arts Centre, and, by night on Hannan street where the party kicks on at the Palace Hotel and surrounding bars.

This year's conference, running from 6-8 August, has a number of key differences.

The 2018 event is now under new ownership after Kate Stokes, wife of the forum's late founder Geoff Stokes, sold the business to Sharon Giorgetta (the daughter of the conference current chairman Nick Giorgetta) and Myles Ertzen in late 2017.

This year's keynote speech will be presented by the former Prime Minister of Portugal José Manuel Barroso.

Mr Barroso has also held roles as President of the European Commission, and more recently his current role as chairman of Goldman Sachs International.

Diggers and Dealers chairman Mr Giorgetta said José Manuel Barroso will be a highlight of the 2018 program.

“The restructure of the European Union because of Brexit is one of the more challenging economic issues affecting the international community,” Mr Giorgetta said.

“2018 will be a significant year for the relationship between the United Kingdom and the European Union.

“Mr Barroso is uniquely qualified to deliver an educated overview of the



economic implications that will come from this momentous change, both for Europe and the global community.”

This year again will accommodate 48 speaking slots, with the additions of a second smaller marquee on site to allow 11 emerging companies to showcase their credentials.

“Additional interest will be catered for inside the marquee with Westrac installing a 4-hole mini golf course and the WA School of Mines demonstrating virtual reality technology used in the mining industry,” Mr Giorgetta said.

This year, ASX-listed Ausdrill and NRW Holdings will also be the first mining service providers to present at the event in its history.

Kalgoorlie-Boulder Chamber of Commerce and Industry chief executive Simone de Been said Diggers and Dealers had always been a successful event.

“It provides an opportunity for businesses to gain first-hand information on the future of the economy,” Ms de Been said.

“It also provides exceptional networking opportunities.”

suez
recycling & recovery

- Commercial refuse bins
- Recycling bins
- Skip Bin Hire
- High Pressure & Vac Truck Service

Call our Kalgoorlie Service Centre on
(08) 9093 8800

www.suez.com

Transporting the Mining Industry's Most Valuable Asset for Over 40 Years

OHS Certified and Quality Assured, GRT Minesite Transfers transports more than 4500 shift workers to and from mine sites across WA every day, 24/7. Get your people to and from work on time every time, rested and safe.



GOLDRUSH TOURS
GRT Minesite Transfers

08 9092 6000
goldrushtours.com.au

info@goldrushtours.com.au
19 Epis Street, Kalgoorlie

Leading the way in building construction

INTERNATIONAL

AS one of Australia's largest construction materials companies, Boral has the resources and innovative and technical expertise to meet the needs of its customers.

Through research, Boral is committed to quality and excellence and strives to develop sustainable solutions and regularly test its concrete, cementitious materials, asphalt and quarry products to certify they meet Australian Standards.

Its in-house research, development and innovation centres focus on best-practice technical capability and product development. This is strengthened through partnerships with leading Australian universities and government agencies that allow the company to expand its access to cutting-edge research and skills.

Boral offers specialised technical support with a range of testing for aggregates, pavement materials, asphalt, cement, fly ash, concrete at its Materials Technical Services centre, the largest of its kind in the southern hemisphere.

This expertise contributes to Boral's confidence in supplying major infrastructure projects such as:

- Asphalt for Northlink Stage 1 in Perth.
- Asphalt road upgrade of Gateway Upgrade North in Brisbane
- Airport works at Queensland's RAAF Amberley base.



Australian building construction company, Boral, continues to deliver performance excellence to clients nationally and internationally.

- Concrete and quarry products for the Amrun bauxite mine project in Far North Queensland.
- Concrete supply from a fixed site and purpose-built plant for NorthConnex, a tunnel linking two arterial roads in

- Sydney that will result in motorists being able to drive from Melbourne to Newcastle without encountering a single traffic light.
- Upgrading sections of the Pacific Highway between Newcastle and Tweed

- Heads in NSW.
 - Precast concrete elements for new rail projects in Sydney, Melbourne and Perth.
- Contact Boral for all your construction material needs at www.boral.com.au.

Build something great™ with Boral

As Australia's largest and most experienced construction materials supplier, Boral's skilled team can assemble the best crews, technical specialists and project managers to successfully deliver large scale projects such as Curtis Island and our current work with Rio Tinto on its bauxite mine in Far North Queensland.

Speak to us about how we can tailor solutions for all your project needs.

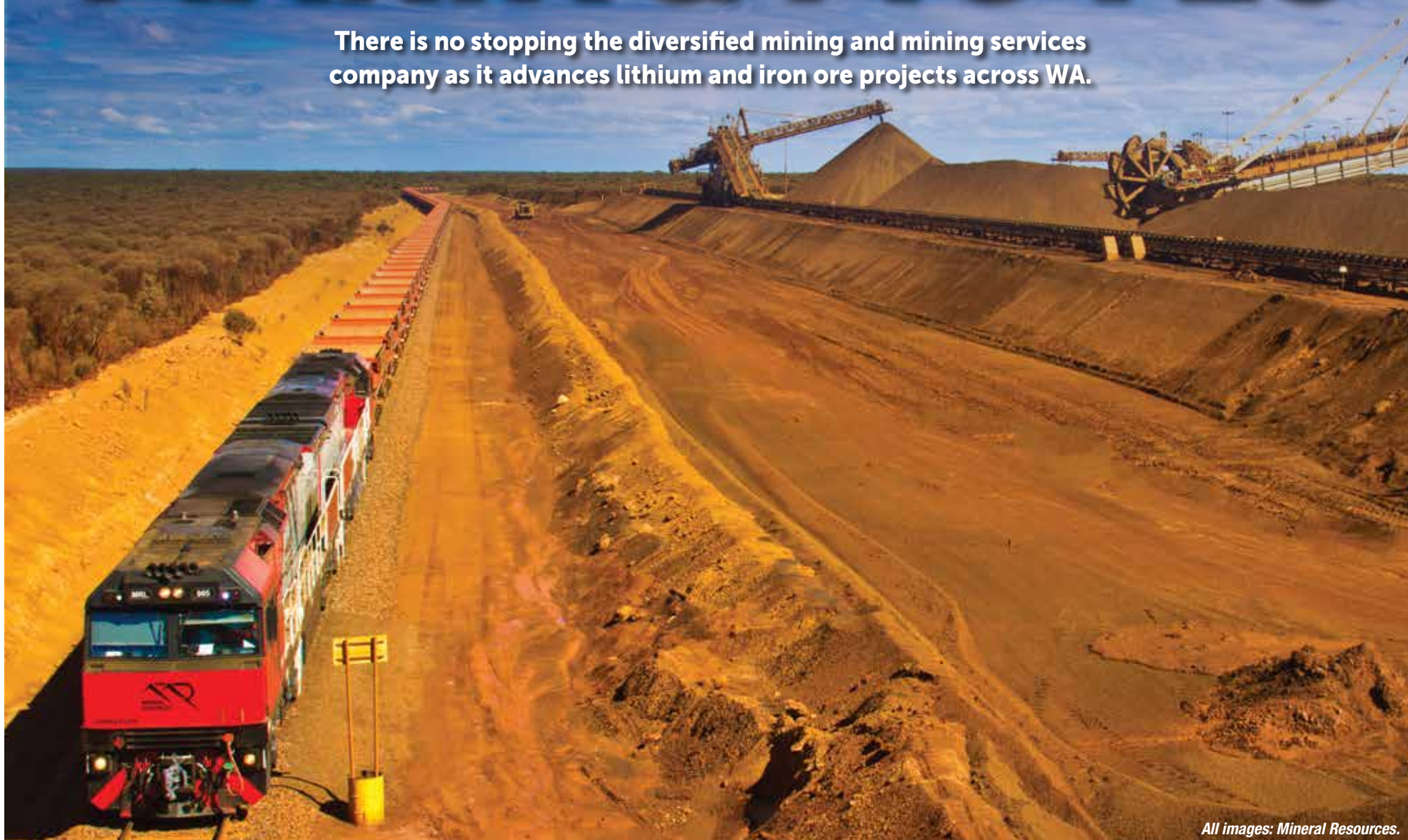
www.boral.com.au



Boral, the Boral logo and Build Something Great are trademarks or registered trademarks of Boral and its subsidiaries. BOC 25/01/17 Jun18

MAKING MOVES

There is no stopping the diversified mining and mining services company as it advances lithium and iron ore projects across WA.



All images: Mineral Resources.

ELIZABETH FABRI

THE arm wrestle over junior miner Atlas Iron has evolved into a compelling corporate drama.

In 2011 Atlas was worth \$3.5 billion, but has seen its value plummet since then due to the steep discounts it receives for its lower grade iron ore.

Its Pilbara assets include two iron ore mines and two undeveloped projects, but it is the 13 million tonne per annum (mtpa) port capacity at Utah Point, Port Hedland, and potential 30mtpa of additional capacity at South West Creek that has the majors circling.

What seemed like a done deal back in April – when Mineral Resources (MinRes) inked a \$280 million deal to acquire Atlas – became a three-horse race between MinRes, Fortescue Metals Group, and Hancock Prospecting.

In April, MinRes was the first to pounce on the junior, signing a binding Scheme Implementation Deed to amalgamate the companies in a deal worth about \$280 million.

Under the terms of the agreement, MinRes would acquire all the shares of Atlas via scheme of arrangement, in which Atlas shareholders would receive one new MinRes share for every 571 Atlas shares based on the closing price of Atlas shares on 4 April (3.02 cents a share).

Atlas directors unanimously recommended its shareholders vote in favour of the scheme.

“The proposed business combination with MinRes provides Atlas shareholders with the opportunity to gain exposure to a diversified commodities and services business, with a strong balance sheet and multiple revenue streams,” Atlas Iron chairman Eugene Davis said at the time.

“The combined operating expertise of the



MinRes' total lithium and iron ore production for the March quarter was 3.95 million wet tonnes.

expanded organisation is likely to facilitate the exploitation of a number of opportunities that currently exist within the Atlas portfolio, transforming the combined operations into a diversified commodity business.”

MinRes managing director and rich lister Chris Ellison also described the acquisition as an “exceptionally good fit” for the company.

“The acquisition of Atlas, including its portfolio of iron ore assets and its export capacity allocation at Utah Point, is on strategy for MRL,” Mr Ellison said.

Running Interference

In June FMG played its hand, acquiring a 15 per cent stake in Atlas to increase its interest to 19.9 per cent; enough to block the MinRes deal.

To make matters worse for MinRes, FMG publicly stated it did not intend to support the Atlas/MinRes proposed scheme of arrangement on its current terms.

On 8 June, MinRes waived its “no-shop”,

“no talk” and “no due diligence” terms, allowing Atlas to assess alternative bids.

In a note to shareholders to address media speculation, MinRes stated the Atlas outcome would not impact its planned Pilbara Infrastructure Project – comprising a lightweight, rail-based system running 330km from the Iron Valley region to Port Hedland.

“MRL has never intended to transport any of the Atlas iron ore on the Pilbara Infrastructure Project,” the company stated.

“The company confirms that MRL’s existing ore reserves are sufficient to underpin the business case for delivery of the Pilbara Infrastructure Project.

“In addition, this will be “multi-user” infrastructure to provide transport and export solution for third parties.”

On 12 June – in a surprise move – Gina Rinehart’s Hancock Prospecting threw its hat in the ring, increasing its interest in Atlas to 19.96 per cent.

FMG and Hancock Prospecting now collectively held almost 40 per cent of Atlas, while MinRes was believed to hold a 3.67 per

cent stake.

And while Hancock’s intentions were unknown, it appears the miner has the most to gain with its Roy Hill iron ore export operations the closest to Atlas Iron’s port berths.

However, in mid-June the story took another turn when WA Transport minister Rita Saffioti told Atlas that its majority interest NWI did not in fact have priority right to develop the two new iron ore berths at the South West Creek location.

The minister confirmed the berths were set aside for junior miners and the Pilbara Ports Authority would assess any application by NWI to develop the berths.

Hancock Prospecting has since made a takeover bid to acquire 100 per cent of the Atlas shares for \$390m – a \$110m premium on the original MinRes offer.

“The Atlas Board will evaluate the Hancock Offer and provide shareholders with a recommendation in due course,” Atlas Iron stated.

“Atlas will consider the impact of the Hancock Offer on the Scheme, including any rights of MinRes to ‘match’ the Hancock Offer, and will provide shareholders with an update in due course.”

Days later, MinRes pulled the pin, announcing it would not make a counter proposal to the Hancock offer.

Koolyanobbing Win

The Atlas Iron acquisition may have slipped through its fingers, but MinRes has since entered a last minute deal to acquire – or save – US miner Cleveland-Cliffs’ Koolyanobbing iron ore mine near Southern Cross, WA for an undisclosed sum.

(CONTINUED ON PAGE 24)



Image courtesy Brenden Scott

Qantas — connecting Australia's mining and resource sector in WA

The Qantas Group, as a leading provider of air transport services to the mining and resources sector, has recently enhanced its capability in Western Australia with Network Aviation adding two Airbus A320 aircraft to its Perth-based fleet. The 180-seat jets are now operating flights on resources routes within WA and are available for mining charters.

The Airbus A320 performs well in high temperatures and offers greater operational reliability at high elevation airfields, like those in WA's Pilbara region. Plus, as the aircraft is configured as a single-class cabin, it can carry more passengers and is well suited to the State's resource markets.

The two A320s and 17 F100s are operated by Network Aviation alongside the Qantas Group's existing Perth-based Boeing B737 and B717 aircraft. This mix of fleet types allows the Qantas Group to offer flexible capacity with 180, 174, 125 and 100 seat options for customers across both charter routes and the nine regular passenger transport air routes in Western Australia.

From greenfields to steady state operations, the Qantas Group's broad range of air transport solutions is available for the various stages of a mine's development. To enquire about our charter options, call 08 9277 8977 or email charter@networkaviation.com.au.



(CONTINUED FROM PAGE 22)

This follows Cliff's March announcement it was closing Koolyanobbing this year, with the last shipment slated for the end of June.

MinRes will now acquire Cliff's tenements in the Yilgarn region of WA, remaining iron ore, fixed plant, equipment and non-process infrastructure, as well as ownership of its fixed infrastructure assets at the Port of Esperance (a rail car dumper and two large storage sheds).

MinRes has had its eyes on the project as far back as 2014.

The 11mtpa Koolyanobbing is immediately adjacent to MinRes' Carina iron ore project, which winds up later this year after the WA Environment minister blocked the extension of the operations at the J5 and Bungalbin East deposits.

The 11th hour deal will enable MinRes to continue to realise value from its fixed plant, mobile equipment and rail rolling stock investments in the area.

Mr Ellison said the transaction was a "win-win outcome for all parties involved".

"Cliffs achieves a clean exit from Australia on economic terms that are more favourable than if they were to have simply shut down the Koolyanobbing operation," Mr Ellison said.

"The remaining iron ore left on the Cliffs tenements will be extracted and sold to create ongoing economic activity and benefit for Western Australia; and MRL will continue sending tonnes down the rail to Esperance and by doing so continue to provide jobs for hundreds of West Australians for the next five to six years."

New Focus: Battery Minerals

The MinRes team was also busy advancing



"Mineral Resources is very focused on battery minerals as we are of the view that they have a 50 year plus horizon."

its Wodgina lithium project in the Pilbara.

Wodgina, 100km south of Port Hedland, is the world's largest hard rock lithium deposit with a JORC mineral resource of 233.9mt and an inaugural probable hard rock ore reserve in Casserite Pit of 142.4mt.

The reserve supports a mine life of almost 30 years at a production rate of 5.65mtpa, with additional exploration upside remaining.

In May, MinRes announced it was looking to offload 49 per cent of the project to help fund potential downstream processing capabilities.

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.

Mr Ellison said the decision to embark on a process to sell a minority interest would allow the company 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".

"However, MRL will only introduce project partners if acceptable terms can be secured," he said.

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

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.

Construction of the first 250,000t module is due for completion later this year.

The company is also finalising a pre-feasibility study into developing two 28,000t lithium hydroxide modules at its Wodgina mine for about \$US300 million per module.

On top of its Wodgina work program, the team was busy at its Mt Marion lithium project, of which it has a majority interest, and was also advancing plans for its proposed

graphite pilot plant with Hazer in Kwinana.

The graphite plant will create high-quality, battery-grade synthetic graphite using key ingredients of natural gas and iron ore, with commissioning targeted for the third quarter of CY2018.

MinRes also has entered an unincorporated joint venture with Hexagon, to acquire a 51 per cent interest in the McIntosh graphite project in the East Kimberley.

Over the next three years, MinRes will undertake all feasibility studies, build, and begin operations at the project.

"Mineral Resources is very focused on battery minerals as we are of the view that they have a 50 year plus horizon as the world transitions away from traditional fossil fuel and combustion engine derived energy to a range of clean, sustainable energy sources," Mr Ellison said.

"This transaction is consistent with our strategy of partnering up with like-minded companies with long life, high-quality resource projects who share our vision of a future involving renewable energy."

A success story

WA

LOCALLY owned and operated company Level Steel Engineering and Construction started from humble beginnings.

In 2016 the business – which specialises in piping, tanks and vessels – was born at a time when the mining industry was still recovering from the downturn.

"The first six months of operation were extremely tough and still are to some degree," Level Steel managing director Anthony Moore said.

"We probably sent out more than 600 capabilities to companies in the early months alerting them of our presence to win the work.

"After previously working on four of the biggest LNG tanks in the State at Barrow and Wheatstone projects, I had a clear focus of engaging with Tier 1 contractors' right from the outset of operations."

And while Mr Moore received many knockbacks during this time – like many start-ups do – he persevered and eventually was awarded the Wash Weir project Alcoa Wagerup from Monadelphous to look after the carbon



Level Steel is a proud partner to Mineral Resources.

and stainless spools.

"We then were engaged by a third-party to do cryogenic spools for Mineral Resources' Mt Marion lithium project," he said.

"Then (me being a persistent bugger) I knocked on Mineral Resources' door to potentially be given the opportunity to quote and tender for future work.

"We were then successfully awarded the vaporiser spools for Mt Marion LNG Power Plant to complete for them along with site installation."

"We achieved this over three shutdowns

and successfully got the power plant back up on line in the time frame as this was a critical asset as it runs the entire mine operations, with no recordable injuries or lost time apart from the weather.

"We worked closely with project manager Tony O'Connor, principal process engineer Rowan Hill, and mechanical engineer/QA/QC Kim Dumbreck."

Level Steel has also successfully completed work for CB&I, GR Engineering, Monadelphous, Wenco Mining, Allied Pumps, Tidal Solutions Australia, to name a few.

Mr Moore said he was a firm believer

his company offered a great value service, competitive pricing, and outstanding tradesmen.

"To be able to engage with the kind of companies like Mineral Resources has been hugely rewarding for us, to be able to manufacture and deliver to their requirements," he said.

"We greatly appreciate all the Tier 1 companies who have given us an opportunity to showcase what we do, in an extremely tough market and being only 18 months in operation."

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



Quality PIPING SOLUTIONS

Level Steel Engineering and Construction Pty Ltd is a WA owned and operated company established in 2016. We specialise in the construction of Structural, Mechanical and Piping installation to the Industrial, Mining and Resources sector. No job is too small or too big to handle with our proven capabilities.

We offer a broad range of services in the piping sector to Industrial, Mining and Resource Industries:

- Pipe Spooling – Workshop or Site Either Carbon or Exotics Stainless, Titanium, Super Duplex
- Valve Assembly and Change out
- Flange Alignment, Bolt Torquing, Tensioning
- Hydro and Pneumatic Testing
- Spool Change outs
- Fabrication of tanks ranging from the smallest dia. to large scale dia. — Specialising to API 620 and API 650
- Pressure Vessels too ASME IX 1210
- Pre-Commissioning and Commissioning
- Weld Testing to AS3992 and ASME IX Carbon and Exotics B31.3
- Specialists in Process Piping LNG, Fuel, Water, Mineral Processing AS3992, AS2885, ASME IX
- Coded Welders and Pipefitters
- NDT, Surface Treatment, Machining
- WPQR'S
- We offer full traceability through MDR'S and ITP'S
- We are working towards ISO 9001 - 2015

We provide a comprehensive service designed to suit our client's expectations.

- In-House Engineering and Design
- Engineering, Construction & Mechanical Services
- Fabrication, Structural, Mechanical and Piping AS/NZ 4041, ASME IX, AS3992, AS2885
- Site Installation and Fabrication
- Design and construction



Level Steel is a proud partner to Mineral Resources' WA projects.



LEVEL STEEL

INNOVATIVE FABRICATION TECHNOLOGY

levelsteelconstruction.com.au

GET IN TOUCH

☎ (08) 9459 8447 📠 0438 806 422 ✉ info@levelsteelconstruction.com.au

LIFE AFTER DEGRUSSA

A cashed up Sandfire Resources is pursuing a multi-pronged strategy to replace production from its depleting flagship DeGrussa operation, which is expected to reach the end of its life in 2022 on current reserves.



A diamond rig at Doolgunna.
All images: Sandfire Resources.

JESSICA CUMMINS

SANDFIRE's replacement and growth strategy includes taking advantage of M&A opportunities in Australia and overseas, an aggressive \$30 million regional exploration campaign around DeGrussa, and the rapid development of its \$US250m Black Butte project in Montana.

The recent \$72.3m purchase of Talismans' 30 per cent interest in the Springfield Exploration and Mining Joint Venture gives Sandfire full ownership of the Monty copper-gold development, Springfield and Halloween West.

Neighbouring Sandfire's Doolgunna project, Monty is being developed as a new satellite underground mine to feed the DeGrussa processing plant, 10 km away. Development continues to move ahead of schedule, with the production expected in the first quarter of 2019.

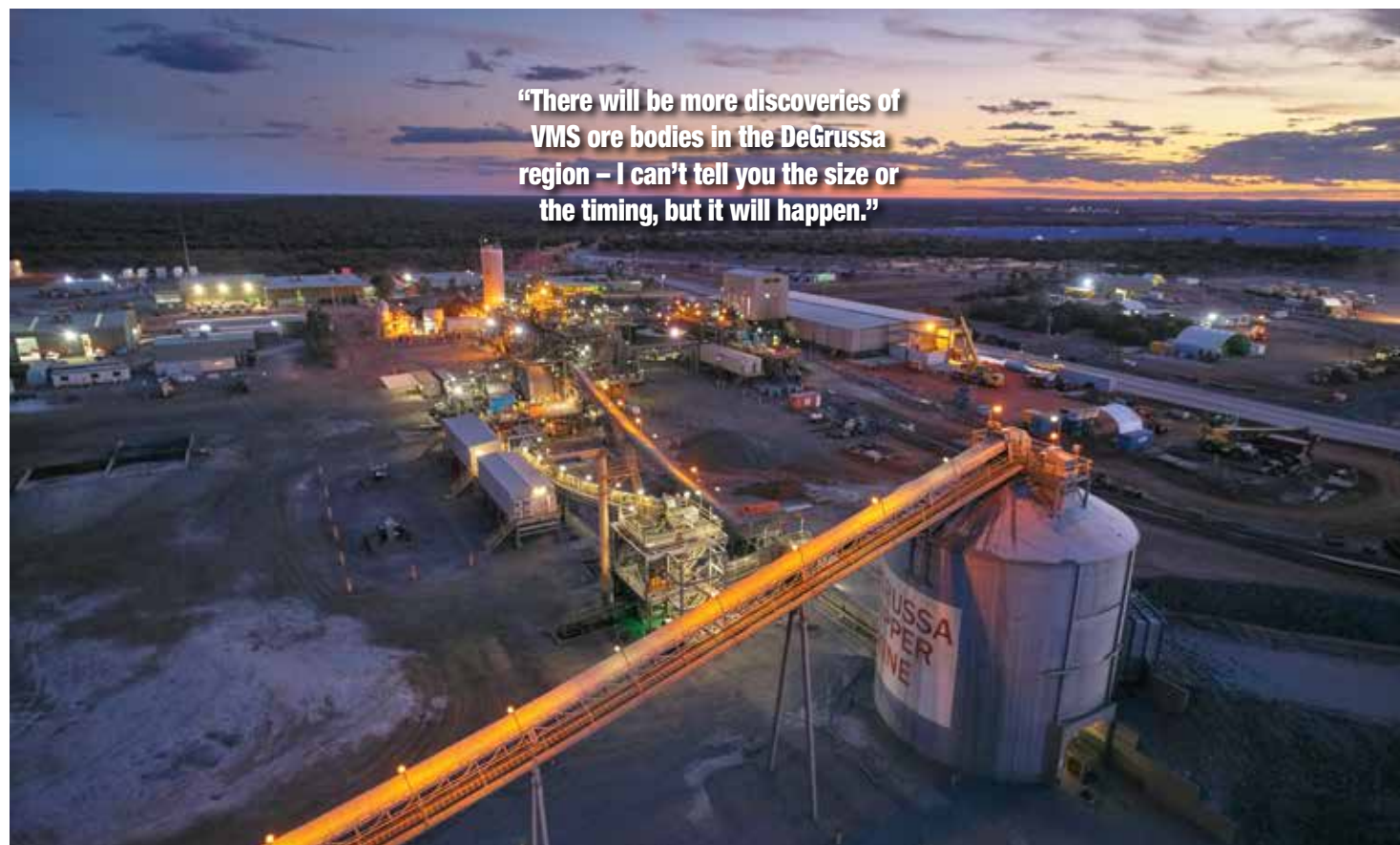
The acquisition also strengthens the company's exploration and development pipeline in the Bryah Basin and surrounds. Sandfire Resources managing director Karl Simich said it was a win-win for both Talisman and Sandfire.

"What it does is simplify the ownership structure. It removes a number of levels of complexity between us owning 70 per cent, Talisman owning 30 per cent, and Sandfire buying some of the 30 per cent of the ore that we technically don't own and trucking it to DeGrussa," Mr Simich said.

"If anything new was to [be discovered] we will pay a royalty of 1 per cent over any new deposits."

A March farm in agreement with Auris Minerals' over its prospective Morck's Well project, about 22km south of DeGrussa, is also paying dividends.

In June, Sandfire received assay results for a recent aircore drilling campaign, which intersected narrow zones of sulphide and supegene copper mineralisation. Significant results included 11m grading



"There will be more discoveries of VMS ore bodies in the DeGrussa region – I can't tell you the size or the timing, but it will happen."

3.5 per cent copper from 73m, containing 3m grading 9.5 per cent copper from 81m.

The company said while the high grade intersections were narrow, the overall tenor and grade was encouraging and supported continued exploration along this corridor.

Mr Simich said he remains confident of another company-making discovery around DeGrussa.

"Even though we've been in the field for a little while, in exploration terms we've barely started," he said.

"That region has significant potential for further similar deposits, high grade volcanogenic hosted sulphide ore bodies of copper, gold, silver, and potentially lead. Exploration endeavours will continue to be

extensive."

"There will be more discoveries of VMS ore bodies in the DeGrussa region – I can't tell you the size or the timing, but it will happen."

Black Butte Copper Project

Through its North American affiliate Sandfire Resources America, Sandfire has a 78 per cent stake in Montana's Black Butte project—one of the world's top 10 undeveloped copper projects by grade, and a key plank in the company's long term growth plans.

Black Butte's Johnny Lee deposit boasts a measured and indicated resource of 11.57

million tonnes with an average grade of 3.57 per cent. The company is currently moving through the approvals process, with a final Environmental Impact Statement expected by the end of 2018 and a Record of Decision anticipated in early 2019.

"You talk to anyone in the US and they will say they can't believe how quickly our permitting process is going," Mr Simich said.

"It's an ore body that has some 600,000 plus tonnes of contained copper with a three and a half per cent copper grade.

"It has zero impediment to take it to production from a technical perspective, and we are going through the final stages of permitting as provided for in the legislation there."



“You talk to anyone in the US and they will say they can’t believe how quickly our permitting process is going.”

Drilling at the Black Butte project in Montana.

Mr Simich said the company expected the mining license to be issued by the second quarter of next year, and for Black Butte to be in production by first quarter of 2021.

In June, respected Sandfire Resources America chief John Shanahan suddenly passed away. Rob Scargill, who recently joined Sandfire America as Project Development vice president and as a Sandfire America director, was appointed interim chief executive officer.

Mr Simich said Mr Shanahan had left an indelible imprint on Sandfire America and on the communities of White Sulphur Springs, Helena, and beyond.

“His warm and open leadership style allowed him to engage widely with stakeholders, communities, governments

and regulatory authorities, and lead a growing team which is focused on developing a world-class project that will bring many benefits to the State of Montana,” he said in a statement.

“His loss will be keenly felt, not just by those of us within the Sandfire family in Australia and North America, but also by the many friends and former colleagues who knew him or worked alongside him during a distinguished career spanning many decades in mining, mine finance and commodity trading globally.”

The Balkans and Beyond

Sandfire is also looking to the Balkans for further greenfields opportunities. In May,

the company announced a \$2m cornerstone investment in ASX-listed, Bosnia & Herzegovina-focused explorer Adriatic Metals.

The companies also entered into a strategic partnership agreement, which includes the formation of a technical collaboration committee aimed at developing the polymetallic Veovaca and Rupice projects.

Drilling results released in June confirmed Rupice’s exciting prospects. The very first hole of a 15,000m drilling program produced 64m grading 4.6 g/t gold, 537 g/t silver, 7.7 per cent lead, 10.8 per cent zinc, and 46 per cent barite.

“It’s the most extraordinary drill hole – the results were off the Richter scale,” Mr

Simich said.

Mr Simich said it was part of the company’s strategy to dip its toes into the pool of smaller prospects that may not fit into its larger global plan.

“Sandfire has a business strategy, and that strategy is looking for tier 1 and tier 2 assets that have the ability to produce 30,000 tonnes of copper or copper equivalent, and that have at least a 5 year mine life with significant prospectivity,” he said.

“However, in addition to this we would allocate a quantum of money to smaller [prospects] that don’t fit into our big strategic plan but provide exposure to people and opportunities.”

TOUGH TANKS...
TOUGH INDUSTRY
SPECIALISED SOLUTIONS WHERE EXPERIENCE COUNTS

Tanks West manufacture storage solutions for a variety of mining applications from camps to extraction sites and processing plants. We have delivered specialised storage options to the West Australian mining and industrial sectors for over 20 years and have extensive experience in a wide range of liquid storage, from water to chemical solutions.

Engineered to meet your specifications, storage tanks are certified to meet the requirements of Region “D” Cyclonic rating and are available in sizes from 1–65 cubic metres.

Our technical staff are on-hand to assist with your next project.

Call (08) 9456 0677

TANKS WEST

WE BUILD THE BEST

Factory: 5-7 Uppsala Place, Canning Vale

info@tankswest.com.au | (08) 9456 0677

tankswest.com.au



Adding value to client projects

NATIONAL

FOUNDED in 1996, MACA Interquip (formerly Interquip) is a multi-disciplinary company with a proven track record in delivering small to large scale SMP projects, new and refurbished plant and equipment, and consumables to the mineral processing sector of the resources industry.

Supporting the resource and infrastructure industries across Australia, MACA Interquip offers SMP installation, modification and commissioning services along with a range of fixed and mobile, second hand mining equipment and machinery for sale or hire.

Its hands-on-approach and can-do attitude makes it different to other contractors in the industry.

The company aim to provide value to its clients' projects through more than just the equipment.

With a vision to be number one, MACA Interquip invests in its people, understands its clients' needs, and sources reliable and quality equipment to deliver a complete project solution.

The team has established relationships with many local and national companies in the mining industry, is strongly committed to building positive relationships and responding to its client's needs.

MACA Interquip's current client base includes large international mining corporations, mid-tier companies and



More information can be found at: www.macainterquip.net.au.

smaller operators.

As part of the MACA Ltd Group, MACA Interquip has the advantage

of working alongside an international mining services company.

As the trusted experts in its field,

MACA Interquip's promise is to deliver the best project results to every client.



WE CARE • WE ARE FLEXIBLE • WE DELIVER

MACA INTERQUIP'S CAPABILITIES

MACA Interquip is your mineral processing solution provider. With over ten years' experience in mine site construction, we are an ISO compliant Western Australian owned company specialising in structural, mechanical and piping installations.

Ready for Anything.

We're your end-to-end solution, offering a full range of site services:

- **Construction:** Fixed plant installation and commissioning
- **SMP Supply and Installation:** Structural, mechanical and piping capabilities
- **EPC Contracts:** Engineering, procurement and construction
- **Tank Builds:** New tank installation
- **Maintenance:** Mining maintenance solutions
- **Upgrades:** Process plant upgrades
- **Refurbishment:** On and off site refurbishment services
- **Dismantling & Relocation:** Plant dismantling, relocation and installation
- **Recommissioning:** Mineral processing facilities

Equipped for Everything.

The fleet comprises:

- **220 tonne** Liebherr hydraulic crawler
- **130 tonne** Grove all terrain
- **75 tonne** Grove rough terrain (x2)
- **45 tonne** Grove rough terrain
- **30 tonne** rough terrain (x2)
- **20 tonne** Frannas (x6)
- Forklifts & Telehandlers
- Access Equipment
- Tools and Infrastructure

Talk to us today about how we can find you an affordable solution for your next project.
We will work with you to create the solution you need.



The Pilbara support service hubs of Port Hedland and Karratha are preparing for a new wave of growth, as the region’s revitalised resources sector changes gear.

JESSICA CUMMINS

THE mining centres of Port Hedland and Karratha will be the centre of a new wave of mining and resources activity.

Last month, Fortescue Metals Group approved its new \$US1.3 billion Eliwana project, which is set to create 1900 jobs during construction.

BHP’s \$4.7 billion South Flank will replace its Yandi mine, creating about 3000 construction and operational positions, while Rio Tinto expects to make a final investment decision on its massive Kooldaideri project by the end of the year.

In a statement last month, Woodside chief operations officer Meg O’Neill also said the company was entering a new multi-billion dollar growth and construction phase.

WA Treasurer Ben Wyatt told the ABC these project announcements should give West Australians confidence in the long-term value of the mining industry.

“It highlights the fallacy some people have around the idea that the mining sector simply goes bust — it doesn’t, it changes, it morphs into a new phase and this is a new phase for BHP and an exciting time for the WA economy,” Mr Wyatt said.

“WA is at its core, and is going to be for a long period of time, a mining state and these sorts of decisions highlight that’s not a negative, it’s very much a positive.

“The WA economy is very much on the uptick. This is a massive shot in the arm for the economy and a huge vote of confidence in the way it’s tracking, and also importantly in the global economy, so this is exciting.”

While these changes are sure to bring job opportunities, infrastructure upgrades, financial security and more people to the Pilbara, Karratha and Port Hedland will also grapple with a number of associated challenges.



Hill view of the Karratha Leisureplex.

Port Hedland

The Australian Mining Review spoke with Port Hedland Chamber of Commerce president Peter Carter about ongoing issues the town faced during the boom and bust cycles.

“During the downturn we probably lost around 4000 people from the town, approximately 150 to 180 businesses closed down, and house prices dropped between 60 to 90 per cent,” he said.

“A house that was worth \$749,000 dropped to \$90,000 last week and another property that was worth \$525,000 sold for \$60,000...you have no idea how bad it is.

“The last four years have been very bad

and very quiet. A lot of businesses left town and laid off workers in order to stay in the town to try and keep the town going, because they thought the downturn would recover.

“Now, because the downturn lasted so long nothing has been built. No houses were built during that time. We are totally unprepared for the boom.”

This is despite the town being on a constant cycle of construction to production over the past 20 to 30 years.

“Port Hedland is a boom and bust sort of town, it’s the nature of the beast,” he said.

“Will the cycle be as bad as the last one? Nobody knows.”

In the meantime, the Chamber is

engaging with major miners and more small to medium businesses through programs, collaboration and events.

“The Chamber has funding from BHP and Pilbara Development Commission (PDC) to build the web business hub, which is an innovation hub that will bring businesses together that are unable to branch out into a shop front to help them collaborate,” Mr Carter said.

He said one of the big challenges the town faced, as Rio Tinto, BHP and FMG ramped up their driverless fleets in the Pilbara, was the fear that the already short supply of trade skilled workers would get worse.

“We really want to see local people with skills in the town trying to help it grow,” Mr Carter said.

“For example, we are trying to get more small businesses in town involved in local buying programs such as BHP’s C-RES; we are encouraging businesses to sign up and get involved with local contracts.”

Karratha

The City of Karratha, 240km south of Port Hedland, is well-positioned with investment in infrastructure preparing its local business community for sustainable growth, according to Karratha Districts Chamber of Commerce and Industry chief executive officer Kylah Morrison.

Although the downturn saw the number of businesses drop from 962 to 800, Ms Morrison said the town faced these challenges by investing in infrastructure.

“We’ve seen new schools, a new hospital opening later this year, an incredible sporting facility, and commercial and residential land that is fully serviced and ready to go facing the next up cycle,” she said.

(CONTINUED OVER)

(CONTINUED FROM PAGE 29)

“We’ve seen new schools, a new hospital opening later this year, an incredible sporting facility, and commercial and residential land that is fully serviced and ready to go facing the next up cycle.”



The Karratha Quarter.

Ms Morrison said the Chamber is helping businesses streamline their operations in preparation for the next boom.

“I think the biggest issue that we’re going to face is human capital; we are already seeing wages increase and it has been difficult for local businesses to get certain skill sets in the region,” she said.

“What we need are specific skills sets and for businesses to relocate to the region so that we have the man power we need. The main skill sets we need are heavy machinery

drivers, the trade skilled workers, and heavy diesel mechanics; the roles where we are seeing the wage increases.”

Last year the Federal Government announced a \$15 million, four year commitment to establish up to eight community owned, regional study hubs – with the Pilbara selected as a leading candidate.

The Higher Reform Package stated that the hubs would support regional students to study courses locally from any Australian

university.

Ms Morrison said the town hopes the hub will become a place of distance education support and ultimately an oil and gas centre of excellence.

With advancements in the mining industry heading towards automation and driverless fleets, Ms Morrison said she hoped the resources companies would consider Karratha as a destination for future training and operating.

“With the massive change or destruction

to the industry we have to remember the human element and weigh that up – the most important thing to consider is, yes we are moving to automation and driverless fleets but why can’t we base the operator of those fleets in the Pilbara?” Ms Morrison said.

“We’ve got a diverse range of projects coming online with over \$10 billion in capital investment expected over the next 10 years in the Pilbara – Karratha is well positioned to make the most out of the next cycle.”

Free up value in unused assets

WA

ROSS’S Auctioneers & Valuers is part of the WA family-owned and operated Dodd and Dodd Group.

Since establishment in 1983, Ross’s Auctioneers & Valuers has grown to become a recognised market leader within the auction and valuation industry and the team are committed to supporting industries in their asset management solutions and disposal practices.

The company goal is to provide complete, competitive, transparent and professional auctioneering and valuation services to vendors across a broad range of asset classes.

These include mining, earthmoving equipment, plant and machinery; vehicles, trucks, passenger and light commercials; oil and gas industry equipment; timber, hardware and building supplies; IT and computers; furniture, electrical appliances and white goods; and catering, delicatessen and hotel equipment.

Having the State covered with established auction sites in Welshpool, Kalgoorlie and Karratha, Ross’s Auctioneers & Valuers can provide the most cost-effective, timely and uniquely tailored disposal solutions to WA industries.

The company operate a professional and experienced team, including auctioneers, valuers, and more than 30 support staff.

Ross’s have the internal capability



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

to address all client asset disposal, marketing, business development, and health and safety requirements.

Ross’s Auctioneers & Valuers conducts more than 1200 sale events per year, incorporating various disposal methods

including traditional auctions, online auctions, tenders and expressions of interest.

The auction division of the company currently operates from three premises allowing Ross’s to hold more auctions at

its showrooms and on-site than any other auction house in WA.

It is this experience and knowledge in a diverse market that allows Ross’s to create specialised asset disposal solutions for its clients.

Award-winning mobile maintenance solutions



Visit High Grade Mechanical at www.hgmechanical.com.au.

NATIONAL

HIGH Grade Mechanical provides fully integrated mining maintenance solutions to customers Australia-wide, specialising in heavy equipment repair, maintenance and shutdowns, and also providing expert trade qualified labour solutions.

High Grade Mechanical has become the

provider of choice for a number of high profile mining clients, due to its focus on quality and reliable labour and equipment solutions.

All of the High Grade Mechanical team have a background in mining with the company's recruitment and project management team being trade qualified diesel mechanics with combined 45 years mining experience. This means High Grade Mechanical will always identify and provide

the best quality person for the job.

High Grade Mechanical understands the industry and the complexities required to ensure customers and employee expectations and requirements are exceeded.

A finalist in the upcoming ABA Employer of Choice Awards, the WA-owned company instils its core values of safety, performance, reliability, proactivity, communication and

honesty into all its employees.

Its fully qualified staff, including heavy duty fitters, auto electricians, boiler makers, servicemen and light vehicle fitters, are available for on-site labour rosters or shutdown servicing.

Contact High Grade Mechanical on 1300 79 77 44, 0448 801 998, or email mark@hgmechanical.com.au for further info.



**AWARD WINNING
HEAVY EQUIPMENT
MAINTENANCE
SOLUTIONS**

for the Mining and Civil Industries

High Grade Mechanical is the trusted and reliable provider of quality, fully integrated mining and civil heavy equipment maintenance solutions across Australia.



**WA Owned
and Operated**

8 years strong growth | Reliable workforce of Diesel Mechanics and Auto Electricians | Run to QA standards | Quality not Quantity approach | Nationwide Field Servicing | All aspects of Heavy Equipment Maintenance

Indigenous Engagement Program



**High Grade Mechanical
A Grade Above the Rest**





Mark: 0448 801 998 | Email: mark@hgmechanical.com.au

1300 79 77 44

JUST THE START

Capricorn Metals is in the final stages of debt financing discussions over its 823,000oz Karlawinda Gold Project, ahead of construction in the second half the year. The company is working in parallel to further enhance the value of this compelling development – and the results have been outstanding.



Image: Capricorn Metals.

JESSICA CUMMINS

CAPRICORN has a very low profile for a company lining up to become one of Australia's next significant gold producers. After acquiring its flagship Karlawinda Gold Project – 65km, southeast of Newman in WA – at the beginning of 2016, Capricorn has moved quickly towards development.

In June, an optimisation study increased the value of an already attractive project by \$100m, with improved rates of return and a quicker payback period. *The Australian Mining Review* spoke with Capricorn Metals chief **Heath Hellewell**.



Q. Your recent 23% reduction in project design and construct capex is impressive. How were you able to cut costs so significantly since releasing the 2017 Feasibility Study?

In some ways it is the a function of running a very good tender process with the prospective engineering groups, working closely with them to get an optimal engineering solution, but at the same time running a good commercial and competitive process.

We are very happy to now be working exclusively with GR Engineering Services as our preferred contractor, as in our view there is really no-one better at delivering these types of projects in Australia.

Utilising their experience and engaging them on a fixed price contract allows for a significant amount of contingency to be

removed from capital estimates. This further de-risks the funding of the project.

Working with GR, we have settled on a much more efficient processing flow sheet that provides a number of significant operational improvements.

Not only was there a reduction in capital costs but at the same time we also managed to reduce the operating cost estimates for the processing plant; this very positive outcome is a real credit to both our team at Capricorn and the team at GR.

Q. How is project funding tracking?

The project funding is going very well. We have been working very closely with a number of traditional banks since early this year, who have been busy reviewing all technical aspects of the project.

With the recent updated Ore Reserve, we expect to deliver an updated project financial model to the banks within the next few weeks. It will be on this basis that we will move to finalise the debt funding component of our project financing.

The level of interest from the banks in our project is very high and we received very attractive indicative terms based on our Feasibility Study financial model. The economics of the project only get better with the Reserve update so we are very confident in obtaining an attractive debt solution for a significant portion of the project financing.

Q. Tell us about the geology of the Karlawinda's Bibra deposit. Will it be the main source of proving up resources and reserves into the near future?

Bibra is a greenstone hosted gold system, in many ways not unlike many of the other the greenstone hosted systems around Kalgoorlie and in the Goldfields region of WA.

We are still learning more and more about not only what we have at Bibra, but what we also have elsewhere in the project area including at our Francopan/K3 deposit, which looks very similar to Bibra in terms of both its style and size potential.

It is really only the beginning at this project, as the belt is a new discovery and really hasn't

been exposed to much modern day regional mineral exploration.

What is clear though is that these systems are potentially very large. At Bibra we have 1.5moz in Resources already and recently we stepped out a drilled a deep hole beneath Bibra, effectively doubling the current size potential of the deposit.

While at Bibra to date we have been focussed on a bulk tonnage, open pit mining scenario, we also see a potential higher grade core zone to these systems that ultimately might lead to underground mining positions and extend the life of the project – well beyond the initial eight year starting mine life.

In addition to the size potential what is equally important to us is the simple mineralogy of these deposits. The mineralisation is essentially gold, quartz and pyrite; this simple mineralogy translates into very benign metallurgical properties, which makes the ore very easy to process and will give us very high gold recoveries in our plant, including very high gravity gold recoveries.

Q. What led to the decision to bring forward the implementation of the 4.8MW SAG mill and 4.8MW Ball mill at project commencement?

There are numerous advantages. Simplicity is an important part of the decision; not having to shut the plant down in a couple of years and retro-fit a second mill just makes for more simple execution.

Most importantly though, it will mean we won't have to blend our very important laterite ore during the first few years of production. The laterite, on average, is our highest grade ore and is also the first material to be mined.

Not having to stockpile and blend that ore through the plant translates into significant project cash flow advantages. The new flow sheet with equal sized mills at 4.8MW also resulted in a much easier to operate process plant and also gives us the ability to fine tune the size to which we grind our ore so we can extract as much value as possible from our processing plant over the life of the project.

Q. What exploration will Capricorn be conducting during Karlawinda construction and ramp-up?

We are very excited to be drilling our Tramore target at the moment and expect that the work there will continue this year.

It is potentially a significant extensional target at Bibra which will very likely add open pit ounces to our mine plan in the long term.

Aside from the extension work at Bibra we are now starting to do some more work on the Francopan/K3 deposit; just scoping it out initially to understand the geometries and potential open pit positions at K3, but also the potential for higher grade ore which could represent a long term underground mining target.

We are also now ramping up our regional exploration to look for new mineralised positions within the greater project area.

At the moment we are completing a significant soil geochemical sampling program, which aims to define the potential for additional and very important oxide mineralisation across the 1400km² of tenure we currently have at Karlawinda.

Q. Gold prices have remained buoyant over the past year. What is your medium term outlook?

We have a quite bullish view on the gold price, particularly in Australian dollar terms. In terms of the sector, the Australian producers have, in most cases, done a wonderful job in recent years, and this is bringing significant confidence to our industry here in Australia from investors all over the world.

While Australia will always be a very attractive jurisdiction it is important our producers continue to perform well and run well considered and efficient businesses, which I'm sure the majority will.

With the current, very high standards being set by our producers it is inevitable that interest will soon work its way down the line to the developers and explorers.

Overlaying that general confidence is the fact that new economic gold resources are getting harder and harder to find globally, but particularly in low risk jurisdictions like WA. I believe we are going to see increasing competition for access to those low risk ounces in the coming years.

GRES wins Karlawinda work

WA

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

At the conclusion of a competitive tender process, GRES were named as the preferred engineer for the delivery of the Karlawinda Gold Project (Karlawinda) for Capricorn Metals Limited (Capricorn).

GRES will design and construct a 3 million tonnes per annum (mtpa) processing plant and associated infrastructure at the project under a lump sum turn-key contract.

GRES is proud to be assisting Capricorn in the transition from explorer to producer through the development of Karlawinda and has assigned an experienced team onto the project.

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

The innovative engineering solutions developed by GRES enable its clients to secure project funding and move confidently into development, which has been recently demonstrated for Dacian Gold's Mt Morgans, and Gascoyne Resources' Dalgarranga projects.

GRES has successfully completed feasibility studies, process and engineering designs and construction for projects of



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

various scale, covering a diverse range of mineral commodities.

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

Australia and internationally.

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

GRES also has a presence in the

hydrocarbons industry via its wholly owned subsidiary, Upstream Production Solutions (Upstream).

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



Proudly supporting CAPRICORN METALS LIMITED in the development of the KARLAWINDA GOLD PROJECT.



• Feasibility Studies • Design and Construction • Project Management • Consulting Services • Asset Management

GR Engineering Services Limited | 71 Daly Street, Ascot WA 6104 | 42 McDougall Street, Milton QLD 4064
www.gres.com.au | +61 8 6272 6000 | ASX:GNG

INDUSTRY REBOUND

QLD Resources Investment Commissioner Todd Harrington will be part of a panel discussion on Transforming Regional QLD at the upcoming QME conference and exhibition in Mackay. We spoke with Mr Harrington ahead of the event about the biggest issues facing the industry, investment opportunities, and the global importance of QLD metallurgical and thermal coal.

All images QME.

ELIZABETH FABRI

Q. What topics will you cover as part of the QME panel discussion on Transforming Regional QLD?

QLD has got some of the best geology. We've got the best metallurgical coal, some very good thermal coal, we've got copper, lead, zinc, silver, and then oil and gas, both conventional and unconventional.

The vast majority of those commodities have had significant price improvements over the last 12 to 18 months; nearly all of those sectors 18 months ago were in a lot of pain. Because prices were so low there was cost cutting, deferred work programs, [and] service towns like Mackay and other regional support towns really suffered.

Sentiment for that reason was low for both investors and for [resources sector] companies.

Since then commodities have all rebounded, and they have rebounded significantly. If you think of the coal sector – metallurgical coal was \$88 exactly two years ago and it's well over \$200 now. The turnaround has made everyone busy again.

We've seen some companies move a little bit slowly to fast track major expenditure items, but what we've seen is deferred work programs scheduled back in.

And most of the contractors, (whether they provide equipment or services), have a full book of work, and a bit of a wait to get them at this point in time which is a great position for our industry.

Because prices are so strong, the mining companies themselves are [also] returning to profit. The profits are then reinstalling confidence that they'll look to open up some additional growth projects.



QLD Resources Investment Commissioner Todd Harrington.

Q. What current projects are you are excited about?

In the last two to three months there has been three adjacent metallurgical coal projects announced and now looking to be fast tracked and built. That's within the central QLD region of the Bowen Basin.

You've got Pembroke's Olive Downs project; right next door to it Whitehaven's Winchester South; and right next door to it on the western side, South32 and Aquila

are now looking to reinvigorate Eagle Downs mine.

Outside of coal there's certainly some exciting zinc opportunities as far north as Chillagoe. As we head out towards Mt Isa, copper, zinc and a number of other minerals, there is a lot of exploration now going out the back of these areas.

And then you return to our oil and gas side of things, where pricing has returned significantly. If you overlay this east coast gas crisis demand against limited supply and the fundamentals for the gas explorers

is particularly good as well.

It's a perfect storm of positive elements that haven't been here for a while, and have all come back to the table.

Q. What are you looking forward to most about this month's QME?

Mackay is a regional hub which is a great cross-section of the mining, equipment technology and services (METS) industry, and for me it's a great read of where things are at.

I'm a former Mackay resident and spent a long time in the industry up there myself prior to coming into Government, so I'm looking forward to seeing where individuals and companies are at, and how things are going for them, and areas of focus that may not be obvious.

Last time when we were [here], because the industry was so bad, a lot of those companies were looking at the international market as a source of forward work (specifically the services companies).

I think everyone now is head down and focused on the work that's in our current market. And I think like all of the conferences we have seen over the last three to six months – whether they be straight investment or mining services – the takeaway that you get is people's confidence in the sector.

I'm looking forward to seeing that [confidence] from the crowd, because it should be as the sector rebounds.

Q. What are the biggest challenges facing the regional QLD mining region at present?

I think it's the rebound factor. I think people got so badly burnt and some of these towns got really decimated.

(CONTINUED ON PAGE 36)

25 years for QME in Mackay

QLD

IN 2018, The Queensland Mining & Engineering Exhibition (QME) will celebrate its 25th year in Mackay and deliver the strongest line up of companies to the event when it runs from the 24-26 July.

QME will showcase more than 200 leading suppliers including Hastings Deering, Flexco and Becker Mining who are eager to provide new and advanced solutions for the QLD mining sector and also welcome Adani, Anglo American, BHP and Yancoal as exhibitors in the 2018 edition of the show.

Dedicated to innovation and progress, QME will attract more than 4000 industry personnel to Mackay and will be strengthened by the inclusion of a free to attend seminar series that has been developed in close consultation with the industry.

QME is also excited to partner with the Bowen Basin Mining Club who will host the 2018 Queensland Mining Awards on Wednesday 25th July.

The awards celebrate innovation, excellence and collaboration from suppliers and contractors who have worked in operations in QLD.

QME is an event not to miss, with registrations now open and available online at: qmeexpo.com.au.



Register for free at qmeexpo.com.au.



Queensland Mining & Engineering Exhibition
24 – 26 July 2018
Mackay Showground

THE **HEART** OF QUEENSLAND MINING & ENGINEERING

3,600+
Industry
Personnel



200+
Industry
Suppliers

Featuring
Free seminars - Live demonstrations - Networking events

REGISTER FOR FREE NOW

FOR MORE INFORMATION VISIT QMEEXPO.COM.AU

(CONTINUED FROM PAGE 34)

In some of these towns even the pubs went into administration and closed down.

As jobs come back to these centres it's about returning basic services, having people's confidence that this sector won't decline again in another month or two, and that the pricing and commissions are here to stay for the foreseeable future.

All of the towns have the infrastructure they need (prior to the last boom there was a housing shortage in most towns).

So, certainly for the interim, it's not a wave of construction we need, it's a wave of support services and systems that make these towns really function strongly.

Pricing has gone up and down like a yoyo particularly in the coal industry, which is a major exporter in our State. But it's been high now for a while, and substantially high.

I think the view for most people is even if the prices wane a little further, it's still in positive territory and the fundamentals are really strong.

Q. You're originally a geologist by profession. What opportunities do you see for QLD exploration?

If we were to have this conversation any time over the last 10 years, one or two of the commodities were going particularly strong and therefore [explorers] would move across green and brownfields projects chasing them.

But we've got a very good situation at the moment. If you're an explorer its worth exploring for both metallurgical and thermal coal; they're both at record prices.

On the mineral side of things; [there is] copper, zinc, even gold, and then more strategic minerals like vanadium or cobalt.



QME will feature more than 15 speakers over three days.

Even oil prices are well over \$70 a barrel up from \$30, which is dragging up the gas price.

So the really nice situation for all explorers is that the pipeline and infrastructure can support more growth.

While these commodity prices are high, we're seeing junior mining companies raising small amounts of money on the stock market (again that was impossible to do the last few years as they went into survival mode).

Even some of the bigger companies [which] stopped exploring themselves are now back in that focus area. It's really encouraging for geologists like myself.

Q. Xcoal Energy and Resources chief executive Ernie Thrasher recently said the end of coal was "fake news" and the coal industry in QLD has potential to expand dramatically. Do you agree?

I definitely agree, based on fundamentals and fact. Firstly, QLD is dominated by

metallurgical coal, probably in the order of 70 per cent to 30 per cent thermal coal.

The metallurgical coal is not used for energy; it is not part of the Paris Agreement, it is used with iron ore to make steel.

Even if you want to just use solar panels and wind turbines or build more bridges, you can't do it without metallurgical coal – there is no other way.

The fundamentals of metallurgical and thermal coal are very separate.

But those fundamentals are very strong, both on strategic supply and what the world needs moving forward.

Then you overlay pricing which is over \$US200 a tonne; they're very healthy pricing margins and QLD has some of the best metallurgical coal you can get, and second to that we control 55 per cent of the global market.

You then overlay thermal coal, which can be substituted by other forms of energy.

The Paris Agreement itself, through their own studies that they've published, has

shown as the world declines from thermal coal, the need for Australian premium thermal coal will actually increase through to 2024.

It's in their own numbers, so as percentages go down, our net tonnes go up, because most of our coal is double the quality of any coal you can get in India, for example.

Coal is socially unpopular. In my view, I think it's an unfair situation because most people don't even understand the use of metallurgical coal, at all.

Q. How can QLD attract greater resources investment, and what investment prospects are out there?

I think even if we can maintain the resources investment we've had over the last 12 months we'd all be doing high fives.

There's been so much resources investment in this State in the last 12 months; it's hard to quantify.

I think the key for us is to give clarity of investment proposals.

Quite often companies don't position themselves as well as they could; they just talk about the geology side of the story.

But when these very strategic investors come from New York or some other part of the world, they are very focussed on any port or rail constraints or opportunities.

They're very mindful about operating cost positions, combination provisions – all the other sub factors more than just geology.

At different times, I often try to help lots of different range of parties.

In the smaller end of town, they can collate some more information (and at Government we're happy to help them do this) to make their sales pitch more comprehensive and easier for international investors to understand.

Emergency tank shower wins gold



The Enware team at the Good Design Awards.

NATIONAL

IN an emergency situation, every second counts.

The inspiration for Enware's design-thinking approach saw the development of the ET1400 Emergency Tank Shower designed without the use of complex technology to operate simply and reliably in some of the harshest environments and workplace conditions

around the world.

The ET1400 Emergency Tank Shower has been built to meet the highest industry standards in mining where workplace safety is paramount.

In recognition of excellence in design and innovation, the ET1400 Emergency Tank Shower was awarded the prestigious "Gold Award" in the following categories; Product, Commercial and Industrial design at this year's *Good Design Awards*.

The company is proud that design simplicity and product efficacy has been rewarded with this accolade.

The judges' comments included – "Thoughtful design... a no nonsense safety product that is brilliantly executed" and "a great example of a company that knows its product category, and has thought of everything."

The ET1400 provides remote workers with an easily deployed permanent or semi-permanent emergency safety

shower, in locations where suitable infrastructure such as power and water may not yet be established.

The result is a robust, reliable and highly visible first response emergency solution, providing clients' workforces with confidence that help is right by their side.

Minimising the impact of workplace injuries to people, their families, businesses and the community are at the heart of Enware's design.



80
YEARS
STRONG

THE BIG REVEAL

VISIT US AT QME



24-26 July
Mackay Showground
Stand OS300



**GOOD
DESIGN
AWARD®**
GOLD WINNER

@2018 Good Design Awards
bit.ly/enwarethebigreveal

Safer, longer lasting scaffold planks

NATIONAL

THE TechPlas Extrusions TechBoard is a revolutionary new scaffolding plank designed to be safer, last longer and provide much lower life-cycle costs than timber and LVL planks.

All TechBoards are designed to last; they will not swell, warp or crack, are impervious to weather and moisture, will not corrode, are chemically inert and are non-contaminable.

TechBoard has been tested to last significantly longer than traditional timber planks and LVL, meaning users don't have to regularly pay replacement and trade waste costs.

Due to the fact that they won't degrade over time, maintenance and storage issues along with the associated costs are significantly reduced.

TechBoards are also entirely recyclable with TechPlas intending to recover all used planks for recycling and provide an environmental rebate on new replacement planks.

These benefits all lead to significantly reduced life cycle costs.

TechPlas Extrusions' unique pricing structure means that after just one year of use, TechBoard will return a positive cost advantage.

The lightweight design of TechBoard means that more planks can be transported and installed at a time, increasing productivity and limiting



TechBoard is a smarter, safer scaffold plank that costs less and lasts longer.

freight costs; weight savings are up to 30 per cent per plank (compared to standard LVL) and 20 per cent when installed with additional tube and clips.

The Australian-made TechBoard planks help reduce on-site injuries such as splinters or cuts, muscle strains and

minimise scaffolding slips and falls via the supreme under-foot grip. TechBoards are also entirely self-extinguishing so will not carry flames and are designed for fire and smoke safety.

The TechBoard is now used on various sites across Australia and New Zealand

including coal mines, wastewater treatment plants, power stations, processing facilities, civil works and various food processing facilities such as dairies.

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



- **Ideal for mining maintenance and shutdown work, custom construction access and more**

- **Minimises injuries**
 - 15-25% lighter than alternatives
 - Supreme underfoot grip
 - No splinters
 - Will not snap
 - Fire and smoke suppressant

- **Lower cost**
 - Low maintenance
 - Recyclable

- **Longer lasting**
 - Will not delaminate, swell, warp, twist or crack
 - Ideal for hazardous, contaminated, moist, over water, electrically or chemically harsh environments

- **Fully compliant with AS/NZS 1577:2013 and international standards**



The Smarter, Safer Plank that Costs Less and Lasts Longer

Introducing TechBoard, the engineered polymer scaffold plank that is safer, lighter, lasts longer and is easier to store and use than LVL or timber planks



www.techplas.com.au 321 Wentworth Ave. Pendle Hill, NSW

GET IN TOUCH
(02) 9636 6755

THE ORIGINAL IS BACK AND BETTER THAN BEFORE

KONG[®]



THE
BEST
NEVER
STOP

WWW.KONGGLOVES.COM



SEE US
AT STAND
A224

australia@ironclad.com



IMPACT
TESTED-PATENTED-RATED

PROTECTION AND PERFORMANCE, WITHOUT SACRIFICING EITHER. | VISIT: IRONCLAD.COM

GOOD AS GOLD

Recent success at Kirkland Lake's Fosterville gold mine has sparked a new wave of activity in regional Victoria. But it's not just gold; zinc-copper, battery metals, and mineral sands projects are also accelerating toward development.



Image: Chalice Gold.

ELIZABETH FABRI

VICTORIA'S mining sector, which has flown under the radar for years, has been reinvigorated.

News the Fosterville gold project will be ramping up production to 400,000 ounces per annum by 2020, after mine resources were upgraded from 1moz to 1.7moz earlier this year has caused a buzz.

Just ask Melbourne Mining Club chairman Richard Morrow.

The industry advocate told *The Australian Mining Review* the Fosterville update had opened up new opportunities for Victorian miners, and the buzz around the region was palpable.

"The success of Kirkland Lake Gold at Fosterville has really lifted the profile of Victoria as a place to find gold, especially high-grade, underground mineable gold," Mr Morrow said.

"WA has held centre stage for many decades but Victoria is fighting back.

"The old saying 'the best place to find gold is in the shadow of the headframe of an old mine'; that's certainly happening in Victoria."

Victorian Resources minister Tim Pallas said Fosterville's success had drawn attention from global investors who were looking at Victoria as an international investment destination.

"Recent success at Fosterville and the under-utilisation to date of Geoscience data means there is plenty of upside for gold mining in Victoria," Mr Pallas said.

But the buzz wasn't just over Fosterville; the mining town Stawell also had cause for celebration.

In December 2016, the town's namesake mine was placed into care and maintenance by former owner Kirkland Lake, due to declining profitability.

But last December, Melbourne-based Arete Capital came to the rescue and acquired the mine, with the intention of returning it to production.

Mr Pallas said since buying the mine back in December, Stawell's new owners had been actively exploring.

"[They] have been drilling on the east flank of the deposit where there has been some recent underground mineral exploration success," Mr Pallas said.

"There are commercial decisions to be



Fosterville gold mine.

made and further regulatory steps to be taken but the news is positive.

"The gold mining industry in Victoria is looking healthy and a number of explorers and operators, including those at Stawell, are positive about the future."

In the East Gippsland region, CopperChem was also looking to invest \$200 million in a new mine development at its newly acquired Stockman zinc-copper project.

The project is set to create 300 jobs during construction and an additional 250 jobs in later stages of the development.

Juniors on the Rise

Recent success by the majors has ignited interest in junior miners to find repeat-style deposits, particularly those which hold tenements near the Fosterville and Stawell operations.

Advanced geoscience work by Geological Survey of Victoria has identified that the area around Bendigo and Fosterville alone could hold up to 32moz of gold.

"Nothing stimulates investment in exploration like a drill success," Mr Morrow said.

"The secret is to use the modern exploration techniques such as gravity, IP and EM to better target potential gold bearing lodes.

"Much of the gold potential is under thin

cover of the Murray Basin sediments.

"Modern techniques can see through this cover so you don't have to go exploring with the drill bit these days."

Chalice Gold

Chalice Gold was one junior ramping up activity near Fosterville.

The company owns the Pyramid Hill gold project less than 30km north-east of Fosterville, where it is searching for similar-style deposits.

Chalice chief executive Alex Dorsch said the company was encouraged by a consistent flow of "great results" coming from the Bendigo area recently, but the region was still poorly explored under cover.

"Our focus is now about applying modern exploration techniques to effectively explore," Mr Dorsch said.

He said the Chalice team would focus on two modern techniques; regional geochemical sampling for trace amounts of gold and pathfinder elements in soils; and detailed ground gravity geophysical surveys to define structures in the underlying Bendigo Zone geology, which host the typical lode gold deposits of the Bendigo region.

"We expect both techniques to be complimentary as detailed gravity helps to pin point regional structures which tend to have large strike lengths but relatively narrow footprints, and these areas can then be followed-up with geochemical sampling

to see through the younger Murray Basin cover," he said.

"The results of these surveys will then determine which areas we will look to drill, initially to sample both the base of cover (potential alluvial gold setting) and basement, then with follow-up drilling to test the deeper potential of any identified mineralised structures."

The miner was granted an exploration license in May, and the next four tenements are expected to be approved in the coming months.

Nagambie Resources

Nagambie Resources has also been inspired by the recent success at Fosterville.

The junior has commenced exploration for high-grade sulphide-gold underground deposits, and in April identified four strong underground sulphide targets in a cluster over 2.7km at its Nagambie mine.

The four targets included Nagambie, Nagambie North, Cahill and Racecourse.

The company is now completing further exploration around the tenements to test whether the cluster could extend further north.

Navarre Minerals

Another explorer raising its profile was Navarre Minerals, which owns the St Arnaud gold project, Western Victoria Copper project and Stawell Corridor gold project in Western Victoria, and the Tandarra project in central Victoria.

At St Arnaud, recent drilling results testing for a high-grade gold system similar in style to Fosterville confirmed strong potential for economic gold mineralisation.

"The drilling has provided an important insight into the geometry and structure of the gold mineralised zones that have remained hidden below Murray Basin cover and delivered compelling new exploration targets that we intend to further assess in the coming months," Navarre managing director Geoff McDermott said.

"The latest find caps-off an exciting period of mineral discoveries for Navarre, including Resolution and Adventure lodes at the Irvine Gold Project and an interpreted epithermal gold-silver system at Glenlyle."

(CONTINUED ON PAGE 42)

Quality industrial diesel engines



LK Diesel Services general manager Bernard Kuhlwind.

VICTORIA

ESTABLISHED in 1967, family owned and run business LK Diesel Services now has three generations working together under one roof.

The beginning of its fourth generation, Thomas Kuhlwind, was born on 26 December 2012.

The Victorian company has earned a reputation for supplying and servicing

industrial diesel engines, generators, and pump sets for the mining, rail, construction and agricultural industries; within Australia and the Asia Pacific Rim.

This includes the repair and overhaul of engines, supplying service exchange units, designing and building to customer specifications, and field servicing at any location.

“With our principles and staff, we have more than 350 years of combined experience with diesel engines and

equipment,” LK Diesel Services general manager Bernard Kuhlwind said.

“We have become dealers for a range of reputable brands including Deutz, Kubota, Hatz, Kohler Diesel (incorporating Lombardini and Ruggerini), Yanmar, VM Motori Perkins, and Mann Filters.

“We are pleased to announce we are now the top Deutz dealer in Australia and the top Kubota Power Centre in Victoria.”

LK Diesel Services operates a

fully-equipped workshop in Victoria, which includes an engine dynamometer, bead blaster, overhead crane, welding facilities, spray booth, and more.

“We can even tailor training seminars for mechanics to suit individual requirements as we have for mining companies on-site in Papua New Guinea,” Mr Kuhlwind said.

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

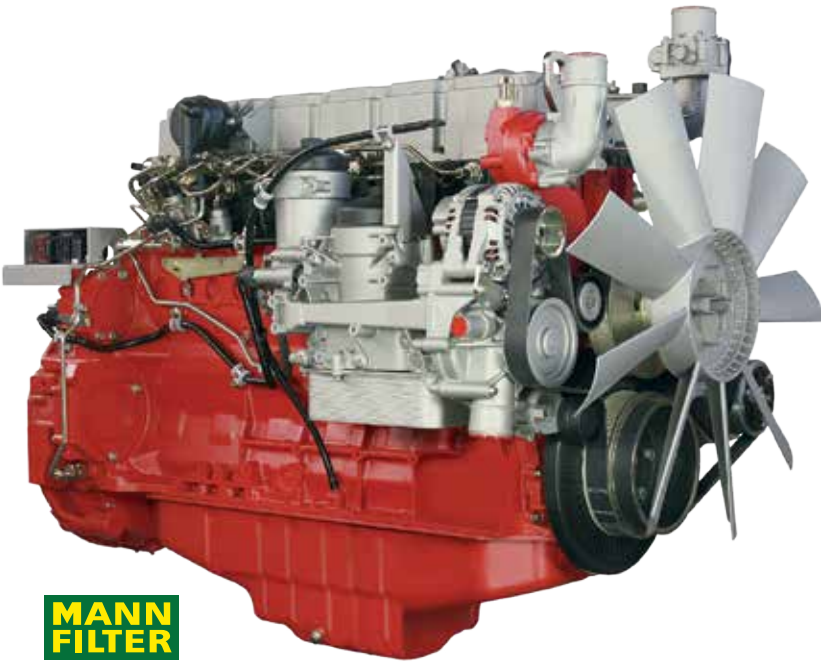
We provide diesel engine solutions to **EMPOWER** your business

• Petrol engines up to 13 HP

• Diesel engines up to 83 HP

• Generating sets up to 30 KVA

WATER PUMPS ALSO AVAILABLE



Kubota

KOHLER

W

DEUTZ

YANMAR

HATZ
DIESEL

MANN
FILTER

52 Woodlands Drive, Braeside Victoria 3195

PO Box 876, Braeside Victoria 3195

(03) 9588 6900

(03) 9588 6999

info@lkdiesel.com.au

www.lkdiesel.com.au



Control anything, anywhere on Earth

Satellite, Web, SMS control, monitoring, alerting.

Create your standalone control system with our mobile automation and electronics specialists.

SMS CONTROL DATA LOGGING

CALIBRATION AUTOMATION

IMDynamics
INDUSTRIAL & MINING

03 5339 9660
imdynamicsvic.com.au



Victoria Resources minister Tim Pallas visits the Fosterville mine.

(CONTINUED FROM PAGE 40)

Catalyst Metals

In June, Catalyst Metals' subsidiary Kite Operations entered a deal to earn a 51 per cent interest in Navarre's Tandarra project, to further extend its footprint in the region.

Tandarra is situated along the Whitelaw Fault Corridor, which is considered to be a major structural control of gold mineralisation north of Bendigo.

Catalyst manages the entire Whitelaw Gold Belt and has interests in eight exploration licences which extend for 75 kilometres along the Whitelaw and Tandarra Faults.

These include the Raydarra, Four Eagles, Macorna Bore and Sebastian projects, which have shown promising exploration results to date.

Hill End Gold

Battery metals focussed companies such as Hill End Gold were also picking up pace.

On 20 June, Hill End announced it would sell its NSW gold assets, to focus solely on its High Purity Alumina (HPA) Yendon project, near Ballarat, Victoria.

The project, acquired in July 2017, contains rich kaolin deposits which can be processed into the highly lucrative HPA, which is currently fetching prices as high as \$US40,000 per tonne.

A recently completed pre-feasibility study confirmed Yendon would generate outstanding financial returns with low production costs, if developed.

"Production costs are expected to be extremely competitive at just \$7668 a tonne," Hill End stated.

"This will ensure Yendon enjoys robust margins, approaching 70 per cent, based on a conservative sale price of \$25,200/t."

The company hoped to secure project funding by early 2020, and commission the project in late 2022.

Kalbar Resources

Then there's Kalbar Resources, which is advancing its Fingerboards mineral sands project at Glenaladale, in East Gippsland.

The project is currently awaiting approval by the Victorian Government, and if developed, would produce products such as zircon, titanium and rare earths.

However, in recent months Fingerboards has received significant backlash from nearby farming communities. Minister Pallas said this was a common challenge.

"Victoria has a higher population density than the other larger mining states and faces some challenges with so much of our land used for homes, high value agriculture or parkland," Mr Pallas said.

"It is important in this context that all projects build a social licence within local communities to proceed.

"We are also looking across the board in government to improve links between regulators and make the decisions effectively and efficiently."

Brown Coal

Opportunities were also opening up in the brown coal space.

AGL's Loy Yang brown coal power station in the Latrobe Valley will soon become a test site for a world-first coal-to-hydrogen clean energy pilot.

The Hydrogen Energy Supply Chain (HESC) Pilot Project aims to transport the liquefied hydrogen to Japan for use in electric vehicles and power generation.

The project will be developed by Japanese

energy and infrastructure companies led by Kawasaki Heavy Industries – with the full support of the Victorian, Commonwealth and Japanese Governments.

Mr Pallas said the opportunity to produce hydrogen from brown coal was exciting.

"It could be a long-term game changer for the Latrobe Valley and Gippsland," Mr Pallas said.

"The HESC is an important project that has the potential to utilise the skills base within Gippsland.

"The project will have little impact on Victoria's substantial brown coal resources, and coal production for the project is consistent with the recent mining licence decisions."

Should the HESC project proceed to commercialisation (scheduled to occur in the late 2020s or early 2030s) it would create a significant number of jobs and deliver substantial economic benefit to south-east Victoria.

It also presents an opportunity to establish a domestic hydrogen industry within Victoria, with continued utilisation of the State's brown coal resource in a low-emissions context.

In June, the Government approved license extensions to EnergyAustralia's Yallourn coal mine, and AGL's Loy Yang mine.

Mr Pallas said the mining license extensions for Victoria's two remaining brown coal mines increased the provision for rehabilitation.

"This extension does not allow for the mining of coal beyond the 2032 (Yallourn) and 2048 (LoyYang) deadlines already in place by the respective companies," he said.

"It does provide for a minimum of 17 years rehabilitation."

A Bright Outlook

Minister Pallas said new geoscience research and data showed Victoria may have further deposits of copper, gold and other metals that

could be the catalyst for a wave of exploration and jobs.

On 22 June, the Government released additional tenders for exploration in the Stavely precinct with low impact minerals exploration activity, such as sampling, surveys, mapping and analysis expected to start next year.

Minerals exploration could occur across up to 11 pre-defined blocks, spanning 9500sqkm.

The tender would also include grant co-funding from the Government's \$15 million TARGET Minerals Exploration Initiative.

"We're attracting minerals explorers with strong social values to invest in western Victoria and provide long-term, high-quality jobs in towns like Ararat and Stawell," Mr Pallas said.

The Victorian mining industry was also eager to host the 2018 International Mining and Resources Conference (IMARC) in Melbourne in October.

This year, the IMARC event will also coincide with the International Council on Mining and Metals (ICMM) bi-annual Council meeting, being held in Melbourne at the same time.

Mr Pallas said this was the first time the ICMM had held its council meeting outside London.

"Bringing IMARC and ICMM together will create an unprecedented gathering of the most influential decision makers in mining and resources," he said.

"So much so, that this year we're expecting over 5000 mining and resources professionals from over 90 countries.

"We're cementing Melbourne's reputation as a global resource and mining leader, showcasing everything the State has to offer.

"It's clear that Victoria is the place to do business, whether it's in resources and infrastructure, in the regions or in the city."



SSR EXPANDING FOR THE LONG HAUL

OUTSTANDING RAIL OPERATOR SERVING MORE STATES AND INDUSTRIES.



After 15 years of operations exceptional customer service and innovation are underpinning Southern Shorthaul Railroad's (SSR) national expansion strategy and strengthening its reputation as one of Australia's highest-performing independent rail operators.

SSR continues to achieve diversified growth working with customers to focus on identification of efficiencies in the logistics supply chain, providing greater flexibility to drive cost effective solutions in a highly competitive industry.

SSR's ability to drive efficiency gains in rail is resonating with its customers employing a collaborative model based on driving enhancements with both immediate and long-term savings and following with acute responsive services for its customers.

Recent freight haulage contracts include the expansion of multiple services for the haulage of bulk grain and intermodal standard and broad gauge freight services throughout regional Victoria and NSW, Newcastle, Sydney and South Australia for domestic processing or export. SSR is also supporting Victorian and NSW Government passenger requirements providing critical transfer services for delivery of new vehicles and between facilities for scheduled maintenance

purposes for existing vehicles.

SSR's capacity for innovation is evident in its recent successes upon which supply chain solutions have consistently reduced operating and capital costs in rail haulage improving efficiencies for a diverse range of clients.

SSR's growing rail footprint

SSR has expanded across the Eastern Seaboard to become a full service freight operator with rail operations in the haulage of minerals, bulk coal, containerised concentrates (lead and Copper), bulk and containerised grain, intermodal and infrastructure trains, as well as providing the capability to support its rail operations with two full service railway workshops. Of particular note is SSR's 10,000m2 Bendigo facility providing a full suite of freight and passenger manufacturing, maintenance and overhaul services.

Employing more than 200 staff across Australia, SSR is highly capable to respond immediately to customer demands and requirements.

SSR's diverse fleet of rollingstock and locomotives is capable to provide customers with an efficient operational solution to their exacting requirements -

from brand new high horsepower equipment to specialist terminal shunting and passenger car transfer capability.

As a full service rail operator, SSR also provides the rail industry with crewing, train and asset management, rollingstock provisioning, infield repairs, incident management, refuelling solutions, train inspections and examinations, and running and heavy maintenance and overhaul.

SSR's superior customer support

SSR's success is built on outstanding service with the capability to provide real time 24/7 operations support, 365 days a year.

Longstanding relationships are another feature of SSR. SSR puts extensive effort into maintaining strong relationships with all key stakeholders, knowing the critical importance that customers have on information being provided in real time by SSR to manage their businesses. Customers appreciate the ability to have direct access to key decision makers in SSR, as this assists with providing immediate responsiveness to their freight and passenger requirements.

SSR has an exceptional safety performance record appreciating the impact

on customers and the community and has had no fatalities or serious injuries in 15 years of operation.

A promising future

SSR continues to strive for growth in identifying opportunities for potential customers that are seeking to develop and implement higher utility gains in their logistics supply chain and are looking to partner with an engaged, pro-active and collaborative rail operator.

SSR creates innovative options for customers to move freight more efficiently and cheaper via rail, with alternate intermodal solutions used to support the rail task.

Long term, SSR's expansion into further opportunities in Victoria, Queensland, South Australia and Western Australia promises a new phase of growth. SSR has built a strong base over the past 15 years and the challenge now is to leverage that platform into new markets in continuing to improve efficiencies and reduce freight costs for more national customers.

TO LEARN MORE ABOUT SOUTHERN SHORTHAIL RAILROAD, VISIT WWW.SSRAIL.COM.AU

VICTORIA, SOUTH AUSTRALIA AND TASMANIA
Brent Nally - Director Workshops
175 Murphy Street
Bendigo, VIC 3550
Phone: (03) 5434-7777
Fax: (03) 5443-7828
Email: brent_nally@southernshorthaulrailroad.com.au

NEW SOUTH WALES, QUEENSLAND AND WESTERN AUSTRALIA
Shane Mair - Executive General Manager Market Development and Commercial
12/121 Anzac Avenue
Engadine, NSW 2233
Phone: 0407-052-997
Fax: (02) 9520-9951
Email: shanemair@ssrail.com.au



SOUTHERN SHORTHAIL RAILROAD

All images: Image Resources.

A SHARPER IMAGE

The mineral sands market continues to tighten in 2018 with prices increasing as a result – particularly in zircon. It's in this positive pricing environment that Image Resources is fast-tracking development of its high-grade, zircon-rich flagship Boonanarring mineral sands project, 80km north of Perth, WA.

BOONANARRING is considered one of the highest-grade mineral sands projects in Australia – and about 70 per cent of revenue will come from zircon.

The low capital cost, short lead time to production and strong forecast cash flow, coupled with multiple growth options, positions Image as an exciting new player in the mineral sands space.

Reuben Adams spoke with Image managing director Patrick Mutz.

Q. Boonanarring has been on the fast track to development since the series of transactions with Murray Zircon mid-2016. How did the initial discussion between the companies come about?

I was fortunate to have had the opportunity to start those discussions between the companies back in mid-2014.

The idea from the outset was to bring together Image Resources (with a great set of high-grade and zircon-rich mineral sand resources and ore reserves in the ground, but with no operational equipment or experience) and Murray Zircon (a company with all the necessary equipment and operational expertise, but with only lower grade mineral sand resources in the ground), in such a manner that 1 plus 1 was greater than 2.

The combination of Murray Zircon's equipment and experience gave Image a major advantage to fast-track the project to production while the mineral sands commodity prices were still at their lowest level in some eight years.

And, by doing so, Image will now be in pole position to capitalise on the rapidly rising zircon prices that are forecast to continue to rise through 2022.

Q. A recent article noted that many explorers often struggle to make that quantum leap to production on their own – something Image has almost achieved. What learnings have you applied to Boonanarring from your time as Murray Zircon chief?

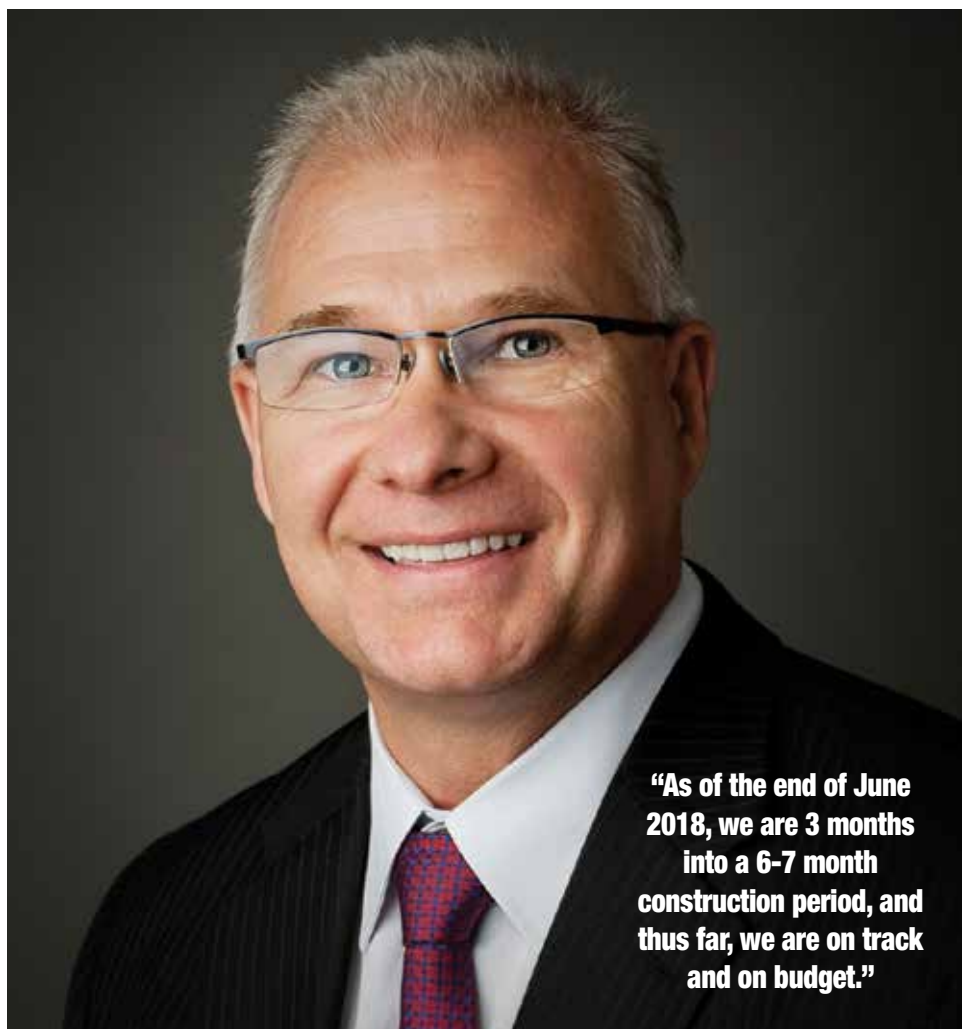


Image managing director Patrick Mutz.

I suppose the biggest lesson is to develop a credible plan, which includes full project or company funding; get full support from the Board on the plan; and then most importantly, “work the plan”.

Q. What are some of the key mistakes junior companies make during this transition to production?

Perhaps one of the biggest mistakes is for the company failing to recognise that the transition to production is best done by a team with specific project development and production experience, rather than by

members of the exploration team without those skills and experience.

No criticism whatsoever to the exploration team. They are great at what they do, but the learning curve of carrying the ball through the project development phase will at best be less efficient and more costly to the company, and at worse could result in a failed transition.

Q. The main reason for the low \$52m project capex was the prior acquisition of key capital equipment, including the Wet Concentration Plant in the Murray Zircon deal. How much did you save in estimated capital costs?

It is not easy to estimate how much this may have saved Image, however it can be argued that in the first instance the replacement cost for this equipment would have been between \$25m and \$30m.

However, there is also the element of time savings. For example, construction and commissioning time are significantly reduced by utilising the wet concentration plant (WCP) from Murray Zircon's Mindarie mineral sands project in South Australia, which results in not so much a ‘construction’ project, but rather an equipment relocation and reassembly project.

The WCP and associated equipment from Murray Zircon is a pre-engineered, pre-commissioned, proven assembly of equipment. These latter positive issues are more difficult to place a value contribution to for Image, but they are real.

Q. How is relocation of the WCP and associated equipment from South Australia tracking?

By the end of June 2018, the WCP and associated equipment will have been almost completely relocated from South Australia to the Boonanarring project site, some 80km north of Perth and be already partially reassembled.

Q. How is the aggressive construction schedule tracking?

As of the end of June 2018, we are three months into a six to seven month construction period, and thus far, we are on track and on budget.

This has always been an aggressive schedule, and it is clearly seeing its challenges.

To our credit, we have selected a project management team and contractors with specific experience for this type of build, but most importantly, with a “get-it-done” attitude while maintaining a safe, environmentally-friendly and land-owner and community sensitive approach.



(08) 9702 2190
WWW.PROJXCO.COM
INFO@PROJXCO.COM



Managing projects from concept, through design and planning, to successful execution

- Project Management** – We tailor the management of your project to ensure objectives are met and expectations are exceeded.
- Planning** – Scoping studies, conceptual design, project scheduling, focussed industry research, project execution, stakeholder liaison + more.
- Engineering** – We partner with select industry professionals across all disciplines to facilitate conceptual engineering design through to detailed engineered solutions.
- Design & Drafting** – Utilising the latest in 3D and 2D design software to develop innovative solutions to complex projects.
- Resourcing** – Providing experienced project management and construction personnel.

LET PROJX ADD VALUE TO YOUR PROJECT



ProjX are currently managing the project execution phase on site at Boonanarring WA.

Redefining project success

WA

PROJX is a multi-disciplinary project management consultancy based in South West WA.

ProjX offers a range of project delivery services including project management, planning, studies, procurement, engineering design, and drafting.

With extensive in-house capabilities, particularly in the minerals processing industry, and a long history of successful

partnerships with a network of industry professionals, ProjX delivers projects to the highest of standards.

The company is proud to be partnered with Image Resources, forming the core of the owner's project delivery team, managing the execution phase of the Boonanarring project.

ProjX congratulates Image Resources on the culmination of years of hard work with the development of this exciting project.

More information can be found at www.projxco.com

Q. The original BFS estimated a rapid debt payback period of 22 months. Do you intend to pay down this debt pile even sooner if benchmark zircon prices continue to climb, or will you use this extra cash elsewhere?

The original BFS results published in May 2017 indeed indicated a payback period of just 22 months.

However, the BFS was revised in November 2017, with higher commodity prices and a different AUD:USD foreign exchange rate curve, and resulted in a payback period of only 16 months.

That aside, the \$50m debt package we executed does not allow an early repayment of the loan. Therefore the extra cash generated during the three year term of the loan will partially be used to fund additional exploration aimed at increasing ore reserves and therefore the mine life at Boonanarring, as well as potentially a scoping study to determine the preliminary economics of a second operating mining centre at one of Image's other projects called Bidaminna, just 25km northwest of Boonanarring.

Q. What is the next focus for Image once Boonanarring is up and running?

Once we demonstrate profitable operations at Boonanarring, Image will be evaluating its options to grow the company. Importantly, we have a few options within our current, 100 per cent owned portfolio of projects in the West Perth Basin.

The first priority will be to add ore reserves at Boonanarring and in the immediate area around the processing plant to expand the effective mine life to 10 years or more.

Next will be to investigate the possibility of a second operation mining centre, with the

front-runner prospect at this time being the Bidaminna project, which has the potential to become a stand-alone dredge mining project.

Of course, the company will also be looking at the opportunity to also offer a dividend following the repayment of the three-year debt facility.

Q. How did your discussions with Sunrise Energy Group initially come about? What are some of the key benefits the solar farm will bring to the operation?

Since the Boonanarring project is located in an infrastructure-rich part of the North Perth Basin just 80km north of Perth, we have the opportunity to tie in to grid power.


The project is not in a remote location so, to be honest, solar was not on my radar screen. Sunrise Energy Group actually approached Image with the opportunity to utilise solar.

As the cost of solar equipment continues to come down, Sunrise was able to put an offer on the table for Image to utilise solar for the Boonanarring processing plant on an economic basis, and without the need for additional capital.

I call this a "no-brainer".


Image is able to do the right thing by the environment and community – at no up-front cost, and with a small but significant annual savings – by simply agreeing to take electricity supply from the solar farm.

Obviously I am being a bit overly simplistic, but the fact is, solar has now become economically competitive for industrial users, and it comes with the benefit of perhaps an intangible, but none-the-less important green footprint.



Piacentini & Son

Proud Service Providers to
Image Resources


Piacentini & Son
Ph: (08) 9780 8900 PO Box 308, Bunbury WA 6231
www.piacentini.com.au

ADDING VALUE

Tianqi's decision to establish a lithium downstream processing facility at the Kwinana Industrial Area (KIA) was a watershed moment. It not only flagged a new wave of growth for the KIA, it was synonymous with a broader step change for WA's resources sector – from 'dig and deliver' into value-added processing.



Kwinana Industries
Council director
Chris Oughton.
Image: KIC.

REUBEN ADAMS

THE Kwinana Industrial Area is the heart of the Western Trade Coast (WTC), WA's premier industrial area which pumps about \$15 billion into the State economy each year.

The KIA could see its current \$11 billion per annum contribution to the WA economy skyrocket as this push toward secondary processing and battery manufacturing gains momentum.

In August 2017, BHP Nickel West announced construction of world's largest nickel sulphate plant at its site in the KIA – 100,000 tonnes per annum, with a potential Stage 2 expansion to 200,000tpa – for use in the battery market.

Then came the seminal moment – Tianqi Lithium's commitment to the \$400 million construction of a processing facility in Kwinana, with Stage 1 of the project expected to be completed in mid-2018.

In May this year WA Lithium – 50/50 joint venture between Sociedad Química y Minera de Chile and Kidman Resources – inked a deal to proceed with its own Kwinana lithium refinery.

Then in June, MinRes and Hazer finalised the first stage of concept design for a proposed graphite pilot plant, also at Kwinana.

Kwinana Industrial Area

The Kwinana Industries Council (KIC) is a business association advocating on behalf of its membership, drawn from the Kwinana Industrial Area (KIA).

Passionate, long serving KIC director Chris Oughton said this development period, and the potential for further explosive growth, was in a league of its own.

Until now, his almost-12 year tenure at KIC had been predominantly characterised by member companies "hunkering down" and facing the financial challenges of staying in business during an economic downturn.

"From 2007 things were humming along quite nicely but there were no new entrants, and hadn't been for quite some time," he said.

"Then, of course, the Global Financial

Crisis impacted industry, and then the companies in the industrial area were focused on survival.

"There were some near misses, let's say, but they are all here today."

KIC focuses on key strategic issues that impact the businesses in the KIA, including road access, rail access, port access, governance, and trying to get rid of inefficiencies associated with "red rope".

"We don't fight red tape, we fight red rope down here; gnarly, twisted, stainless steel wire-reinforced, horrible stuff," Mr Oughton said.

For KIC and the KIA, there are two large, interconnected issues at play.

Firstly, this new wave of interest in WA, and particularly the KIA, as a hub for battery metals processing; and secondly, the advent of the State Government-led Westport, and the potential development of a long-debated outer harbour at Kwinana.

For Mr Oughton, this is a policy area ubiquitous with "red rope".

"If this new industrial wave passes us by and goes somewhere else – If that happens and the reason for it was that we weren't ready, how dumb are we?"

Outer Harbour Development

Mr Oughton has been advocating for an outer harbour development for more than a decade, but this time he was confident the ducks were lining up.

With the election of the McGowan Government last year came another promise of the planning and construction of an outer harbour container and bulks port.

In September, the Westport Taskforce was established.

"If there is a new outer port built in Kwinana that resolves all of our key strategic issues," Mr Oughton said.

"This is why I am extremely focused on contributing to that [Westport] process. And I must say, as a contributor to that process – I

sit on eight of the work streams, five of them active – the Government are listening to what we are saying, to their credit."

The companies moving into the KIA, such as Tianqi and WA Lithium, are choosing this location because it is the best for their business.

This only adds impetus to the outer harbour argument, which is about opening up the export potential of the State.

Without it, future growth will be held back through inefficiencies and lost opportunities directly related to transport and logistics, as well as local production and export, Mr Oughton said.

"The base of the argument now for those against the outer harbour is that the inner harbour can work for the next 25 to 30 years. That is a true statement, and it is an efficient competitive port relative to Australian ports," he said.

What Mr Oughton is saying – what many are saying – is that capacity or competitiveness is actually not the argument; it's about opening up the State's export potential.

Industrial Symbiosis

But KIA is already well placed to cater for new entrants, as an example of the world's best practice industrial symbiosis at work.

The interdependency of Kwinana industries helps provide cost and environmental benefits beyond what is achieved by widely dispersed industries, Mr Oughton said.

"There's 150 synergies operating as we speak – commercial relationships between members, made on commercial terms," he said.

For Tianqi, neighbouring KIA business Coogee Chemicals is providing it with a product it manufactures already as part of the business.

Now, Coogee will increase production to supply Tianqi, and presumably WA Lithium once it is up and running.

It's a synergy that makes Coogee Chemicals stronger and provides Tianqi with a lower cost inputs.

What also attracts these companies to KIA is the qualified staff and highly skilled service companies surrounding the heavy industrial core.

"It is common practice that the existing process plant operators, scientists, engineers, advanced tradies who populate the industrial area – 30,000 of them – move from company to company," Mr Oughton said.

"So there is a local, highly skilled workforce ready to be employed. We also have a belt surrounding the core of advanced fabricators and maintainers, engineering companies."

AMEC's *The Path Forward* report, released May 2018, stated that without Government and industry collaboration, Australia would capture just \$10 billion of the total value of the battery supply chain in the next eight years. However, if one more step was taken down the value chain into electro-chemical processing, by 2025 Australia could have a share of a further \$297 billion.

"These markets to the north of Australia are massive, but we don't think in a large enough scale. All we think about is exporting in bulk ships," Mr Oughton said.

"I don't see any difference in shipload of iron ore and livestock or grain. It is secondary processing opportunity being exported.

"A shipload of lithium rock spodumene is exported for about \$80/t. If it's processed into lithium hydroxide here it's a little in excess of \$20,000/t.

"But that's just the price of it; you can imagine what that does to our State's balance of trade."

"And it's a good four or five times the employment and growth in the service belt around the area. The multipliers go out into the State economy."

The additional synergies of co-locating battery mineral processing facilities in a single battery processing hub at the KIA are considerable, Mr Oughton said.

"We have Tesla out their spruiking WA as the lithium centre of the world," he said.

"If this new industrial wave passes us by and goes somewhere else – If that happens and the reason for it was that we weren't ready, how dumb are we?"

Lifting equipment for all logistical needs



Boddingtons Crane Hire provides lifting solutions to all sectors of Australian industry.

NATIONAL

BODDINGTONS Crane Hire is a specialist dry hire provider that has serviced some of Australia’s biggest mining and tier one construction companies.

Standout projects have included the hire of machinery to contractors on the expansion of the Boddington gold mine, construction of the Ravensthorpe nickel

project and major gas projects including the Pluto and Ichthys LNG plants.

Most recently they have supplied various equipment to contractors engaged in the construction of the Tianqi Lithium processing plant in Kwinana and expansion of the Talison Lithium processing plant in Greenbushes.

Big or small, Boddingtons Crane Hire can find a solution for all projects.

The company also hire extensively to

established crane and equipment hire companies.

Its dry hire model allows these clients to supplement their own fleet quickly and simply without the burden of large capital commitments.

At Boddingtons Crane Hire, the team pride themselves on only offering the best quality equipment from cranes and forklift trucks to reach stackers and telehandlers by the world’s leading manufacturers.


Boddingtons Crane Hire is fastidious with its maintenance, ensuring its equipment is always in top condition.

Its staff are experienced in all technical aspects of its machinery, and have built a reputation for unparalleled customer service.

More information and specifications on its complete range of equipment can be found at: boddingtoncranehire.com.au.







Providing quality equipment for your project

Boddingtons Hire

boddingtoncranehire.com.au

Boddingtons Hire provide a range of lifting machinery to suit all logistical needs. Specialising in dry hire, we provide cranes, fork lift trucks, reach stackers and telehandlers. All equipment is maintained to the highest standards and we take pride in our reputation earned for excellent client service.

Call Boddington's today and see how we can assist you on your next project.

(08) 9524 5144 | headoffice@boddingtoncranehire.com.au

INDUSTRY SPOTLIGHT

COMPANIES GEARING UP

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



More information on the company's services can be found at: www.electricalswitchboards.com.au.

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 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.

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

Visit us
www.electricalswitchboards.com.au

Send your switchboard inquiries to
sales@dara-switchboards.com.au or call **1300DARASW**

Resistance is ‘useless’

NATIONAL

AN increase in haul truck rolling resistance can triple costs, according to a recent study.

Fuel burn, plant damage and cycling times all suffer at the hands of a poor haul road surface.

It is not a new problem, and not a new fix with the implementation of a Broons Square Impact Roller.

Up to 50 per cent of operating costs in open cut mines sit with loading and hauling, according to Western Australian School of Mines professor Dr Rodger Thompson.

Dr Thompson found three factors of a failing or uneven haul road that significantly increase operational costs.

Firstly, the energy required to ‘climb’ the weight out of each depression in the road was adding up to 5 per cent in fuel costs.

Secondly, the increased cycling of suspension and friction on tyres was accelerating truck maintenance, and lastly the cycle times were suffering badly.

Adding only 3 per cent in rolling resistance was recording up to a 20 per cent increase in segment cycling times; pretty damning evidence that not enough attention is being paid to this high cost area of mining operations.

For more than three decades,



Broons' Impact Rollers are used worldwide for transforming haul roads.

Adelaide-based roller manufacturer Broons has been supplying its legendary Square Impact Rollers to eradicate these exact problems.

With its high energy output, the Broons Square Impact Roller compacts deep beneath the surface in the subgrade layers to secure the haul road structure,

preventing the formation of ‘waves’ so detrimental to haul truck costs.

Deep on compaction, low on maintenance, and fast to site – it’s little wonder Broons Impact Rollers are revered worldwide for transforming haul roads.

Costing a fraction of the savings to

be made, a Square Impact Roller with matched tow tractor is ready for hire or purchase now.

More information can be found by calling (08) 8268 1988, emailing info@broons.com, or downloading a brochure at: www.broons.com.

The structural steel experts



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

NSW

HARD BAKKA is a major player in providing steel structures for ore sorting machines for the mining industry.

The Hard Bakka team has a combined 30 years of experience in steel fabrication and welding, with its road to success starting in fabricating structures for oil refinery plants, before expanding to executing steel structures for roads and maritime services.

Today Hard Bakka is a preferred steel fabricator for mining solutions all over Australia.

“We specialise in supplying plant structures for sorting machines, complete with stairs, gratings, rails, conveyors

and skid frames,” Hard Bakka general manager Mona Hwalla said.

“We also specialise in fabricating ore bins, rock boxes and complete wash screen units.

“Our services include producing shop drawings, fabricating, surface finishing, deliveries, trial assemblies and onsite construction supervision, to ensure a trouble-free assembly of the complete plant.”

Hard Bakka understands the importance of reliability and the structure’s working life in the mining environment.

Compliance to the steel fabrication codes and delivering on time is a priority with no compromise.



THE PREFERRED STEEL FABRICATOR FOR MINING

HARD BAKKA is an Australian steel fabrication company with a 30-year tradition. The qualified team pride themselves on delivering reliable, world-class steel services to the industrial and resource industries across Australia.

CONTACT US TODAY FOR A FREE QUOTE

(02) 9796 7888
sales@hardbakka.com.au



The safer, cost-effective motor mount

NATIONAL

ROSTA Australia offers a range of self-tensioning motor bases (or motor mounts) that are extensively used by leading mining and quarrying operators.

Offering a safer, convenient and cost-effective option to traditional mounting devices, the ROSTA motor base range is also incorporated as a standard product by major screen manufacturers.

Maintaining proper belt tension is imperative in crusher, screening and fanning applications.

A tight belt can lead to early bearing wear and failure.

A loose belt can create transmission losses leading to costly downtime.

Similarly, significant downtime is experienced with traditional mounting devices that require constant tensioning of belts.

The ROSTA MB50 (and other ROSTA MB products) incorporates a self-tensioning device, which continuously compensates belt

elongation thereby improving drive efficiency and reducing downtime.

The benefits

The MB50 can be installed by one person using a flat 30mm wrench.

Similarly the changing of belts can also be undertaken by one person, usually in under 15 minutes.

With less workers required, and an easy-to-access tensioning system at the ready, the MB50 offers a considerable safety advantage with less exposure to safety risks.

With no belt realignment required, the MB50 offers a significant reduction in belt related downtime, adding to the cost efficiency of any operation.

By continuously compensating belt elongation, the MB50 reduces belt slippage and subsequent power draw.

More information about the MB50 Motor Base, can be found by calling (08) 9248 1588, or emailing sales.aus@rosta.com.



The ROSTA MB50 in action.



Codelco selects SampleManager LIMS Software

INTERNATIONAL

THE Corporacion Nacional del Cobre de Chile (Codelco) is the main copper producer in the world, controlling about 20 per cent of the world's copper reserves.

Established in 1976, the company was created out of a 1971 Chilean constitutional reform that nationalised the copper industry, and was initially tasked with operating and managing the mining properties given to the Chilean State as part of the reform.

Today, Codelco is a major employer in Chile, with almost 18,000 direct workers.

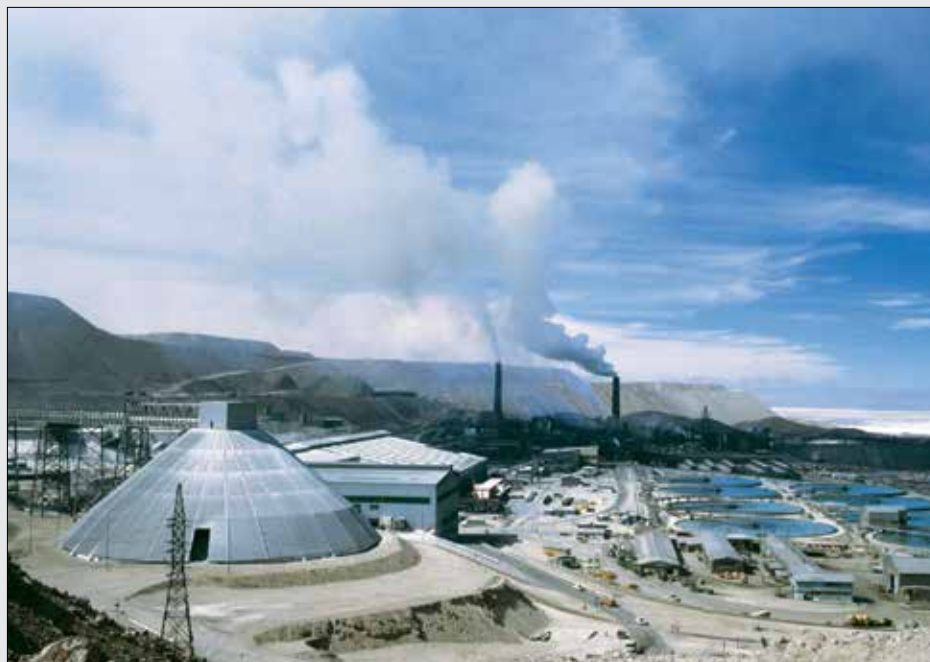
Codelco belongs to the Chilean State and its main business is exploring, developing and running mines that produce copper and by-products, processing the ore into refined copper and then selling it.

Codelco selected Thermo Fisher™ SampleManager™ LIMS software for its Chuquicamata (now part of the Norte Division) facility.

SampleManager LIMS software replaced Codelco's existing LIMS and the project was managed by Codelco's Quality Management and Information System departments.

The LIMS was installed in one laboratory and several remote sampling sites, with the functions of the laboratory including the preparation of raw materials, material process control, process control and finished product quality.

At the time of the deployment, Codelco decided to introduce Good Laboratory Practice (GLP) into the organisation and required a LIMS that would facilitate this process.



Codelco selected Thermo Fisher™ SampleManager™ LIMS software for its Chuquicamata (now part of the Norte Division) facility.

Codelco determined that it was necessary to select an information management system that would horizontally integrate with the enterprise.

In addition, Codelco required a LIMS that would also integrate several remote and networked systems into a unique and common platform, and needed a system to conform to a number of external regulatory disciplines, including ISO 9000, ISO 14000, and ISO 18000.

The project team and vendor selection

The Chuquicamata division appointed Ricardo Breve Inostroza (from the Safety,

Quality and Environment department) as the user project manager and Jorge Navarrete Nunez (from the IS department) as the project manager.

They were in charge of evaluating the LIMS market and justifying the project from a technical and economic perspective.

After a detailed selection process, they awarded the contract to Thermo Fisher Scientific.

Codelco's selection criteria were vast; however, a few key factors in selecting SampleManager LIMS software included: the quality of Thermo Fisher's response, workshops and project management capabilities; Spanish language sales and support; and the LIMS' comprehensive

functionality and alignment with Codelco's IT technology.

"SampleManager LIMS software is adaptable to our organization's changes and business dynamics and works with other software applications such as Microsoft® Office and SAP®," Jorge Navarrete Nunez said.

"The system is also user friendly."

In addition, Sergio Espinoza Leon, the laboratory manager responsible for ensuring a smooth LIMS implementation said "We have had a very positive experience with Thermo Fisher in terms of effective communication, on-time delivery, system specifications and quality of documentation and records."

Instrument integration

SampleManager LIMS software supports automated reports and information analysis that are used in production management decision-making for process and product quality.

It also functions as a corporate database providing information to key organisations, such as product development, marketing, operations, and more.

Instruments including balances, spectrometers, EAA and FRX are integrated directly into the LIMS to automatically collect data and provide laboratory statistics, such as workload, manhours, utilization of assets, budgets and cost of processes.

It also tracks and audits samples, tests and results.

Folded and AMOC radiators

HEAVIER CONSTRUCTION



Deep-drawn slots increase tube-to-header contact



Centre mounts are over 20% thicker than OE



Tank walls and headers are 30% thicker than OE

Heavy-wall welded seam tubes

IMPROVED DESIGN

The baffle plays an integral role in a two pass system. The OE rubber gasket (pictured below) is prone to degrading over time leading to rising operating temperatures & ultimately begins to overheat equipment.



Procore's split-tank design is a major improvement over OE.



This improved development guarantees ZERO coolant bypass for the lifetime of the radiator by eliminating the OE gasket, which can fail.

OIL-RESISTANT SEAL MATERIAL



ADRAD has added new folded and AMOC radiators to its extensive industrial cooling products range.

NATIONAL

OVER the past three decades, ADRAD has established itself as Australia's leader in aftermarket heavy duty radiator design, manufacture and supply.

The company's engineering and manufacturing teams have implemented a number of advanced construction techniques that extend the performance of ADRAD cooling products far ahead of the

original factory fitted units they replace.

It should come as no surprise then to learn that ADRAD applies this same quality principle when selecting parts from carefully chosen partner suppliers around the world.

The latest new additions to ADRAD's heavy industrial cooling range are folded and AMOC radiators from PROCORE to suit many Caterpillar heavy vehicle applications.

These aftermarket radiators are built

with heavier construction and feature significant design improvements, such as deep-drawn header slots and split-tanks. The changes dramatically increase strength and durability which delivers much longer service life.

Seals and grommets have also been sourced from MICON INDUSTRIES which feature oil-resistant material.

A high number of radiator leaks occur due to seal degradation and failure. The rubber compound specially developed

by MICON is completely resistant to hydraulic oil, motor oil and diesel fuel and tolerates a high temperature range. MICON grommets are also available for water or glycol applications with Mesabi type radiators.

ADRAD supplies an extensive network of radiator specialist workshops across Australia. Information about ADRAD's extensive industrial cooling products range can be found at: www.adradradiators.com.au.

NOW AVAILABLE FROM



FOLDED & AMOC RADIATORS & SEALS

For more reliable cooling and less downtime, choose radiator cores and seals with advanced design features.

These products are engineered to deliver maximum service life in the most demanding applications. If you're looking for superior performance, then you'll find it with these high quality Micon and Procore products.

- AFTERMARKET COMPONENTS
- SUITS CATERPILLAR
- SUPERIOR TO OE DESIGN
- AUTHORISED DISTRIBUTOR



Available from Adrad Stockists including



or contact Adrad

1800 069 610
adradradiators.com.au



Adrad is a Quality Accredited Manufacturer and Supplier.

Big pump goes stainless

NATIONAL

CORROSIVE liquids on mining and construction sites are a fact of life.

Tsurumi's new 316 cast stainless steel high head pumps are designed for those applications.

Metalliferous mines are susceptible to pump breakdowns simply because the pump's material of construction is not compatible with the required mid-range PH liquids.

Australian Pump Industries is working with Tsurumi, the world's biggest manufacturer to develop a range of big electro submersible pumps designed to deal with these issues.

The pumps, available in 316 stainless steel are now in a range of up to 110kW with heads as high as 200 metres.

Called the Tsurumi LH series, the new pump is claimed by API to change the way mines, quarries and industrial applications and even infrastructure projects think about moving inconvenient water fast.

"Tsurumi's LH series will deliver flows of up to 6500 lpm," Aussie Pumps' Tsurumi product manager Neil Bennett said.

"They are loaded with features that Tsurumi have integrated as standard to maintain the highest levels of reliability."



Tsurumi's LH series high head 316 grade stainless steel pumps ready for drilling, mining and abattoir duties.

The big pumps, with their high flows and high head combination are designed in the unique 'slimline' that enables the pump to be used in bores and wells.

For example, even the 110kW pump has a diameter of only 606mm.

Additionally, the pump incorporates a centred discharge flange that ensures the pump is ideally balanced for lifting in its installed position.

Discharge ports are up to 200mm (8") and are flanged.

The pumps achieve their high performance by using two 316 stainless steel impellers. Pumps over 55 kW are fitted with electro type leakage sensors and protection anodes where required.

Tsurumi's anti-wicking cable entry prevents water into the motor if the power lead is damaged or the end submerged.

The unique double dual silicone carbide mechanical seal system is an added feature, and the seals are incorporated in an oil chamber fitted with a patented 'oil lifter'.

The oil lifter provides forced lubrication into the mechanical seals thus ensuring they always stay 'wet'.

That extension of seal life and the anti-wicking cable entry point eliminates 90 per cent of the reasons for failure in submersible motors, dramatically extending the pump's life and ultimately its reliability onsite.

"Tsurumi's commitment to Australian Pump and the Australian market is tremendous", Mr Bennett said.

"The establishment of the pump banks in Singapore and Japan mean fast delivery even if Australian Pump's huge warehouse in Sydney doesn't have product for immediate shipment," he said.

Further information is available at www.aussiepumps.com.au or authorised Aussie Pump distributors nationwide.

World class mining services

NATIONAL

CMI Technical Services began in 2011 as a single man operation with company managing director Zeb Ogilvie as the brain child.

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

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

The team also offers construction management, procurement, commissioning planning and management, asset management, condition monitoring, and training and development.

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

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

CMI Technical Services general



More information on its services and products can be found at: www.cmitech.com.au.

manager Tito Chacone echoed Mr Ogilvie's views, citing a focus on customers as the company's recipe to success.

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

satisfaction," Mr Chacone said.

"We are lucky in that we are now in many different facets of maintenance in mining, oil and gas as well as touching on marine.

"New additions to our maintenance equipment, include one of the only fully mobile lineboring units in Australia

capable of 254mm (10") to 1524mm (60") bore diameters.

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

adenco.com.au



WATER MANAGEMENT AND CIVIL ENGINEERING



7 Abrams Street, Balcatta WA 6021

08 6262 2225

info@adenco.com.au

Tru-Flo showing the way

NATIONAL

TRU-FLO Pumping Systems is a world-leader in dewatering pump and pontoon packages, providing 'cutting edge' products for mine dewatering and water transfer for open cut and underground mines.

Headquartered in Bathurst, NSW, the company has branches operating near key mining hubs in QLD, WA, and Indonesia.

From these bases, Tru-Flo can service clients throughout Australia and abroad; even in remote international mining locations such as Papua New Guinea and the Pacific Islands.

"Tru-Flo is the benchmark for mine dewatering, you won't find a pump more reliable or efficient," Tru-Flo sales executive Martin Richardson said.

"We have an expansive range of mining and industrial pumps supplying solutions to global mining, oil and gas, civil and food markets.

"What's more, our extensive team of engineers and hydrologists take projects from initial concept all the way through to commissioning and client hand over."

Mr Richardson said the company's pontoon mounted pumps are a "must-have" in areas that receive heavy rainfall.

"Skid mounted pumps are often drowned in these situations due to limited access to operating pits once rain starts,"



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

he said.

"If you do drown your pump we have that covered also. We have rebuild facilities that can bring pumps back to 'as new' condition."

When building a pontoon pump, Tru-Flo's skilled in-house engineering team considers each location's particular specifications during the planning and design process, resulting in the delivery of a tailored pump that precisely meets our client's specifications.

Tru-Flo pontoons can be configured to suit a range of applications, including tailings decant, dewatering, leachate and

Each pontoon is manufactured in either two or three module sections enabling easy transport in condensed shipping and sea freight containers.

Access to pontoons is available through various systems including floating and spanning walk ways.

"The diesel range can be fully customised to suit individual mine applications, with engineering approvals available for compliance, displacements and weight carrying capacities; and are custom designed for safety, quality and ease of use," he said.

Mr Richardson said the range is capable of pumping against high head situations, large quantities of solids, and slurries; often encountered in mine dewatering.

"Our broad range of diesel and electric options span from 30l/s to 1200l/s, and can achieve heads of up to 200m in a single lift," he said.

Skid mounted pumps can be dragged across tough mining terrain, as they have a rugged design that is fitted with super heavy duty push bars enabling them to be towed or pushed by earthmoving equipment.

Tru-Flo pumps and pontoons are sandblasted, primed, and painted with high build, two pack epoxy paint in accordance with Tru-Flo's 'mine spec' coating and bake procedure to protect against abrasive mine water.

CHPP supply water pumps; as well as to underground or fire water supply and water evaporation projects.

"All our pontoons are manufactured to withstand harsh Australian and international open cut mining environments and are quality assured and pressure tested prior to painting," he said.

Pontoons come in various configurations depending on the application.

They can either be of steel construction or roto mould high-density polyethylene cells, with the option of foam filling for indestructible buoyancy.



INTRODUCING AUSTRALIA'S COOLEST HIGH VISIBILITY SHIRT

“

The new lightweight shirts are considerably cooler than our previous drill shirts and were welcomed by our workforce during our warmer months.

The quality and longevity of the shirt has not been compromised by the use of the lighter material and cooling treatment applied to the garment hence it has now become our standard work shirt on site.

Evolution Mining

AVAILABLE EXCLUSIVELY THROUGH THE **LEADING EXPERTS IN**
ONLINE UNIFORM MANAGEMENT SOFTWARE

BRINGING VALUE TO THE AUSTRALIAN INDUSTRY THROUGH

- Onsite PPE Vending Solutions
- Onsite Uniform & Footwear Fits
- 48hr Turnaround Time on Clothing Orders
- Warehouses in NSW, QLD and WA



RWW
UNIFORM & SAFETY MANAGEMENT

Made Easy

25
YEARS
1993-2018

Uniform management made easy through software

NATIONAL

GONE are the days when company receptionists or purchasing officers had to manually record employee clothing orders and sizes on a spreadsheet to keep track of budget entitlements and allocations.

The process is outdated, and the hidden costs associated with manual labour are hurting many large organisations when these processes can simply be replaced with technology to automate and streamline operations.

Established work apparel and personal protective equipment provider Riverina Work Wear (RWW) Group has developed Dataspace Uniform Management, a world-class and purpose built online uniform and safety management portal that takes the stress and financial strain from managing uniforms and PPE wear.

Built with powerful B2B functionality, the portal has been developed for larger companies that employ more than 250 staff, and have multiple locations with multiple purchasing staff.

“Our online apparel and PPE management solution is a ‘best in its class’ purpose built ordering system, revolutionising the clothing supply management process and providing you with faster, more efficient, reliable and ultimately more cost effective ordering capability,” RWW Group head of sales Jamie Firth said.

“Many large companies today struggle with managing their apparel requirements across their network of



RWW Group's Technikool Lightweight Ripstop Coolit Shirt can cool down the body by up to 5 degrees.

branches and multiple locations and don't have control on budgets per employee and access to reporting.

“Dataspace makes the whole uniform supply & management process so streamlined, efficient and cost effective.”

The system eliminates the need to manually record staff clothing orders on spreadsheets, provides access to staff ordering history in one click, automatically tracks budget allocations per staff member and remaining budgets,

and pre-sets a company's clothing range against each staff member to ensure a consistent image is achieved.

With innovation at the core of RWW's approach, the team is continually launching new features to users.

Many more exciting features are scheduled to go live in 2018, including a front end app for employee uniform requests, enabling employees to request uniform requirements direct from their phone; sizing charts against products

to assist with ordering; and employee communication functionality to record feedback on uniform comfort and functionality.

Dataspace Uniform Management currently has more than 27,000 employees set up from more than 150 companies.

RWW's clients also benefit from its high-quality workwear and PPE offering.

For more than 20 years, RWW has grown to become one of Australia's leading national providers of apparel, partnering with globally recognised brands including Van Heusen, Calvin Klein, Hard Yakka, Bisley Workwear, Steel Blue, Force 360, Ritemate and its own exclusive brand Technivision.

One of its latest offerings in its Technivision brand is the launch of Australia's first high-visibility shirt with cooling treatment technology to help cool the body down by up to 5 degrees.

The Technikool Lightweight Ripstop Coolit Shirt is perfect for those working in hot and humid areas and comes in sizes 2XS to 6XL to facilitate male and female sizing across the mining workforce.

The high-visibility shirt is made from a 140gsm lightweight ripstop fabric with three points of cooling vents, including vertical rear vents, underarm vents and horizontal rear vents to provide extra air flow around the body.

More information on Dataspace and RWW's brand-new cooling shirt can be found at www.dataspace.global, and www.rwwgroup.com.au.

THE AUSTRALIAN
MINING REVIEW

PROFILES FOR AUGUST 2018

- 3D Animation
- Corrosion Control
- First Aid Training & Supplies
- Heavy Haulage & Low Loaders
- Industrial Tyre Solutions
- Lightweight Solutions
- Maintenance Products & Services
- Mine Ventilation
- Mineral Processing
- Mining Education
- Refuge Chambers
- Satellite Communications
- Spill Control
- Water Treatment
- Welding Products & Services

CALL US TO BOOK YOUR PLACEMENT TODAY

BOOKING DEADLINE: July 13th 2018

BRAD FRANCIS

(08) 6314 0303 0405 345 312

brad@miningoilgas.com.au



HEXAGON
MINING

SHAPING SMART CHANGE

PLANNING | OPERATIONS | SAFETY

Productive mines know technology drives their success. Companies must be smarter, safer, and quicker to respond to change. Their future depends on it.

Hexagon Mining is built for your future. We recognize that your competitive edge depends on integrating, automating, and optimizing critical workflows. Precision, accuracy, and safety are pivotal to those needs.

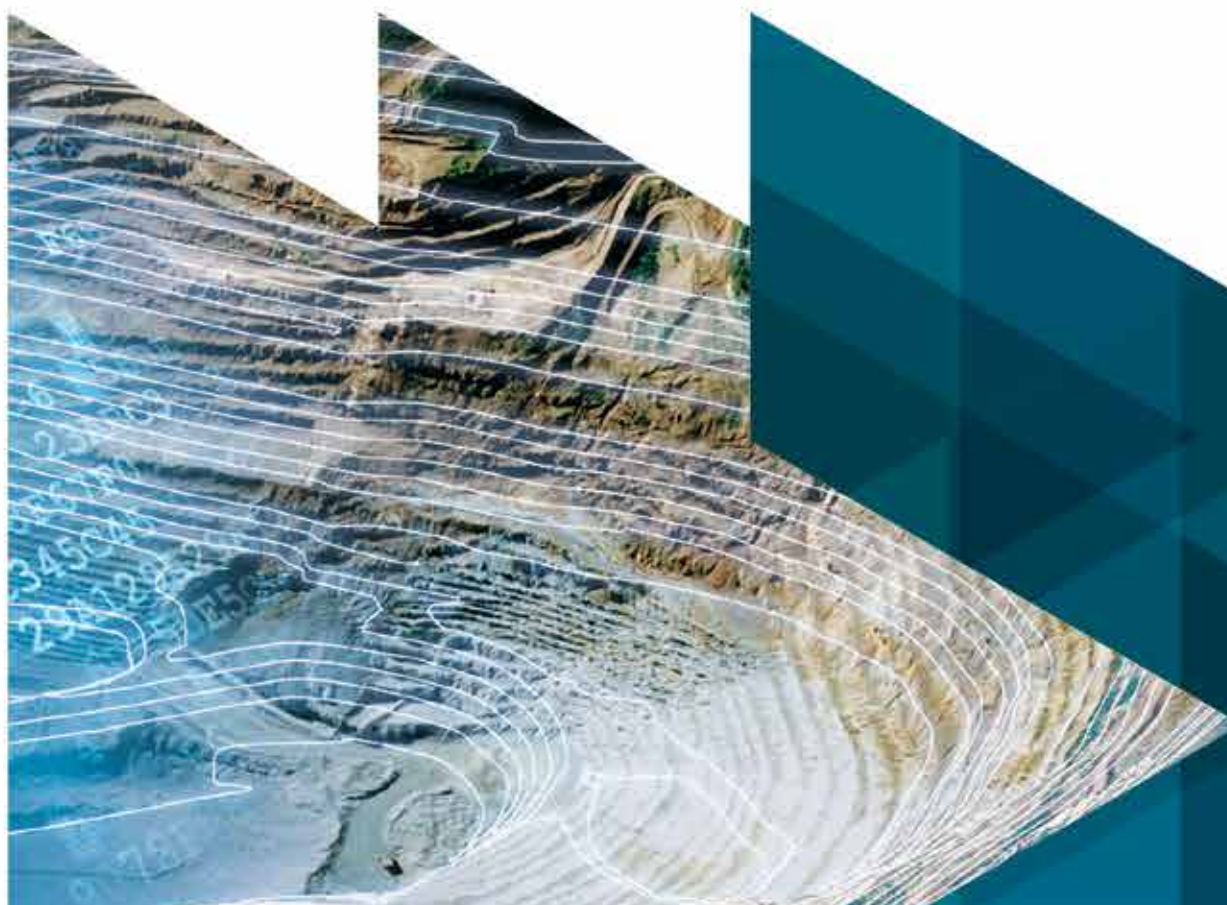
Hexagon Mining is the only company to solve these challenges with proven technologies for planning, operations, and safety.

We are a global network of talented mining professionals, delivering technology, service, and support.

We are Hexagon Mining.

SHAPING SMART CHANGE FOR THE LIFE OF YOUR MINE

hexagonmining.com
contactus@hexagonmining.com



MANUFACTURED IN
AUSTRALIA



ROCKFALL MITIGATION AND SURFACE SUPPORT SOLUTIONS.

Rockfall barrier

Rockfall drapes

Rockfall drapes

Rockfall attenuators (Raised drapes)

Slope stabilisation

Surface support



Your local Geobrudd specialist:
www.geobrudd.com/contacts

Geobrudd Australia Pty Ltd
14 Century Road | Malaga WA 6090
T +61 8 9249 9939 | F +61 8 9249 9949
www.geobrudd.com.au

Regional offices
Sydney NSW, T +61 400 845 289
South Melbourne VIC, T +61 488 044 708
Brisbane QLD, T +61 488 044 003
Cairns QLD, T +61 408 774 059
Christchurch NZ, T +64 220 499 897



More information can be found at: jetcrete.com.au.

A complete underground shotcreting service

NATIONAL

WITH more than 35 years' experience in the mining and construction industries, Jetcrete provides clients with ground support solutions, civil infrastructure development, project management and more.

The company has made a commitment to complete shotcrete application activities in a cost-effective manner, and its projects

can be found across regional WA, South Australia, QLD, NSW and Tasmania.

Clients can be assured that Jetcrete provides a total safety environment in achieving its mission of quality, fairness, honest communication and equity.

Since 1992, Jetcrete has provided underground shotcrete and fibrecrete ground support for both development and rehabilitation in underground mines Australia wide.

The company uses only the best equipment available for both hard and soft rock mines.

All shotcrete operators have a minimum of eight to 12 months intensive training, including concrete batching and delivery driving prior to their appointment as a Sprayer.

Being at the forefront of the industry for many years' means the Jetcrete team has developed most of the modern technologies

used for shotcreting in Australian mining today, such as the implementation of laser scanning for thickness measurement. It is also the first contractor in Australia with EZRI classified shaft lining equipment.

Jetcrete, in conjunction with major suppliers, has been actively involved in the development of many specialised mixes and the trialling of new, more advanced technologies to meet ever growing industry demands.



AUSTRALIA'S
**LARGEST
SPECIALIST
SHOTCRETE
AND CIVIL
CONSTRUCTION
CONTRACTOR**

OUR EXTENSIVE EXPERIENCE INCLUDE:

- Underground/Tunnel Shotcrete Application
- Remote Area Concrete Supplier
- Zone 1 Hazardous Areas shaft lining services suitable for coal mines
- Laser scanning for shotcrete thickness measurement

CORE SERVICES:

- Underground Shotcrete Services
- High Wall Shotcrete Services
- Tele-remote shaft lining
- Underground and Surface Civil Construction

☎ 9270 1000 🌐 jetcrete.com.au
✉ tendering@jetcrete.com.au

The Perfectly Iced Package



Introducing Kloppenberg's new DISP IND automated ice AND water dispenser coupled with Manitowoc's Indigo® or M-Series ice machine: The hygienic one-stop solution for your ice and water dispensing needs.

Suitable for:

- Mine sites
- Construction sites
- Health services industry
- Hospitality industry

 MANITOWOC

INDIGO®

 KLOPPENBERG

The Kloppenberg Advantage



BAKER
REFRIGERATION

1800 ICE MAN
423 626
www.ajbaker.com.au



INNOVATIVE MINING, QUARRYING & EARTHMOVING SOLUTIONS

A consumable wear part company specialising in:

- Quality wear parts
- Superior product support
- Demonstrable cost savings
- Reputable brands
- Ground engaging tools
- Crusher wear parts
- Weld overlay wear plate & composites

SPOTLIGHT THIS MONTH ON 2TUFF PLATE & BLOCK

Wide range of specialised wear protection products to provide protection and prolong life of your valuable mining and quarrying equipment like buckets, bodies, chutes, impact plates and more.

2TUFF LAMINATED COMPOSITE BLOCK

Hardness = **700 BHN (63HRC)**

2Tuff LCB products include

- Chocky Bars, Wear Buttons
- Skid Bars, Wear Bars
- Wear Plates, Grizzly Caps



2TUFF CHROMIUM CARBIDE WELD OVERLAY WEAR PLATE

Hardness = **58-63 RC (610-705 BHN)**

2T60 = High Abrasion Low Impact

2T80 = High Abrasion Medium Impact

2Tuff CrC Plates can be supplied as:

- Sheets, Strips, Custom sized and shaped
- Can be rolled, pressed or bent to shape
- Various grades and thicknesses
- Attached via weld, stud or through bolting



OUR TEAM IS READY TO ASSIST – CONTACT US TODAY FOR SERVICE

QLD | 16 Silverton Court, Paget QLD 4740 Australia **p.** +61 7 4953 9400

NSW | 60 Mustang Drive, Rutherford NSW 2320 **p.** +61 2 4015 9900

WA | Unit 2 48 Denninup Way, Malaga, Perth WA 6090 **p.** +61 8 6229 4500



1800 940765
sales@2mtminingproducts.com
www.2mtminingproducts.com



Nobody extends wear life like we do.

You've probably heard about the innovation and progress LaserBond is achieving in surface engineering technology. We apply new surfaces to worn parts so they work literally better than new. And brand new parts can also be treated so they last a lot longer. Customers enjoy longer wear life, fewer shutdowns for component replacement, and better workplace health and safety control. Our laser-applied coatings typically at least double the life of a part. The new 'laser cell' in our SA engineering facility will have the highest-power laser beam used for laser cladding in the Southern Hemisphere. We already operate the three most powerful lasers in this industry in Australia. These are supported by many other processes and technologies, such as HP HVOF, all supported by our own well-equipped metallographic laboratory and state-of-the-art workshops. If you're looking for the best surface engineering available, look no further.



LaserBond – an excellent choice

LaserBond Limited | www.laserbond.com.au
Sydney | Adelaide | Freecall 1 300 527 372
International +612 4631 4500 | Fax +612 4631 4555
Email info@laserbond.com.au



HAVILAH RESOURCES CHIEF EXECUTIVE WALTER RICHARDS

Diversified junior Havilah Resources has been busy. In June alone, the company announced high cobalt recoveries at Mutooroo, launched a due diligence agreement with SIMEC, and divested its Portia and North Portia gold projects.

All images: Havilah Resources.

ELIZABETH FABRI

Q. You recently flagged the sale of Benagerie Mining Lease, comprising the Portia and North Portia mines, for \$14.7 million and a 2 per cent royalty. Why did you sell?

Havilah has established a mutually beneficial relationship with Consolidated Mining and Civil (CMC) over the past three years and together we have made a success of the Portia gold mine.

With all the infrastructure in place at Portia and a willing and able partner, with relevant experience, it appears to be the logical next step for CMC to develop the North Portia copper-cobalt-gold deposit, which is right next to Portia on the same mining lease.

Havilah also has other projects in its diverse multi-commodity portfolio that have greater potential in both scope and profitability.

The divestment of the Benagerie Mining Lease provides Havilah with some immediate funding and an ongoing revenue stream from which to fund our other major projects, without the distraction of developing the North Portia resource ourselves.

Havilah also maintains first rights to the pyrite (potentially cobalt containing). It's a 'win win' outcome for both parties.

Q. Take us through Havilah's 'Copper Strategy—Enhanced by Cobalt' and its significance.

Havilah is a very fortunate junior miner with a multi-commodity portfolio that allows it to choose the right commodity at the right time.

We believe that the current commodity to focus on is copper due the positive outlook for the red metal.

We are also in the fortunate position to have all our copper deposits enhanced by cobalt and gold.

I believe most people are aware of the social and political challenges facing the Democratic Republic of Congo (DRC), which to date has been a major source of the world's cobalt.

Due to its use in batteries, including those required by the renewables industry, cobalt prices have increased significantly.

What sets Havilah's projects apart is that our projects work on copper alone. The cobalt therefore becomes a bonus that generates significant upside, without increasing the



risk of the projects. If you are looking for an ASX listed company with exposure to copper and cobalt, but where the cobalt is located in Australia, then Havilah is one of only eight such companies.

Havilah has the biggest resource base of this group of companies. This combination of metals, risk profile, size of JORC resources, and exploration upside, makes Havilah a unique investment opportunity.

Q. In June you inked a deal for GFG Alliance's SIMEC Mining to begin due diligence at your iron ore projects. How does iron ore fit into your portfolio currently?

We have now acquired the tenement to give us full control over the Grants Iron Ore Basin. Iron ore is not considered to be a core asset at this time, but it is part of our multi-commodity portfolio.

That means we are not investing significant funds or effort into iron ore at the moment, but we do keep an open mind as others might be prepared to invest in iron ore, or it might fit their business strategy and create opportunities for Havilah.

SIMEC could be the perfect partner for our iron ore assets. They have access to a steel mill as well as a port, which is the

missing piece of the puzzle for Havilah.

Q. What was the outcome of your partnership with Cobalt Blue to investigate cobalt recovery potential at Mutooroo?

Our relationship with COB is in the very early stages of exploring potential ways we can work together with respect to cobalt.

We have recently released promising results from laboratory scale work that COB have performed on some of our Mutooroo copper-cobalt-gold ore using their proprietary technology.

We now have to develop a work program for the next phase of our cooperation to explore how these results could benefit both parties going forward.

Q. Do you encourage more juniors – like yourselves – to collaborate in projects like this?

I think as a junior, you have to keep an open mind as to how you will be developing your projects and advance the execution of your strategy.

There is no single approach, solution, answer, or funding model/opportunity.

In other words, when you do get the

opportunity to work with others to explore opportunities that could benefit both parties then these should be explored.

Q. How soon could you hit the start button at Kalkaroo and Mutooroo?

Mutooroo is a very doable project for Havilah.

It is a high grade copper deposit (1.5%) with a high cobalt grade (0.13%) that outcrops at the surface, is 40 minutes' drive from Broken Hill, and has a relatively low capital cost.

It also has a lot of exploration upside. It is therefore the perfect project for Havilah and is our next priority. We have a \$5 million work program that covers exploration, PFS and permitting. We could have Mutooroo in production in two years' time.

Kalkaroo is the largest undeveloped open pit copper-cobalt-gold deposit in Australia.

The economics are robust, but the project requires significant funding.

We are planning on advancing Kalkaroo by addressing a few metallurgical recovery opportunities and also expanding the scope of the PFS to include cobalt to further enhance the value proposition.

Kalkaroo could be in production in three years' time under the right circumstances.

Q. Havilah chairman Kenneth Williams will retire later this year. Has the board commenced a recruitment process for his replacement?

This appointment will be an important one for the Havilah Board and for the evolution of Havilah.

In communicating his intent to retire at the AGM, Ken has afforded the Board sufficient time to canvass broadly to ensure that a high calibre candidate is sourced.

Some expressions of interest have already been received and we would encourage suitably qualified individuals who might be interested in being part of a company with a very exciting future to make contact with us.

Q. Final thoughts?

Havilah is a low cost investment opportunity to get into the copper-cobalt investment space on the ASX.

With our 16,000sqkm tenement holding in the Curnamona Craton in South Australia, a solid exploration track record, and local knowledge there is real upside opportunities for us to add value and enhance the value proposition further.



WingtraOne

Aerial Data for Professional Mapping and Surveying

The Vertical Take-Off and Landing (VTOL) capability allows the WingtraOne to ascend and move like a helicopter. For the mapping mission it transitions into forward cruise flight and matches the endurance and speed of fixed-wing airplanes. In order to land, the WingtraOne switches back to hover flight and descends vertically.

- **Vertical take-off and landing** allows use in a far greater variety of situations, guarantees safety for the operator and offers much reduced wear and tear on the drone.
- **State of the art PPK system** allows for mapping with down to 1 cm absolute accuracy without using ground control points.
- The WingtraOne PPK system with **42 MP camera** produces brilliant resolution images with down to 0.7 cm/px GSD.



Call **1300 886 982** for more information
survey.crkennedy.com.au

Why Bosich Low Loaders are the safest low loaders.

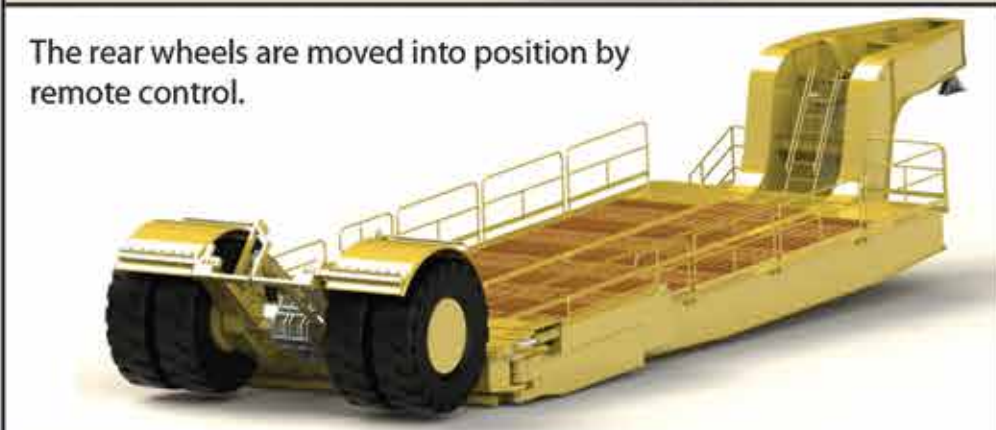


No jack-up when loading.

Safe drive-on/drive-off loading with deck secure on the ground.



The rear wheels are moved into position by remote control.



Tyres to full width of trailer for extra stability.



The Bosich Rear Axle Expanding Low Loader lowers the deck to the ground then raises it without the use of jacks.

No jacks to shift on uneven surfaces or sink into soft ground.

All loading functions are done with the deck sitting safely on the ground.

Advantages of the Bosich operating system:

- No jack-up when loading.
- Lowered deck sits securely on the ground.
- Low ramp angle for safe drive-on/drive-off loading.
- High ground clearance under raised deck.
- Oil-cooled, fully sealed brakes.
- Tyres to full width of trailer for extra stability.
- Remote controlled operation with mechanical back up.
- No uncoupling from truck to load.
- Operates at high speed with full load.
- Ideal for drills, dozers and excavators.

Bosich Lowloaders from
150T - 800T capacity



For more information email
milan@bosich.com.au