Inside:

- The yellow metal finds favour
- Liquid gold in Flinders Shire
- Agripower fertiliser project takes root
- Robots used to detect structural faults

Pajingo ramps up

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MCE we are always looking for ways to reduce costs to our customers business. One area we have identified as a major cost benefit is rationalising your conveyor pulleys.

Working with a major mining house in the Bowen Basin we completed a complete pulley audit, reviewed all GA drawings, checking dynamic and static reports for each location.

The review process identified a few issues with the most common one being under designed shafts allowing too much deflection at the locking elements.

The engineering design calculations worked on a worst-case installation for each pulley size, considering belt wrap angle and the tensions for the location.

Shaft designs were designed to AS 1403 and calculations completed to select bearing size, locking assembly styles and shell thickness.

What we found was that in most cases the shaft diameters at the locking assembly needed to be increased to limit the deflection. This was supported by recent failure of the locking assemblies at the site.

Some pulleys required an increase in diameter to limit the stress in the shell with others increasing the shell OD was found to be the most viable way to limit the stress in the shell.

The result of the complete design and engineering review meant we could reduce the end users' pulleys from 46 designs to 16.

Engineered into the new pulley designs the SKF Mine spec solution adding additional cost savings by increasing bearing life and reducing grease consumption.

Total initial cost savings that were identified were approx. $600K with future cost savings to come by increasing bearing life and reducing contamination issues with the SKF sealed spherical roller bearings and Kobra sealing arrangement.

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"COST SAVINGS BY RATIONALISATION"

Cover Image: courtesy of Budd Photography
Open-cut drilling and explosives preparation, Pajingo gold mine, Charters Towers.
High-grade finds excite Cloncurry explorer

Ausmex believes it is sitting on 'an absolute bonanza' at its Golden Mile project near Cloncurry.

Managing director Matt Morgan says the ground is riddled with high-grade workings, abandoned since the late 1930s. "There is a string of nine former mines, plus unmarked ones," he said. "We're just focusing on a small area and it is proving to be super high grade. "This has the potential to be a huge province." The most exciting part is that underneath the whole area at depth is a large geophysical anomaly that Exco Resources identified in 2012 as an IOCG (iron oxide copper-gold) potential source. Miles and nearby Mt Freda appeared to adjoin the mining lease, Mr Morgan said. Round Oak had already constructed a haul road in the area for its operations. Golden Mile gold would be processed at the Round Oak Minerals Cloncurry processing facilities, providing an opportunity for quick cash flow with minimum start-up costs for Ausmex. Mr Morgan said Ausmex had been conducting targeted drilling of nine reefs and planned to carry out resource drilling in 2019 to prove up a JORC estimate. "In the New Year we will be gearing up again. We will need four or five rigs." Mr Morgan said. Round Oak Minerals kicked off the Wallace Reef West and Sandfield deposits. Among other developments in gold this year was the start of production at the Lourina gold project near Cloncurry, while Round Oak Minerals kicked off the Wallace South gold development after investing in upgrades at its Cloncurry processing plant. Fat Prophets resource analyst David Lennox said Australian gold miners had benefited from a weak Australian dollar against the US. "That has helped our gold mining industry no end," he said. "What we are seeing is that gold production in Australia has improved and that is primarily because it is still worthwhile for Australian gold producers to mine gold." Gold prices in United States dollar terms have hit the peak of about $US1355, but with the Australian dollar sitting around 78 cents against the US, that means prices topping $1600 per ounce in Australian dollars. Fat Prophets expects inflationary pressures to push gold prices higher in 2019. "The other thing you need to look at is the cost of production and miners have put a lot of effort into getting their costs down. In Australian dollar terms the margin has probably improved as they have reduced costs and have a better Australian dollar price," Mr Lennox said.

Market's golden ticket for Australian miners

Gold exploration in Queensland rose 21 per cent last year as resource companies looked to cash in on favourable market conditions.

Queensland Resources Council chief executive Ian Macfarlane said the amount spent on gold exploration statewide in 2017-18 was $81.7 million, compared with $51 million in 2016-17 in the face of strong demand for the precious metal overseas. "Currently, the gold price is around $US1000 an ounce, which means Australian producers would receive an extra 30 per cent on the spot price with the currency difference and this is one of the reasons why we're seeing gold producers looking to expand their mines," he said.

Evolution Mining announced in October that it had the green light from its board for a $60 million underground development, cut-back and relevant plant modifications at the Mt Carlton gold operation in North Queensland. Meanwhile Mirrco Gold is planning to develop a new decline at its Pajingo gold mine near Charters Towers, where it has recently brought a number of small open-pit operations online to add to its main underground production stream. Resolute is continuing to progress its $300 million plus Ravenswood Expansion Project, which has seen the company establish a 18-year mine life for local gold operations based on a return to large-scale open pit mining at the Nolans East, Back Reef West and Sandfield deposits. Another movement in gold this year was the start of production at the Lourina gold project near Cloncurry, while Round Oak Minerals kicked off the Wallace South gold development after investing in upgrades at its Cloncurry processing plant. Fat Prophets resource analyst David Lennox said Australian gold miners had benefited from a weak Australian dollar against the US.

"We're seeing gold producers looking to expand their mines" Ian Macfarlane

"We think we are sitting on an absolute bonanza at our Golden Mile project near Cloncurry. Exploration activity at the Golden Mile project in north-west Queensland.
Long, wide loads to meet heavy demand

National Heavy Haulage recently completed a massive delivery to BHP’s Peak Downs mine, with five ultra-class Liebherr T 282 C dump trucks transported from Mackay.

But the rental deal for the 260-tonne mining trucks is just part of a bigger picture, as equipment suppliers face increased demand from a pumped-up resources sector in Queensland.

‘Mining companies are trying to get more production so it does create a vast for more equipment to pull the tonnes out of the ground, and as mines are going to buy new the load times are somewhat up to two years,’ National Group managing director Mark Ackroyd said.

Mr Ackroyd said his company had seen a 30 per cent increase in demand for heavy equipment in the Queensland mining industry in the last 12 months.

It was adding to its rental fleet at the rate of about one piece per week, but still found most of the fleet was fully utilised and some areas of demand could not be filled, he said.

The Ernst and Young 2018 Australian yellow goods and mining services report shows the Australian mining fleet value index has risen 75 per cent since December 2016. Analysts found that supply was tight and it was difficult to find quality low-hour and late-model yellow goods, particularly ultra-class units.

Chief general manager Heavy Haulage East Corey French said that group had seen an increase in heavy haulage activity over the past year.

“This has been driven by both new equipment being ordered and delivered as well as older equipment requiring off-site maintenance,” he said.

“We’ve seen a general upturn in commodity prices and in the industry, which has underpinned this increase in activity.”

The group’s work to date had primarily been focused on the Bowen Basin; however, it was also seeing increasing demand in North Queensland, he said.

“Rental fleet chief executive officer Sally McPherson said that group had seen demand for civil plant and equipment start to grow in areas south of Bundaberg and west to Toowoomba and surrounds about 24 months ago with the establishment of several major infrastructure projects.

“The market had contracted prior to that with the downturn in the mining industry causing several larger plant hire companies to close in the market,” she said.

She said anywhere north of Bundaberg had been consistently flat, with only a few major projects keeping the industry alive in central and northern Queensland.

Agreement recognises traditional owners

Alice Queen managing director Andrew Buxton is proud of the strong relationship the company has developed with the traditional owners of Horn Island in the Torres Strait.

When deciding to go ahead with mining for gold on the island, Mr Buxton wanted to ensure he had permission of and cooperation from the Kaurareg people, who are the traditional owners of a number of the islands which make up the Torres Strait.

He also wanted to put a mechanism in place to ensure the Kaurareg people could share in any profits from the mine.

“What we came up with was a joint venture with the traditional owners of Horn Island,” Mr Buxton said.

“We explained to them that we wanted to establish an agreement that meant both money and jobs for those people.

“We were determined to put something in place that helped their community.”

Mr Buxton said the Kaurareg people had been upset at the lack of respect shown to them in the past.

“During our talks, one of the traditional owners said it was the first time a white fellow had ever asked permission from them to do something on their land and, because of that, their answer was yes,” Mr Buxton said.

“It meant so much to him that he had tears running down his face.

“We think what we are doing with the Kaurareg people is a fantastic example of how black and white Australia can come together.”

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New Year celebrations for fertiliser plant

Agripower’s new $52 million fertiliser manufacturing plant is nearing completion at Charters Towers, with commissioning planned in the first quarter of 2019.

The company plans to engage a contractor to carry out campaign mining at its Greenvale site to provide the amorphous silica ore for processing at the facility.

Agripower managing director Peter Prentice said the new 250,000tpa-capacity (Townsville Earth Moving), ICS Electrical Contractors, Wulguru Steel and AECOM.

Key contractors have included Mineforce Australia, SMEC, FortisEM, TEM (Townsville Earth Moving), ICS Electrical Contractors, Wulguru Steel and AECOM.

Amorphous silica mined at Agripower’s Greenvale site will be screened at the new complex, milled and processed in a mixer to create a product with a rough ball shape. This is then smoothed to a sphere to mirror the shape, size and weight of the more common NPK [nitrogen-phosphate-potassium] fertiliser granules, so the products can be admixed without problems such as separation.

Mr Prentice said Agripower would be seeking a contractor to mine an initial 100,000-150,000 tonnes of ore commencing in May.

The campaign mining stunts were expected to ramp up as the operation grew, he said.

“Eventually we’ll be getting to the point where we want to mine monthly and at that point we will look at buying our own plant and equipment for mining at Greenvale,” he said.

The company has established a JORC resource of 1.8 billion tonnes of ore at the mine site.

Mr Prentice said Agripower would look to start hiring operators for the new plant from about February in the lead-up to commercial production.

“We have about 24 people employed at the moment – that will go to 55-60 people including logistics and transport personnel as it ramps up in the first year,” he said.

The plant has been designed to be relatively easily scaled up through the addition of extra process lines.

“In 2019 we will have the new plant commissioned, we will be delivering into sales contracts, will be growing the demand for the product nationally and internationally – and it wouldn’t surprise me, as we get to early 2020, if we’re starting to look at further expansion of the operation,” Mr Prentice said.

Ultimately we see the project expanding quite significantly in the years ahead

- Peter Prentice

Power play under-realised

The current high price of vanadium, being led by traditional demand sources into record territory, is likely to firm in the long term as the metal develops into one of the solutions to the 21st century’s energy demand.

At least that’s what’s bolstering the confidence of emerging junior miner, Brisbane-based Multicom Resources.

The price of vanadium pentoxide in China had topped out at a 13-year high of $105.33/100g at the time of writing.

A big boost in demand has resulted from new building standards set by the Chinese government for nuclear, the vanadium additive which is used to strengthen steel.

Those changes came into effect in November. Despite the highest price seen since 2005, it seems the impact of vanadium’s place as a principal component in large-scale energy storage is yet to be fully realised.

Multicom Resources is positioning itself as a regional supplier, not only of the raw material, but of vanadium flow batteries.

Chief executive officer Shaun McCarthy told a recent IMARC conference in Melbourne that the company had a 493Mt JORC compliant resource at 0.3 per cent vanadium pentoxide.

That represented 138Mt in recoverable metal from its St Elmo’s lease near Julia Creek in North-West Queensland.

To put that in perspective, global consumption in 2017 was 180,000t.

Mr McCarthy said the North Queensland play had created a lot of excitement.

“I guess having a locally-based company that’s in a project development phase looking to bring some onshore production of vanadium to Australia, yes, we’re quite happy with feedback,” he said.

The company is working on a pre-feasibility study to confirm its approach, including a target production rate of 10,000t/annum over 20 years. This included the prospect of an initial public offer.

“Ultimately we see the project expanding quite significantly over the years ahead.”

“I think it’s going to take us the next three years to bed down the international and Australian market for the product, but I would like to think that in the next three to five years we’re out there producing and selling in excess of 1 million tonnes a year”

Shaun McCarthy

Those are the milestones for the company and then we’ll really assess where we’re at in the early part of next year and how we take this forward in terms of financing the next phase of works.”

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Battery metal finds market comfort zone

By Ross Louthean

The question of where the erratic course of the nickel market is heading now was raised at the recent Australian Nickel Conference in Perth.

The answer by this writer, co-author of Australia’s Nickel Adventure, was that the metal is in a comfort zone rarely seen before.

Nickel no longer has a prime dependency on stainless steel because of the onset of the electric vehicle (EV) revolution.

This year’s conference was perhaps the most vibrant this decade, with the blue sky seen for sulphide nickel and for laterite nickel-cobalt deposits.

The latter scenario brings Queensland back into the picture, for there is exploration and research programs underway on several laterite deposits, including Sconi, and also on similar nickel-cobalt deposits in New South Wales.

Sconi, owned by Australian Mines, is being promoted as a nickel-cobalt scandium project – all metals earmarked for the battery industry now being developed globally for EVs.

Sconi is in the hinterland west of Townsville, which already is an approved export port that was used by the now mothballed Yabulu nickel plant.

Another eastern Australian nickel project developer is Clean X, which has one of the world’s most promising mining entrepreneurs, Robert Friedland, as its principal and a major Chinese partner keen on entering the EV market. The company has the Sunrise nickel-cobalt project in NSW and is advancing testwork for a nickel-cobalt sulphate plant, specifically for the EV market.

At the nickel conference Independence Group chief executive Peter Bradford told delegates decreasing stockpiles and growth in global stainless steel demand would move nickel prices higher as the commodity became the big winner from the EV demand “disruption.”

Not only will that demand spur require an additional 300,000 to 900,000 tonnes of nickel within seven years, but it will also underpin a much stronger outlook over FY19 for IDX’s Nova nickel-copper mine in WA’s Fraser Range.

The company also a major gold producer, has a budget for the coming year of $73 million for exploration.

“Technological advancements and the growth in global EVs is creating a strong demand for nickel. Given the growth in global stainless steel demand, we are confident that nickel will continue to be a strong performer,” Mr Bradford said.

The end of the conference, major nickel miner Western Areas announced it was to start $32 million in early site works for the Cosmos project in Western Australia to revive mining by the end of 2020. There are established

“Nickel no longer has a prime dependency on stainless steel”

Ross Louthean

North’s new take on nickel processing

A band of nickel enthusiasts hopes to have a new Townsville processing plant up and running within three years, with an output geared towards the burgeoning battery market.

Queensland Pacific Metals has identified an effective processing route to produce battery-grade nickel and cobalt sulphate from ore supplied from New Caledonia.

The method they are studying has the added benefit of a greatly reduced tailings stream compared to HPAL (high pressure acid leach) technology, or the Caron process used at the existing, mothballed nickel refinery at Yabulu, according to QPM executive director John Downie.

QPM plans to utilise the DNI process to produce a mixed hydroxide precipitate (MHP) and will take advantage of a CINTO pilot plant in Western Australia to test the approach.

“We plan to put about 80 tonnes of ore through the pilot plant over a three-month period and just firm up the operating parameters from the ore from New Caledonia that we will be using in the full-scale commercial plant,” Mr Downie said.

The proposed Townsville plant would process about 600,000 wet metric tonnes of nickel ore per year with the intention of producing about 25,000tpa of nickel sulphate and 3000tpa of cobalt sulphate.

QPM plans to complete its bankable feasibility study by mid-2020 and be up and running by 2021 subject to government approvals.

Construction is expected to create up to 1000 jobs and about 150 people would be employed in ongoing plant operations, in addition to logistics and transport roles created by the development.

Mr Downie said QPM sought out technology that would not lose acid, that would produce less tailings and that would recover some of the co-products usually lost in nickel-cobalt refining.

QPM is considering sites at Bluewater, Townsville and Woodstock for the processing plant.

Mr Downie said a factor in site selection would be the ability for satellite businesses to locate near the refinery.

“The plant will produce about 290,000 tonnes of haematite (iron oxide) and 100,000 tonnes of alumina and a similar quantity of magnesium in addition to the nickel and cobalt sulphates,” he said.

“We think there is an opportunity for satellite businesses to use the co-products from the plant for further value adding.”

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Researchers go with the flow

Combining maths and bubbles to boost gas production, by Dr Mahshid Firouzi, The University of Queensland School of Chemical Engineering.

How would you like to really see what’s going on in your coal seam gas production well?

New laboratory infrastructure has been built at The University of Queensland’s Centre for Coal Seam Gas to investigate the complex interaction of gas and water flows within CSG wells. In order to extract CSG from the coal seams, groundwater needs to be removed to reduce the flowing bottom-hole pressure (FBHP) to allow gas to flow into the wellbore.

Prediction of the FBHP—the pressure at the base of the well—is key to forecasting and optimising well production and tracking well capacity.

A range of mathematical models are available in industry software which enable prediction of the FBHP. However, these models are designed for conventional wells, which are significantly different from CSG wells.

Unlike conventional wells, where gas and liquid flow co-currently in a pipe, in CSG wells water and gas are produced into an annulus, (the gap between two pipes).

Water and gas are separated by allowing the water to flow downwards towards the intake of a pump at the base of the well, while gas is allowed to flow upwards to the surface. Employing the correlations for conventional wells may not be appropriate for CSG wells and may lead to unreliable prediction of flow pressure and well production.

To resolve this issue and better understand the wellbore gas-water flow, UQ researchers have constructed a laboratory flow simulator that closely mimics the production zone of a CSG well.

This wellbore flow simulator, hosted by UQ’s School of Chemical Engineering, is composed of an 8m high acrylic annulus with a casing (external pipe) diameter of 170mm and tubing (internal pipe) diameter of 70mm, which is the same size as typical CSG wells. The acrylic material allows researchers to observe the flow behaviour at varying gas and water rates, up to 1000 litres per minute of water and 8000 litres per minute of gas.

Mathematical models developed from this work will be tested and validated using laboratory and field data. The project findings have provided a clear insight into the flow behaviour in a CSG well, which is a key in wellbore control and optimisation.

More information at www.ccsg.centre.uq.edu.au
Pre-empting an infrastructure boom coming off major investments in defence, maintenance and construction, iPilot Holdings managing director Anthony Squire is pitching his team’s skills at bespoke engineered solutions.

Parrt-based iPilot is entering the EPC(M) market in Queensland with its ‘Big Entry’ system offer which is like no other. The company’s BIGDoor® offer is part of its value-added services capability, “We also have a particular capability regarding structural steel – whether it be design, outsourced fabrication, procurement, or erection,” he said.

“The consequences of failure can be catastrophic and so there is a day-to-day operational, construction and maintenance requirement from ports to warehousing and maintenance facilities. The lesson you take from this is that you do it once, do it well, and do it safely. “Energy is the biggest, most dangerous and demanding of all extractive industries. The company’s BIGDoor® offer is part of our value-added services capability.”

“We offer full EPC(M) services or can collaborate with your team and contractors to fill specialist gaps in operational, construction and maintenance capabilities. “We can also design, procure, install and maintain its BIGDoor® automated entry systems to suit any industrial requirement from ports to warehousing and maintenance facilities. Work in progress includes commissioning three 900sq m automated entry systems – and early works on one of 2520 sq m. “The company’s BIGDoor® offer is part of our value-added services capability,” Mr Squire said.

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PAJINGO Feature

1983 Discovery
Battle Mountain Gold Company discovers the Pajingo goldfield.

1986 Production
First gold production from open-pit mines.

1991 Joint Venture
Battle Mountain Gold and Normandy Mining Limited go into joint venture.

2001 Acquisition
Newmont Mining Corporation acquires Battle Mountain Gold.

2002 100% Newmont
Newmont takes over Normandy to gain 100 per cent of Pajingo.

2007 Pajingo sold
North Queensland Metals and Heemskirk Consolidated purchase Pajingo.

2010 Conquest owned
Conquest acquires Pajingo via takeover of North Queensland Metals and purchase from Heemskirk Consolidated.

2011 Merger
Evolution acquires Pajingo via Catalpa Resources and Conquest Mining merger.

2016 Minjar acquisition
Minjar Gold completes the acquisition of the Pajingo gold mine and surrounding exploration tenements.

The Pajingo operation, 50km south of Charters Towers, is moving into a new era after operating for more than 30 years.

Photo: Roslyn Budd

‘Pajingo 2.0’ on the near horizon

Minjar Gold’s Pajingo operation is heading down a new path to what is being dubbed ‘Pajingo 2.0’.

A key element of the transition is a plan to sink the site’s first decline in 20 years, providing access to a host of known gold deposits beyond the Vera-Nancy system that has been the mainstay of Pajingo production.

“It is a stepping stone to developing a brand new mining region,” general manager – Pajingo operations Kerry Payne said. “We’re looking at targeting not just the Lynne deposit but at least five other ore bodies from that single decline.

“It enables us to establish a brand new mine almost separate to the old Pajingo - that’s why we’re calling it Pajingo 2.0.”

The ‘old Pajingo’ has a mighty history, operating for more than 30 years and producing as much as 320,000 ounces a year at its peak.

It currently employs more than 355 people, including contractors, compared to about 245 people two years ago.

Recent numbers have been swelled by a new focus on a string of surface mining opportunities to make the most of mill capacity at the site, 50km south of Charters Towers.

“We have spent a lot of time and resources developing open-cut opportunities and we’re having some reasonable success,” Mr Payne said. “We know they are not going to be as big as the underground operations. They are intended to be part of the transition - so as the old underground winds down and the new one winds up we have a buffer there to smooth out production.”

As well as drawing on these small pits to boost mill operations, Pajingo has been lining up third-party ore agreements to process material from other gold projects in the region.

Mr Payne said that for much of its recent history Pajingo had only had a short horizon in terms of mine life, with various owners failing to invest in a longer-term vision.

But that has changed.

“It’s a very exciting time,” he said.

“It is really good to see that Minjar Gold has backed us on our growth strategy and that the operation is finally getting strong support in developing that longer-term potential.”

The impression people may have held of Pajingo as an operation on its way out was a challenge in terms of attracting people to Charters Towers and giving the local community, including suppliers, confidence, he said.

“One of the key things is for us to demonstrate, not just to Minjar and the industry but to the community, that we are here long term,” Mr Payne said.

“We are at a very interesting point in the life of the operation. Strategically we are thinking beyond the 2-3-year window and if our key objectives are delivered upon then the full potential of Pajingo 2.0 should be realised. I wouldn’t be surprised if in 10-plus years’ time there is still a mining operation here given the opportunities we see in front of us.”

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**Intense drill program paves way for further opportunity**

More than 65,000m of drilling is expected to be completed at the Pajingo mining lease this calendar year as the geology team builds the picture that will determine the operation’s future.

Six surface rigs and one underground rig were hard at work at the peak of activity, geology manager Andrew Beaton said.

A major thrust of that work has been building the case to develop a decline to mine the Lynne deposit.

This move would pave the way for further underground drilling that could open up a raft of exciting economic potential targets, so we’d like to bring on another two pits next year and keep the open-pit mining going.”

On the underground front, recent drilling work had focused on pushing into a new deposit for mining known as Camembert, he said.

Mr Beaton said the operation hoped to start developing the decline in the first quarter of 2019 and be drilling underground by the last quarter.

“The other thing we’ve done from a resource development point of view in the last 18 months is to really focus on some shallow open-pit-able targets on surface,” he said.

“We’ve had a rig here pretty much all of last year and from April 1 this year (focused on that task).

“We spent a fair portion of last year drilling out three main open-pit targets - Janine, Janine North-West and Orchid.

“We have now finished mining Orchid and we are still mining the others.

“That rig has been drilling out other potential targets, so we’d like to bring on another two pits next year and keep the open-pit mining going.”

The area immediately around Pajingo mine may have been abuzz with drilling activity this year, but Genesio Circosta has sights on further horizons.

Minjar Gold holds more than 10,000sq km of exploration tenements in the Pajingo region as well as a 774sq km package about 100km to the south-east carried on Wirrale.

It is an under-explored ground, particularly in Wirrale, that has Minjar’s exploration manager for Queensland excited.

“Next to Pajingo, the Wirrale mine historically is the second largest gold deposit in the Drummond Basin and the area had been unexplored for much of the last 20 years,” Mr Circosta said.

Mr Circosta personally worked on the application for the permit to explore theWirrale ground while Pajingo was still under Evolution Mining ownership.

“So it’s good to see some work being done there,” he said.

**Mr Circosta said Minjar was applying fresh ideas and modern geological work to the site.** And while Wirrale is based on a major epithermal gold system, the exploration team has harnessed in on a breccia system on the tenements.

“The sort of things we are coming up with, the target we are testing now is something completely different – so that’s the exciting thing about it all,” Mr Circosta said.

“We’re only just drilling it now and it’s a different style of mineralisation. A breccia system, it’s something that has not been previously recognised in the area.

“There’s a long way to go but it’s looking very interesting.”

At the same time work on the Pajingo regional tenement package is picking up.

“There hasn’t been much expenditure on the more regional prospects in the last 12 years or so,” Mr Circosta said.

“It has just been ignored essentially and we intend to start looking at that a bit more.”

Regional exploration has recently focused on the Wahines prospect, and Mr Circosta said a drill program was planned there next year.

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“Congratulations to the Pajingo operation and everyone associated with Minjar Gold on your on-going commitment to the Charters Towers region. You are a valued client and corporate citizen”

**SALLY FORGAN** - General Manager
**Eagle Drilling NQ**

**www.eagledrillingnq.com.au**

**Broader package to explore**

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Blast from the past in news print

Confirmation of another major gold discovery in North Queensland called the Pajingo prospect headlined in 1985.

The story hit the press in the first edition of the Gold Gazette published for the Resource Information Unit.

Battle Mountain took up Pajingo and other Australasian projects in a north American float.

The publication later merged with Minerals Gazette to be Gold and Minerals Gazette before dying about four years ago.

Many miners would have walked past the tell-tale quartz outcrops of the Pajingo deposit during the 1880s gold rush years in the Ravenswood and Charters Towers area.

It took a Kiwi to recognise their true value in the 1980s, according to Pajingo geology manager Andrew Beaton.

“Those old timers would have walked across this country and they would have seen that quartz but because the gold is so fine they couldn’t have seen any of the gold in there and their gravity-type methods of dollying up or panning would not have revealed it,” he said.

“(The Pajingo system) was discovered in the mid-80s by (Duval Corporation’s) World-class ore body discovery Battle Mountain Gold. It was the first epithermal discovery of its type in this province and it was actually a Kiwi geologist, Ralph Porter, who discovered it.

Epithermal (gold systems) are quite common in New Zealand and the quartz has unique textures.

He recognised those textures in the rocks at one of the local stations when he was there - a rock in their garden. They pointed him in the right direction and he found the outcrops and that’s how they discovered Scott lode - the first one open-pit mined here by Battle Mountain.”

Mr Beaton said the find, on the northern end of the Drummond Basin, was undoubtedly a world-class ore body.

“The field has now produced around the 4 million-ounce mark – so it really is a spectacular deposit. It’s a great place for geos to work,” he said.
Minjar is opening up its Pajingo processing plant to third parties, making the most of spare capacity and giving regional miners the chance to convert otherwise ‘stranded’ gold resources into cash.

Pajingo operations — general manager Kerry Payne said taking third party ore was a plank in the site’s strategy, as it transitioned from traditional workings to the new Pajingo 2.0.

“Having that transition period there was an opportunity for us to leverage off some of the other assets in the region that have been stranded without a processing facility,” he said.

“There’s an opportunity here for the next one or two years for other miners to get a leg up and get some cash flow into those assets without them having to invest in a processing plant themselves.”

At the moment the Pajingo underground operations can’t fully utilise the capacity in that plant and until recently, the plant was run on a campaign/milling basis.

“That is not the best way to run a plant and it is not the best way to optimise the capital that you have invested — so the question that I had is ‘why don’t we open the up to other parties?’”

“It enables us to get our unit costs down and to help develop the region as one of the only processing plants in NQ.”

Cannindah Resources has been the first company to take up the offer, entering an agreement for Minjar to purchase and treat ore from the Piccadilly gold project — 60km north of Charters Towers.

GBM Resources has also reached an agreement to truck ore from its Mt Coolon gold project for processing by Minjar and a private company with a project north of Pajingo has also been in discussions about using the processing facilities.

Small quantities of Piccadilly ore have already been successfully processed this year and Mr Payne said additional opportunities for other companies would made available in 2019 and 2020.

“We have had other expressions of interest and we are also trying to encourage people who may not have thought there was an opportunity (to develop their gold project) to look at the asset and consider working with another company,” Mr Payne said.

“For a small company or one with limited funds it’s a very strategic way of developing and moving their assets forward.”

Third party ore option to help fill the mill

Minjar has ramped up processing operations at Pajingo after boosting its mill feed from two new sources.

The site has been bringing a string of small open-pit operations online to supplement feed from the Vera underground workings, which has been the main feed source for more than two decades.

It is also encouraging small gold miners from around the region to make the most of spare capacity at the mill by entering toll treatment agreements.

Mill manager Laura Logan said the site began full-time processing in August, requiring the recruitment of a further eight operators and three maintenance personnel.

“We were operating from 6am Monday to 6am Friday and shutting down over the weekend,” she said.

“But having the open-cut material has allowed us to go full-time again for the first time since September 2013.”

The processing circuit has the capacity to process about 700,000tpa and Pajingo operations alone are able to provide enough feed for 650,000tpa at this stage.

It is a conventional crush-grind-CIP processing circuit that produces gold-silver doré.

McLogan said one novel part of Pajingo’s processing regime was the grinding.

Boost for processing plant as open-cut material rolls in

Minjar has ramped up processing operations at Pajingo after boosting its mill feed from two new sources.

“We grind to 38 micron – which is quite fine for a gold operation,” she said. “That is basically because our material is grind sensitive – we have to grind it quite finely to liberate the gold.”

Winning work at Pajingo gold mine has acted as an anchor for Charters Towers business Eagle Drilling NQ through industry ups and downs.

Eagle Drilling is in its 13th year as a contractor at the mine, successfully tendering for a string of drill programs. But this year saw a spike in activity as the firm operated six rigs around the clock during a major surface drilling campaign from May to October.

“The Pajingo work has always been important to us – that’s why we always strive to win the tenders,” Eagle Drilling business manager Sally Forrest said.

“It’s in our backyard. We’ve a family-owned company in Charters Towers, so for us to service clients around us in the region and to do a good job of it is very important to our business.”

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“Backing locals brings two-way benefits

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Leading Pajingo operations through exciting times

“What people were looking for was stability”

Kerry Payne

General manager – Pajingo operations Kerry Payne has found himself at the helm at an exciting time for the Charters Towers gold mine.

But the events that have unfolded were not exactly what he signed up for when he took the role more than three years ago.

After working a stint as a mining consultant on the Gold Coast, where he still lives, Mr Payne was attracted to Evolution Mining in September 2016 for up to $52 million in cash and royalties.

Mr Payne faced the challenge of leading the Pajingo team through the transition to Minjar ownership.

“What people were looking for was stability - so that was a key thing I was trying to maintain through the transition – business as usual,” he said.

“It was important for people not to get distracted, so to make sure that the safety and also the performance culture was maintained where it needed to be.”

At the time Minjar Gold, a private company, only had one operational site in Australia and the Pajingo workforce knew little about the new owners.

Minjar Gold now operates the Southern Cross mine and Golden Dragon mine in Western Australia, and where it also holds other exploration tenements.

It has clear ambitions to be a mid-tier Australian gold producer.

Mr Payne said the transition at Pajingo had been incredibly smooth.

“Normally you would expect some bumps in production and possible safety records, but we’ve actually improved on both those in that transition period - so I’m quite proud of the way we did that,” he said.

It was a humble high school careers day that steered Mr Payne into his mining career. “You get asked different things about what your interests are and your strengths and I went through that process and one thing that came out for me was the mining industry,” he said.

“So I learnt more about it and the more I understood that role the more I thought that suited where I wanted to be as a profession.”

Mr Payne completed his degree as a mining engineer through the University of South Australia and did his early work in base metals mining in Tasmania.

From there he moved to Kalgoorlie in 2000 and worked in the Western Australian gold industry, including stints as general manager of the Southern Cross and Gwalia gold mines under St Barbara.

Mr Payne believes the key to good leadership in the mining industry is to make sure the business plan is well developed, well understood and then well executed.

And he says it is an exciting time to be in a leadership role at Pajingo as it enters its next big transition.

“One of the things I want to achieve here is to have Pajingo realise its full potential,” he said.

“It has been going for 30 years and I think it has been (seen as) shutting down for 27 of those 30 years.

“That approach is part of a workplace culture at Pajingo that aligns with the five core values owner Minjar Gold promotes;”

1. Integrity
2. We care
3. One Team
4. Leadership
5. Commitment to Excellence

The Pajingo operation offers residential and FIFO opportunities on flexible rosters.

These include even-time rosters with seven days on/six days off as well as 8/6, 9/5 and 4/4 options.

“The site recruits from Charters Towers and the North Queensland region wherever possible,” Ms Stratford said. “Locals from Charters Towers experience the best work-life balance as they work here every night with their family.”

She said Pajingo offered competitive salary and entitlements above the industry award standards.

“Our entitlements include a bonus scheme and our EBA staff accrue 13 weeks’ long service leave upon completion of 10 years’ service,” Ms Stratford said.

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“We culture promotes a positive workforce”

Penny Stratford

Golden career opportunity

Pajingo gold mine offers career progression for its employees and a great work-life balance, according to human resources manager Penny Stratford.

The Charters Towers district gold operation employs more than 355 people including contractors.

Ms Stratford said Pajingo had a good record of promoting within its ranks and fostering people’s leadership qualities.

“Our culture promotes a positive and engaging workforce, offering career progression and training development within the mining industry,” she said.

“We offer our employees autonomy and the ability to be innovative.

“Our career progression opportunities are available to all staff and are truly outstanding – offering mentoring, training and development, and we have a study assistance program.”

Ms Stratford said some in five employees experienced career progression during their time at Pajingo.

She shared the example of an employee who started his career at Pajingo as a trainee ‘nipper’ and progressed his career to mine superintendent.

“Pajingo fosters a strong commitment to leadership and we pride ourselves on effective performance management, supporting our workforce to truly succeed and achieve our business goals and objectives,” she said.

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Local lifestyle a selling point

Mill superintendent Matt Lowe came to Pajingo 16 years ago with experience from a string of gold mine jobs under his belt.

Among the greatest selling points for him is Pajingo’s location near Charters Towers – the town he has called home since he was five apart from a ‘miserable’ two- and-a-half-year stint in big city, life in Canberra.

“To some people out there living in Charters Towers may not seem an attractive option, but for those local to the area it’s a good little town and it’s a really attractive proposition to work here,” Mr Lowe said.

He enjoys the freedom and community benefits of living in an area like Charters Towers.

Being able to light a fire in the backyard and host a bunch of friends and neighbours for a barbecue. Being able to jump on a motorbike and go for a ride in the bush. Throwing a ‘tinnie’ on the 4WD and spending a few days camping and fishing on the Burdekin River.

These are examples of the options the Charters Towers region offers that a big city cannot match.

“Towns in the city, yes, you have the convenience of being able to buy any brand of any product you want because you have a multitude of shops,” Mr Lowe said.

“Other than that they don’t do much for me in big places. We has nowhere near the freedom we have here. “That said, Charters Towers is a fully serviced town of 10,000. I think about the only thing you can’t get here is Kentucky Fried Chicken!”

Mr Lowe said he had worked at the Mt Leyshon gold mine, Wiralak, Yardan and at Croydon’s Charters Towers gold mine before taking a role as mill shift supervisor at Pajingo.

“If you are a resident of Charters Towers to not think about working here as an option might be a mistake,” he said.

“I’ve worked in five different gold mines and it’s the best one I’ve worked at so far.”

Focus on community

Minjar Gold’s Pajingo mining operation provides about $60,000 to support community groups and events in the Charters Towers area each year, in addition to employee wages and spending on local goods and services.

It is part of an approach that embraces the operation’s role as a pillar of the local economy.

“Pajingo celebrated 30 years of operation in November last year and we are a big part of the Charters Towers’ community,” HSBC manager Tony Shearman said.

“We spend quite a lot of money in local business and local sponsorship.”

The majority of the mine’s workforce lives in Charters Towers and travels to and from the site by bus for shifts.

Mr Shearman said Minjar Gold sponsored sporting groups, school programs, the PCYC, and events as diverse as rodeos, markets and the annual Charters Towers Charity Ball.

“One program we started this year was to provide a fresh fruit scheme for the Charters Towers Central State School, for example,” he said.

“We were looking for something different to contribute and thought we would provide fresh fruit three times a week – and that is sourced from the local Foodworks.”

Mr Shearman said recruitment efforts centred on the local area and included a focus on involving people from the Kudjara and Birrara native title groups.

“We specifically employed two people from these Indigenous groups in our geology area as field technicians and advertise (Indigenous) scholarships each year,” he said.

“Forming a relationship with these groups is not only a legislative requirement but we wish to do extra to ensure we work together.”

Charters Towers Mayor Liz Schmidt acknowledged the importance of mining to regional funding.

“One program we started this year was to provide a fresh fruit scheme for the Charters Towers Central State School, for example.”

“The mine’s proximity to Charters Towers provides local employment and allows local suppliers, the transport industry and construction industry to all benefit from Pajingo’s operations,” she said.

“These benefits also have a flow-on effect into other industries such as retail and tourism as mine staff and contractors visit our town.”

Roster a cut above others

The lifestyle benefits of Pajingo’s roster are crystal clear for 21-year-old trainee process plant operator Majella Mara.

Ms Mara is a qualified butcher who was working six days a week at a Charters Towers business before taking a job opportunity at the gold mine.

“Here at Pajingo (I’m on seven days on, seven days off) – it’s a great lifestyle roster for me,” she said.

“Previously I was working six days a week every week, with Sunday off.

“This is much better for my social life, and my family lives away from Charters Towers (Mum is in Townsville) – so it’s better to be able to visit them more often and for good amounts of time, and you can have a good break after working seven days. Also, the people out here are great. I have a really good crew, which makes work life enjoyable and that is important.”

Ms Mara got into butchery after experience with livestock-growing up and a school-based training opportunity.

She started her new role at Pajingo in June, but said she had always been interested in the resources industry and the opportunities it offered.

“When I did my interview, I asked them if there were career options to go forward and they explained the different parts of the mine you can get into and the training they offer,” she said.

“This gives me the opportunity to gain skills that I can take with me if I want to travel within Australia or overseas.”
The Hann catalyst to economic diversity

Flinders Shire Council is developing a new industrial area at Hughenden to foster transport and manufacturing business as the sealing of the Hann Highway progresses.

At the same time it has been instrumental in advancing an irrigation project hoped to pave the way for increased agriculture in the region. The council has focused on opportunities for economic diversity since Aurizon took away train driver jobs from Hughenden in December 2018.

Major Jane McNamara said the sealing of the Hann Highway (Kennedy Development Rd) would open up new opportunities as the area became a key inland crossroad.

“We have an industrial estate in Hughenden of about 20 blocks and some of those blocks have commercial businesses on them. But Hughenden doesn’t have any heavy industrial blocks, so we are looking to open up an area for heavy industrial activities,” Cr McNamara said.

“We are hoping to attract manufacturing and transport industries, with the Hann Highway getting closer to being fully sealed from Hughenden to the Abbotton Tablelands.”

Meanwhile, Cr McNamara said the shire’s planned 15 Mile Intensive Irrigation Project would see the establishment of cold store and loading facilities in Hughenden that could serve primary producers throughout the region.

Flinders Shire Council’s plan for an irrigated agricultural development was recently declared a coordinated project. This project is estimated to cost $47 million, including transport and logistics infrastructure, and is tipped to generate 70 to 100 full-time jobs.

“This is a pilot project that the Flinders Shire Council is developing so that we can prove to people that the Flinders River is a viable and economic area for agriculture,” Cr McNamara said.

“It would see about 100ha of table grape vineyards, organic horticulture and citrus trees planted.

“As a council we decided that we really wanted this project to succeed and develop into a new industry for the Flinders Shire.”

The project will use shallow bores to draw water from old river bed sands and is expected to require minimal land clearing.

Cr McNamara welcomed recent progress on Hughenden Irrigation Project Corporation plans for a local dam.

There was no doubt it would complement and enhance other planned developments in the region, she said.

“This project will do for Hughenden what the Fairbairn Dam did for Emerald. Because when you add water and you can grow things it creates all sorts of new industries,” she said.

With the Kennedy Energy Park already under construction 20km east of Hughenden, the council was keen to tap into more opportunities in the renewable energy sector as well, Cr McNamara said.

“The Flinders Shire is open for business and economic development,” Cr McNamara said.

Irrigating the NQ imagination

He praised Member for Kennedy Bob Katter, a long-time advocate of the project, for exercising his balance of power to win the funding support. HIPDo has been driving the push for the dam for about two years, including carrying out a State-funded study to collate previous reports on the viability of such a scheme and revisit the idea with the benefit of local knowledge.

“What we wanted out of it was to see A/ if it was possible to do it and B/ to choose the right dam site,” Mr McCarthy said.

The study had a favourable outcome and set the scene for a dam development capable of irrigating about 5000ha.

“There is potential to harvest more water into the dam and then exponentially increase how much cropping you can do,” Mr McCarthy said.

There was potential to boost capacity to 440,000 megalitres quite easily, he said.

The selected site is about 15km north of Hughenden in the upper catchment of the Flinders River.

It is across the river from Flinders Shire Council’s proposed 15 Mile irrigation scheme and a parcel of land earmarked for a potential meatworks.

“The dam would only catch about an eighth of the water that is in that catchment reach and it would not detrimentally affect any water licences downstream from it,” Mr McCarthy said.

He praised $180 million promised for the project from Prime Minister Scott Morrison. It “would only enhance projects like the meatworks proposal and the planned grape cropping.”

Open downs country in the area lends itself to uses including hay growing for drought mitigation, he said.

The $180 million promised for the scheme would go a long way to realising it, but may not cover the full project depending on how it evolved, Mr McCarthy said.

“There is potential there for hydro and if we look into that we would be taking on other investment as well,” he said.

At the moment we have the Kennedy Energy Park just completing Stage 1 nearby and there is another solar farm (Beau Energy).”

Among the options was for excess energy from the proposed Stage 2 development of Kennedy Energy Park to help power a pumped storage hydroelectricity project at the dam, he said.

Mr McCarthy is Flinders Shire landholder but is based well south of the project and will not directly benefit from the dam.

He became involved while on the Flinders Shire Council and, with family ties to the area that stretch back to at least 1893, says he simply has a strong interest in the future of Hughenden.

“I don’t want to see it go backwards I want my kids to be able to live there if they want to,” he said.

A planned 205,000 megalitre dam outside Hughenden is expected to act as a stepping stone to further opportunities, not just in agriculture but through spin-offs including renewable energy generation.

Hughenden Irrigation Project Corporation (HIPDo) chair Shane McCarthy said the group was awaiting more details after a pledge of $180 million for the project from Prime Minister Scott Morrison. “It would only enhance projects like the meatworks proposal and the planned grape cropping.”

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Markwell boss ‘homes’ in on good idea

What do you do when business is quiet and your fleet of earthmoving and crushing equipment is underutilised?

You acquire property and put your heavy equipment operators to work.

The Global Financial Crisis spread across the world a decade ago devastating economies and Australia wasn’t immune. The Markwell Group’s managing director Gavin Markwell was able to ride out the crisis relatively unscathed, but in 2014 he decided to diversify his business into the housing estate sector as the coal mining industry in Central Queensland slowed.

“Quality heavy equipment operators are a vital part of my business and I didn’t want to run the risk of losing any of them,” Mr Markwell explained.

The solution was the creation of the innovative Pinnacle Views Estate, which specialises in large blocks from 2000sq m to 9000sq m.

Never one to miss an opportunity, Mr Markwell saw a gap in the market that would appeal to families already in their own homes.

Mr Markwell said the 52 lots were ideally suited to families with young children who needed more space.

An innovator by nature, Mr Markwell’s Markwell boss ‘homes’ in on good idea estate features the first roads in the city approved by the Townsville City Council and the Queensland Department of Transport and Main Roads to use recycled materials for both sub-base and base course directly under the bitumen roads.

Most of the natural bushland remains and the trees that had to be cut down to accommodate the roads and house pads were mulched to improve the soil quality on the site.

Opened in early 2016, seven blocks have been sold and homes built or under construction.

Pinnacle Views Estate is close to the Townsville Hospital, James Cook University, Lavarack Army Base, schools, shops, medical centres and community centres.

The fully serviced blocks, which start at about $200,000, have both town and bore water available and most importantly are NBN ready with fibre optic cable right to the home, not copper from a nearby node.

Pinnacle Views offers open-space living but is still close to a host of amenities.

Workshop staff and operators line up in front of a few vehicles from the large Markwell fleet at the company’s Ingham Rd headquarters.

Markwell | Advertorial

The rise of technology in virtually every area of business presents exciting opportunities and daunting challenges in equal measure.

For many, just keeping up is enough, but for others it’s an opportunity to prosper.

Managing director of the Townsville-based Markwell Group, Gavin Markwell, sees technology as an express elevator to new and exciting opportunities.

In the past five years he has embarked on a major upgrade of his hire fleet, which features 57 pieces of equipment and accessories worth around $12 million.

His latest acquisition, a $1.1 million Kleemann crusher imported from Germany, came online in May.

“It’s specifically designed to crush recycled concrete and is 40 per cent more efficient than other crushers,” Mr Markwell said.

With 30 years of experience in the hire division, the Markwell Group has a wide range of equipment well suited to crushing at quarry and mine sites, rock-breaking, loading, hauling, demolition work and in more recent times, environmental services in decommissioned mining sites.

The Markwell Group has a team of 20 equipment operators, half of whom hold multiple tickets to operate different machines. They are also trained in the use of GPS technology, which now comes standard on a number of brands.

All operators are well versed in safety and equipment start-up procedures.

A well-equipped workshop run by Paul Blackburn, who has been with the company for 20 years, ensures that all the equipment is in tip-top shape.

“Over the years we have also fabricated equipment for specific purposes in the workshop if we can’t buy it on the market,” Mr Markwell said.

Gavin Markwell describes himself as a person who thrives on a challenge and is continually learning in a changing business environment.

And what’s a clear indicator of his eagerness to thrive in the 21st Century?

“I’ve been able to quietly boost staff numbers from around 35 to 45 people in the past few years,” he said.
Metro Mining is heading into 2019 with plans to boost production at Bauxite Hills on Cape York in the face of strong demand from China. Mining began in April this year at the site, 95km north of Weipa, which only operates during the region’s ‘dry season’.

Free-dig bauxite is mined by front-end loaders then trucked to the port facilities, where it is screened, fed into the Barge Loading Facility (BLF) and into barges. Tugs tow the barges down the Skardon River and out to an anchorage point beyond the river mouth where ocean-going vessels are loaded.

Metro is on track to produce about two million wet metric tonnes (WMT) of bauxite for the 2018 calendar year, with plans to boost that quickly to 3.5 million WMT through expansion works in the next few months.

A definitive feasibility study for Stage 2 expansion to lift production to 6 million WMT per annum is being updated and is expected to be completed in the second quarter of 2019.

Metro is now Australia’s largest independent bauxite producer.

Metro executives told the Annual General Meeting in November that 201 people were employed at the Bauxite Hills mine, with 35.3 per cent being of Aboriginal or Torres Strait heritage.

Shipments have been made to five different Chinese customers.

Bauxite is mined by front-end loaders and trucked to port facilities.

Metro Mining is planning to mine and ship at least 3.5 million WMT in 2019.

Metro Mining barges loaded with bauxite are towed out of the Skardon River to Ultramax ocean-going vessels moored at sea.

Around 35 per cent of the people employed at the Bauxite Hills mine are of Aboriginal or Torres Strait Islander heritage.

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QUALITY TRADES TRAINING

ENGINEERING
MEM30305 Certificate III in Engineering Fabrication (Boilermaking / Sheetmetal)
MEM30205 Certificate III in Engineering Mechanical (Maintenance - Diesel Fitting)
MEM30205 Certificate III in Engineering Mechanical (Maintenance-Fitting and/or Turning)

CONSTRUCTION
CPC30211 Certificate III in Carpentry
CPC32413 Certificate III in Plumbing

ELECTROTECHNOLOGY
AUR30616 Certificate III in Light Vehicle Mechanical Technology
AUR31116 Certificate III in Heavy Commercial Vehicle
UEE30811 Certificate III in Electrotechnology (Electrician)

AUTOMOTIVE
AUR30618 Certificate III in Light Vehicle Mechanical Technology

TEC-NQ FEE FOR SERVICE TRAINING

In the 13 years since the introduction of the Women in Resources Action Plan, the Queensland mining industry has made clear gains in attracting female employees.

The proportion of women working in non-traditional roles in the Queensland resources sector has risen from just six per cent in 2006 to 14 per cent in the latest survey data.

The drive to improve the gender balance in the industry is highlighted by the annual Resources Awards for Women.

The awards, run by the Queensland Resources Council (QRC) and Woman in Mining and Resources Queensland (WMARQ), recognise leading women, as well as the work of men and women who promote gender diversity in the sector.

QRC chief executive Ian Macfarlane said the QRC and its members had a goal of at least 20 per cent women in ‘non-traditional’ roles—such as engineering, earth sciences, trades and operators—by 2030.

“The economic and social benefits of better gender balance for our sector are clear and we believe that women should have equal access to the rewarding and high-paying careers it offers,” he said.

The Queensland Resources Awards for Women finalists for 2019 were announced recently and winners will be revealed at an awards presentation during the QRC’s annual International Women’s Day breakfast on March 8.

The winner of the 2019 Exceptional Woman category will take home an MBA scholarship from the Australian Institute of Management. The breakfast, hosted by BHP, will be followed by the annual Inspire! Convention hosted by South32.

The 2019 finalists are:

Exceptional Woman in Queensland Resources
Carmen Letton - Anglo American
Sussanah Osborne - Thiess
Jennifer Purdie - Adani Renewables

Excellence in Diversity Programs and Performance
South32
WorkPac Group

Exceptional Young Woman in Queensland Resources
Alisa Huikmans - Santos GLNG
Lauren Kelhier - BHP
Jennifer Ross - Hatch

Exceptional Trade/Technician/Operator
Alana Dannien - Komatsu
Carly Donicola - Thesis
Pamela Drummond - Rio Tinto

Gender Diversity Champion
Rob Jackson - South32
Robert Mancinelli - Shell
Heidi Uytendaal - Rio Tinto

Exceptional Woman in Exploration
Kylie Carre - Shell
Sue Slater - Ray Slater and Associates
Kim Wainwright - Xplore Resources

Winning ways to foster female participation
Labour challenge in regions

The time has come for governments to take a closer look at their project scheduling and consider incentives to help regional communities attract workers in the face of a skills crunch, says a Central Queensland industry leader.

Capricorn Enterprise regional economic development manager Neil Lethlean acknowledged the issues were complicated, adding there was a need to think outside the box particularly in respect to projects and their skilled labour requirements.

Options included further tax incentives plus relocation rebates to live in the regions to meet the labour force demands of major project work, he said.

“The construction phase of projects – irrespective of their size – requires a skilled labour force and when projects overlap or compete for this labour, fulfilling the resource requirements becomes a significant local issue,” he said.

Mr Lethlean was commenting as the Capricorn region gears up for a raft of major construction projects, many containing local industry participation of between 65 per cent and 80 per cent, on top of a general ramp-up in the local coal industry.

Among the many projects that have just locked off or are coming online in the foreseeable future include the $135 million Shoalwater Bay Military Training Area remediation project and more than $800 million in works associated with the Australia-Singapore Military Training Initiative.

Major roadworks projects include the Rockhampton Northern Access Upgrade ($127 million), Capricorn Highway – Rockhampton to Gracemere Duplication ($75 million), and the Rockhampton Ring Road project (about $1 billion).

CPB Contractors this year started construction on the $200 million expansion of the Capricorn Correctional Centre, while the $382 million Rockwood Weir project and the $800 million Clarke Creek Wind and Solar Project are on the near horizon.

Add to that the potential labour force requirements for the massive China Stone and Carnieghn thermal coal projects in the Blackwater Basin, and Mr Lethlean said the region had a very complex and challenging period in front of it requiring strategic solutions.

He questioned who was considering industry and labour capability as projects came online.

“Regrettably, it is either a ‘feast or famine’ in regional areas, requiring commitment of government (and persuasion) to take a closer look at project scheduling and resource incentives to support our communities,” he said.

Mr Lethlean, a member of the Queensland Local Content Leaders Network, said the regions required consistent strategic investment.

This would assist in encouraging investment, innovation and skills development, he said.

Capricorn Enterprise was holding a regional workforce forum in early December to help respond to the challenges of meeting the labour demands of a string of infrastructure projects in the region.

Minister for Employment and Small Business, Training and Skills Development Shannon Fentiman said the government wanted to help businesses plan for their future, ensuring they have the skilled workforce to continue to grow.

This was one of the reasons Premier Annastacia Palaszczuk hosted the Future of Work – Industry and Skills Summit in November, she said.

“We have recently released various reports with Jobs Queensland on the future employment needs of our growing economy so we can help businesses to plan for the future,” she said.

Mackay’s Resource Industry Network is targeting workers coming off the $55 billion Ichthys LNG plant construction project in Darwin as part of a raft of strategies to address Central Queensland’s skills shortfall.

The Darwin plant was officially opened on November ‘16 and a construction workforce of about 2500 remains to finalise works, down from a project peak of about 10,000 workers.

RIN general manager Adrienne Rourke said that group had been working with the Department of Jobs and Small Business to get Mackay’s message out to that massive labour pool.

“It’s probably a bit cheeky, but with any major project like that the government has staff working in that space to assist people to look for their next move,” she said.

“There is a one-page flyer we did up for the people in Darwin. We are probably not the only ones being promoted on that site, but we are trying to be as helpful as possible and providing them with information they can give to people so that people coming off the project can look at Mackay as their next option.

“We want to be front of mind for the people that are finishing there and looking for other work opportunities.”

People are pointed towards a jobs page on the RIN website allowing them to submit their CVs on a platform that reaches multiple RIN members with job vacancies.

“Members have listed their HR contacts and the types of roles they are recruiting for so people don’t have to approach each individual organisation,” Ms Rourke said.

“We are trying to make it easy and convenient for both sides.”

RIN has taken similar measures to reach out to ex-Defence personnel seeking jobs. Many were suitable candidates for work in the resources and METS sectors due to their experience with heavy machinery and high-risk environments, as well as a willingness to relocate.

Ms Rourke said RIN has been focusing on the regional recruitment space for about two years due to growing concerns about a skills shortage.

“When the mining downturn hit, a lot of people left Mackay as they lost jobs or contracts or their work finished,” Ms Rourke said. “So we did lose a significant amount of people and we could see that once work picked up we would not be able to fill those roles.”

The organisation has worked closely with the Mackay, Regional Council to promote the lifestyle advantages of Central Queensland.

This year they launched ‘case study’ videos, such as a promotion involving a young man who moved to Mackay for work and was able to buy a house, which he could never have afforded in Sydney, where he originated.

“We’re trying to make sure also that we are retaining people in the region,” Ms Rourke said. “Some people have the impression that in some roles to progress, they have to go to a capital city – so we are trying to look at some ways to help our membership lift the retention rate as well, so there is a range of career development work we are doing.”

Ms Rourke said part of the challenge in encouraging someone to relocate for work was having job options for their partner as well.

She said there were opportunities across every sector in Mackay, but people needed help making those connections.

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Targeted promotions to tap key skills pools

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WEIPA
The Amrun Chth export facility has won a major project category at this year’s Civil Contractors Federation National Earth Awards. The awards recognise excellence in civil construction projects across Australia and this year featured finalists from 42 projects. Rio Tinto, Bocht, Jacobs and McConnel Dowell won the category for projects with a value of more than $75 million with the Chth facility – part of Rio Tinto’s new $2.6 billion Amrun bauxite project near Weipa. The Chth export plant comprises a 650m access jetty and a 500m wharf, which will serve as a berth for ships while in port once the bauxite mine becomes operational. The CCF said the project followed the design concept by moving away from a traditional stick-built design to a modularised facility, with the wharf split into seven jackets, incorporating bollard mooring and dolphins and six topsides modules.

GREENVALE
Australian Mines has announced positive results from a bankable feasibility study into the Sirius cobalt-nickel-scandium project, 250km north-east of Townsville. The operation is expected to cost $2.4 billion – about $1.3 billion to develop. The project has a key competitive advantage compared to other resource projects in Australia – economic modelling in the BFS demonstrated construction of three open pits and a 24Mpa processing plant at Scarr would deliver long-term benefits to shareholders and the regional Queensland economy, Australian Mines said. Construction is expected to create up to 500 jobs from 2019 to 2021 followed by more than 300 full-time positions once the mine, processing plant and associated infrastructure are in steady-state operation. The BFS proposes that 30% of the ongoing annual operational expenditure at the Scarr project be with North Queensland businesses.

CLONCURRY
Mining and processing operations have been suspended at the Rocklands copper site in north-west Queensland while owner CUBoceo undertakes a restructuring plan. The suspension began on August 31 and in a statement to the ASX in mid-October the company said the formal remediation program was expected to take another two months to implement. CUBoceo said it had completed an important preventative maintenance program that it believed would provide more consistent and reliable production from the processing plant into the future. It has also identified significant improvements in operating efficiency for small capital outlay that will be competed with the available funding. In addition, it told the ASX that directors had completed a comprehensive review for restructuring of the project’s operations, and of the company’s long-term funding framework.

GALILEE BASIN
Queensland’s Coordinator-General has approved the $6.7 billion China Stone coal project in the Galilee Basin. MacMines Austasia proposes an open-cut and underground coal operation 300km west of Miles and 190km west of Moranoah. The project would produce up to 38Mpa of coal for export to the Asian market at its peak and the mine life is expected to be about 50 years. It is expected to create up to 3992 direct full-time equivalent jobs at the peak of the five-year construction and early works phase, while ongoing operations would require up to 3391 people. The proponent has committed to recruit workers from regional towns like Charters Towers and Clermont, where possible.

GLADSTONE
Queensland’s Coordinator-General has approved the $1.25 billion Kurridulu Hill Island project in the Gladstone region. The project includes the construction of a 30km south-east of Gladstone, paving the way for works to start in 2020. State Development, Manufacturing, Infrastructure and Planning Minister Cameron Dick said the decision provided certainty for the project rebuilding approximately 100 construction jobs per year over 17 years and will deliver a tourism boom for the Gladstone region, supporting up to 700 ongoing operational jobs, he said. The developer plans tourist accommodation, holiday units and camping grounds for about 2700 people, as well as potential permanent housing, and facilities including a boat ramp, cultural centre, an 18 hole golf course, and a 200m bridge to the mainland.

KARUMBA
New Century Resources has achieved its first shipment of zinc concentrate from the restarted Century operations in North-West Queensland. The shipment was fully loaded and sailed from Karumba in early November 2018, delivering 11,000 tonnes to Guangdong Province, China. The export was hailed as a major milestone for the company just 15 months after listing New Century Resources on the ASX. “New Century has now demonstrated the viability of the operations entire logistics chain from hydraulic mining to tails reprocessing, slurry pipeline operations, port operations and concentrate transshipment.” New Century Resources managing director Patrick Walta said. New Century has procured a bulk export vessel for arrival in Karumba in December for its second concentrate shipment.

TOWNSVILLE
The $215 million Haughton Pipeline Duplication Project is advancing, with the first pipes arriving in port in October and NQ Excavations and CivilPlus Construction is appointed to begin installation. The 18m diameter glass reinforced polymer pipes will be installed over 36km to build the pipeline between the Ross River Dam and the Haughton Channel to improve Townsville’s water security. This Stage 1 upgrade will allow 234 ML to be pumped per day – up from the current pipeline’s maximum capacity of 130 ML per day. Stage 2 involves extending the pipeline through to the Burdekin at Clare, which would increase the capacity further to 364 ML per day. The Federal Government recently committed $195 million to fully fund Stage 2 of the Haughton Pipeline extension and $3 million to complete the project’s business case.
Helping workers is the real reward for union’s Mr Fix-it

Fixing things is a motivating force for union leader Mitch Hughes.

Mr Hughes was elected senior vice-president of the CFMEU Queensland district mining and energy division in 2012 at age 28 and, in addition to those duties, has been acting in the role of state secretary for the past year.

His union position means the qualified diesel fitter no longer gets to work with his hands as much as he would like. But he says he enjoys the chance to apply strategy and fix members’ problems when they come to the CFMEU for help.

Mr Hughes grew up in Dysart in central Queensland, where his father worked at the Norwich Park and Peak Downs coal mines. But he was not specifically drawn to mining – beginning a mechanical apprenticeship with a business in Dysart when he left school.

“I just wanted to do something with my hands,” Mr Hughes said.

“I was probably about three-quarters of the way through my first year when myself and a couple of guys rocked up to work one morning to find the place locked up and the boss had shot through.

“In terms of timing, the mines had just started to call for apprentices and I was lucky enough to be accepted as a diesel fitter apprentice at Saraji mine,” Mr Hughes said.

He finished his apprenticeship in early 2007 and worked for a local contractor in the mining sector before winning a permanent position back at Saraji mine. He worked there for BHP until 2012 when he was elected into the CFMEU senior vice-president role in 2012.

Multiple factors had contributed to his interest in the work of the union, he said.

“There was a significant dispute when I was in primary school. Dad and the other miners were all on strike for weeks. That was probably my first exposure to it,” he said.

“Then, when the mechanic I was working for in Dysart shot through owing me some super, I started to dig around about what I could do.”

“When I got to Saraji, we were probably about a couple of years from our next dispute where it turns out I want on strike.

“It was probably a combination of all those things that led me down the path I’m on now.”

A key part of his role now involved improving conditions for labour hire members, Mr Hughes said.

“Whatever our guys and girls come across an issue I like to be involved in the strategy and find the most efficient way for us to win the argument and make sure they get their entitlements and their rights are protected at work,” he said.

And the best part of the job?

“It’s the people to be honest,” Mr Hughes said.

“I know that sounds a bit of a cliché, but we have some great members out there.

“We do meet some great people and I think probably the best thing is if someone comes to you with an issue and you have a win for them.”

As a boy growing up in India, Hari Boppudi had his sights set on becoming either a doctor or a civil engineer.

Circumstances propelled him towards the latter and he is now responsible for multimillion-dollar roadworks and a range of other projects that keep the Flinders Shire North-West Queensland running smoothly.

Mr Boppudi started work with the Flinders Shire Council in 2010 as a project engineer and has been the shire’s director of engineering since 2015.

He said he was attracted by the diversity of the role and the multitasking skills it demanded.

“When accepting the position with the council, I had a choice to go to Melbourne or to come to Hughenden,” he said.

“I chose Hughenden as I felt this role was challenging compared to the other one.”

Mr Boppudi is from Andhra Pradesh in southern India and says his native place was challenging compared to the other one.

As director of engineering his duties include operational and capital works delivery on buildings, roads, water supply, wastewater, parks and gardens, and he is also responsible for council asset management.

Mr Boppudi said more planning was required to complete any specific works on time in a remote location and skills availability was often an issue.

“(There are) many challenges, but the extent depends on how the individuals deal with them. I mean the perception and the outcomes mainly depend on how we adapt, how we plan and how we implement,” he said.

He said he enjoyed a challenging role, job satisfaction, a good working environment and being part of a friendly community.

“Most importantly, my wife and kids like this place,” he said.
Gold rush worth the wait for Kidston miners

In many ways Kidston has had an unusual history, according to James Cook University historian Jan Wegner.

“Kidston was established surprisingly late,” Dr Wegner said.

“The three gold-bearing hills later known as Wise’s, Mack’s and North’s Knobs, a few kilometres from the Copperfield River, are part of the Etheridge goldfield which began in 1868. ‘Yet it took until September 1907 for the Oaks rush and an estimated 430,000g of gold to be won,” she said.

“By that time the ‘formations’ that the leaders were in was also being crushed, ushering in the third stage of Kidston’s mining history, open-cut mining by small companies.”

Dr Wegner said Kidston’s geology was that dwarfed the earlier open cuts, with production beginning in 1985 on a scale never seen in Queensland.

“It was one of the earliest mines in Australia to use the fly in-fly out system,” Dr Wegner said. “The mine closed in 2001 and is now the first former gold mine in the world to become a source of non-polluting energy, using the pits and dam for a pumped storage hydro project. ‘True to form, Kidston is still unusual’.”

Historic images presented with this story are from the Reverend Frederick Charles Hall Photographic Collection, accessible from the James Cook University NQHeritage@JCU website. JCU Library gratefully acknowledges the support of Kenwyn Arthur Hall (grandson of the photographer).
Cannington mine takes a shine to renewable energy

South32 has commissioned a new 7200-panel solar farm to help power its Cannington mine in North-West Queensland.

The project is among a raft of capital investments for the site this year, including a tailings dam extension and $28 million crusher installation.

Cannington, Mr Jackson said South32 has used contractors already working with Cannington for the project.

“Reduction of greenhouse gas emissions is a big part of that, so for South32 this solar installation is leading the way,” he said.

“Personally I’m hopeful that we will put in more of them across the whole project to fruition.”

The project, delivered by Energy Developments and SunSHIFT, is the first solar installation at a South32 operation.

“On average we have had around 80 people working on the project,” Mr Jackson said.

“We have three dams and we’re raising one at the moment.”

He said Cannington was also making a significant investment in fleet the financial year, purchasing a 2500 Cat loader, a Volvo L20F wheel loader, two Minruner utes, two drill rigs (Sandvik DD421 and Epiroc E7), and 13 light vehicles.

“The committee members deserve a huge amount of praise for bringing what was, at times, a massive project to fruition.”

“The committee members deserve a great deal of credit for what they have achieved,” he said.

“You can’t erase history, but I think it’s important to recognise it and learn from it,” Mr Hempseed said.

“Whenever someone dies in a mining accident it’s obviously devastating for that person’s loved ones. But it’s a death that affects everyone in different ways.”

While three major mine disasters in the district in 1975, 1986 and 1994 claimed 36 lives, 50 men in total have lost their lives in local mine accidents and are honoured at the memorial.

Mr Hempseed hopes the memorial also helps to bring a sense of closure for so many people affected by the tragedies.

“I think it can help with, firstly, that sense of closure, but also in helping alive the memory of those who died,” Mr Hempseed said.

“All families have felt that sense of loss over the years and I think the memorial recognises that.”

Mr Hempseed said the committee deserved a huge amount of praise for bringing what was, at times, a massive project to fruition.

“The committee members deserve a great deal of credit for what they have achieved,” he said.

“It was a big job and they said it properly and they have certainly done that.”

“They have created a wonderful space where people can come and reflect on those miners who have died, but it is also a place where people can find solace.”

Fitting tribute to region’s mining casualties

As a long-time maintenance fitter and Australian Manufacturing Workers Union representative, John Hempseed got to know and socialise with many of the men who risked their lives on a daily basis as Moura mine workers.

Some of those men went to work but didn’t come home, dying in mining accidents that rocked the tight-knit Central Queensland community.

Mr Hempseed, now retired and living on the coast near Rockhampton, still thinks often about mates he lost in the mines.

Meaning drives organisers

It seems appropriate that both John Hempseed and Moura Progress Association president John Walker worked so closely on seeing the vision for a memorial to Moura mine workers become reality.

“Mr Walker’s father, Ron, was killed in an accident in Moura No 2 mine in 1939. Ron was a great mate of Mr Hempseed, who worked for about 40 years in Moura as a maintenance fitter and was also a long-time AMWU representative, before he retired in 2012.

“I knew Ron very well and I have always known how much a memorial to him, and every other miner killed at work, would mean for their families,” Mr Hempseed said.

“It’s kind of appropriate that John [Walker] has been such a massive part of the whole project.”

“He really has been the driving force behind it all.”

“Once the suggestion of a memorial was made in the progress association, John knew straight away that the committee had to make it happen. He simply said, ‘yes, this town can do this.’”

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NEWS

The Moura Miners’ Memorial was officially opened in November.

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The Moura Miners’ Memorial was officially opened in November. Photo: Ian Langton
Oz Mining apps monitor operational needs

As principal contractor on Minjar Gold’s Pajingo mine near Charters Towers, Oz Mining is augmenting the mining process with a series of apps.

In the pre-planning phase, a lot of effort was spent in understanding the client’s drivers in order to help them deliver what they committed to, Oz Mining business development and technical projects manager Logan Francis said.

“Oz Mining customised the operating system for the project to encompass every process in the business into one platform,” Mr Francis said.

“Every detail can be reviewed via dashboards from the computer through to phone and iPads. This can be customised to varying levels through the entire business.

“This gives the client the transparency that was required to make the decisions needed to ensure the project was in line with their deliverables.”

The apps covered “take 5s, safe act observations, audits and inspections, safety data sheets, pre-starts, leave and travel requests, hazards, full production data including tracking and hourly hire, as well as production reports, safety alerts, expenses, supervisor logs, maintenance requests and work-orders,” Mr Francis said.

Oz Mining project manager Robert Lines said the client also had a strong focus on communication among multiple contractors and owners.

“A safety alert chat and shared blog allow the person to take a photo or publish a chat and broadcast it across the team, keeping all abreast of the progress while keeping records for future use,” Mr Lines said.

“This also allows other Oz Mining projects, including corporate, to share safety alerts and opportunities aligned with the business direction.”

The operating system accounted for a financial dashboard for leadership to track costs and forecast revenue, which was a strong focus for the client to maximise return, he said.

“The system allows the project to provide the client the data they need to ensure a transparent view of the operation while maximising profitability to the contractor,” Mr Lines said.

“It means we get the best possible results without the need for any administration staff.”

Deep and meaningful data

Drone technology to gather data in underground mining operations is at the centre of a venture that has raised $3.5 million to commercialise its first product, Hovermap.

Queensland-based Emesent is a spin-out from CSIRO and its Hovermap technology automates the collection of valuable data in underground areas too dangerous or difficult for people to survey or navigate, such as stopes or one pass in mines.

Drones installed with Hovermap can be deployed in GPS-denied environments without a human controller to create 3D maps and record gas readings, videos and images.

The technology draws on a decade of research by CSIRO’s Robotics and Autonomous Systems group and 3D LiDAR-based simultaneous localisation and mapping (3D SLAM) techniques.

“Hovermap simplifies the mining industry to safely inspect inaccessible areas of underground mines, while improving the type and quality of data collected to unlock new insights,” Emesent co-founder and chief executive officer Dr Stefan Hrabar said.

“This includes comparing the stope design to the actual post-blast shape to detect over-break and under-break, identification of geological structures and accurate post-blast volume reconciliations.

“The data we gather improves a mine’s productivity and provides a better understanding of conditions underground, all without sending surveyors and miners into potentially hazardous areas.”

Emesent’s Hovermap system is already being used commercially for a variety of applications by early adopters in Australia, the US, Canada, China and Japan.

Vegetation monitoring takes off

Mining companies are able to gain a birds-eye view of how well plants are growing in their rehabilitation areas with drone technology from a Central Queensland business.

CQG Consulting (CQG), with its business partner Dynamic Spatial Solutions (DSS), has stepped it up a notch by using drones to capture Normalised Difference Vegetation Index (NDVI) data.

This can measure live green vegetation, determine coverage and identify early warnings of plant health issues.

The data is analysed by GIS (geographic information system) and remote sensing specialists and can be overlaid with future surveys to monitor the rehabilitation program.

The business was among those highlighted at a regional innovation showcase held in conjunction with the Queensland Resources Council’s State of the Sector forum in Brisbane in November.

CQG Consulting director/founder Patrice Brown said the firm’s latest offering was particularly relevant given the increasing onus on mines regarding site rehabilitation.

“It would be expensive for people on the ground to capture this level of detail.

Some mines use drones to capture aerial imagery, but our team is taking it to the next level, capturing spectral data of the plants,” she said.

The team began investigating the potential to capture NDVI data for a pastoral company looking for tools to help ensure its land wasn’t overgrazed, she said.

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Structural fault detection steps up a notch

Technology being developed by a Whitsunday company in partnership with a Queensland university researcher has the potential to revolutionise the detection of structural faults in buildings.

In fact, Whitsunday Moorings and Marine Construction managing director Darren Foster believes the partnership could result in a world-first.

Mr Foster’s company and University of Queensland’s Adnan Trakic are working on developing a robotic system to detect structural faults in buildings.

Their research was assisted recently with a $300,000 innovation grant from the State Government.

Dr Trakic said the funding would enable him to develop a robotically-assisted inspection technology that would penetrate structures with microwave signals to be able to deliver 50-times more accurate and 300-times faster detection of deep-interior structural defects in tunnels, buildings, roads, bridges, mining infrastructure and sea facilities.

“This technology, which combines microwave systems with cutting-edge robotic technology and artificial intelligence algorithms, has great potential because it will be the first gold-standard structural inspection system for both terrestrial and underwater applications,” Dr Trakic said.

“We also know this technology could be used to detect rust and cracks in concrete in roads, buildings, tunnels, bridges, mining facilities and marine areas including piers, ports and vessels.”

Mr Foster said the technology involved ground-breaking “It works by utilizing an energy wave length that allows us to see into the structure in much the same way as an MRI can see into a human,” Mr Foster said.

“This is a real world first, as we can now measure density and structural defects down to 5mm in size,” Mr Foster said.

Mr Foster said once developed the technology could have an immediate application on large buildings around the world.

“Straight away there is a need to start testing much of the world’s large infrastructure, a large proportion of which was built through the late 70s and well into the 70s,” Mr Foster said.

“Most of this infrastructure had a design life of 30 years, so it’s now at a stage where people and organisations need to make decisions around repair or replace (and our new technology) will allow that to happen with a greater degree of certainty.”

Adnan Trakic

Whitsunday director’s ‘lightbulb’ moment

A lightbulb moment about five years ago set Whitsunday Moorings and Marine Construction’s managing director Darren Foster on the path to developing ground-breaking research into structural defects in buildings.

“Whitsunday Moorings is predominantly a commercial diving company, and we have specialised in the inspection of large infrastructure,” Mr Foster said.

“About five years ago, I became aware that there was a need to be better able to inspect the ports we were working at, as we were ready only returning less than one per cent of the overall information available.

“Then designed our very first piece of inspection robotics, that is used to inspect large steel piles (and) it was at this point we knew that we required a way of inspecting concrete and timber and began exploring new sensor options.”

Mr Foster said the company was forming a close working relationship with University of Queensland researcher Adnan Trakic; however, it was earlier research with his colleague Yifan Yang that got the ball rolling.

“Yifan and I spent about a year defining the scope of our original feasibility study and then put that project into action last year. During the course of that study we found a huge difference between what is currently available with regards to concrete inspection and what we were theorising we would be capable of.

“Tn the end we found that we may have just revolutionised the inspection of non-conductive structures.”

3D print construction revolution on its way

While it might once have seemed like something out of science fiction, a Melbourne academic believes 3D concrete printing has the potential to revolutionise construction around the world.

“Concrete foundations for a career

With more than 30 years spent working with concrete, there isn’t much Professor Jay Sanjayan doesn’t know about the material which is used in construction all over the world.

“It’s fair to say we get an interest in all things concrete,” Prof Sanjayan said.

Part of the attraction, he says, is how difficult such a seemingly simple material can be to work with.

“I think more than anything I was attracted to concrete because of its complexity,” Prof Sanjayan said.

“In construction you can use steel and timber, for example, that are already made and ready to build with, but concrete has to be poured, compacted and cured on site and that is always a challenge.”

Prof Sanjayan said as long as challenges could be overcome, 3D concrete printing had the potential to revolutionise construction.

“As an example, I know architects are very excited about what 3D concrete printing could mean,” he said.

“At the moment, architects aren’t inclined to experiment too much with complex designs for buildings because it is too difficult and cost prohibitive.

“However, 3D concrete printing would make things like curves on buildings much easier to achieve.

“For example, a complex building like the Sydney Opera House would be much easier to build with 3D concrete printing.”

“Successful 3D concrete printing opens up a world of opportunity and I’m confident we can have it working successfully within five years.”

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Contractor shares tips for Defence wins

Targeting Defence work has proved a smart move for Shamrock Civil.

The company has increased its Townsville business from about $15 million worth of work each year to $30 million since establishing a base in the city five years ago.

Operations manager NQ Clinton Huff said the steady stream of Defence contracts it had landed in that time had provided a good foundation for that growth.

Recent projects have included 7.5km of new security fence around Lavarack Barracks, road rehabilitation and maintenance at Lavarack Barracks, and building a new waste transfer station at the Townsville Field Training Area, Hervey’s Range.

Mr Huff said Shamrock Civil had also been involved in civil works for an air traffic control project and the Land 121 project as a subcontractor to Lendlease, as well as subcontracting to BADGE for the Land 155 Enhanced Gap Crossing Capability Project at Lavarack Barracks.

“The last two years we’ve done in the vicinity of $40 million of work for Defence up here [in NQ],” Mr Huff said.

“We deliberately targeted Defence as a key client around 12 years ago, and were doing work at Amberley and Enoggera in the south-east corner. We commenced operations in Townsville in 2013.”

The strength and recognition the company had built through its involvement in Defence projects had helped it to broaden its footprint, with recent clients including AIMS and a solar farm, he said.

Mr Huff said the key entry point to Defence projects for civil works businesses is through an established prime contractor.

“Subcontracting to them in the first place helps you to gain an understanding of all the security requirements, what you have to do to get access on to a defence base, the requirements of dealing with defence decision-making and regulations,” he said.

“If you don’t go through someone who already knows it, it is a really difficult market to get an understanding of and break into.”

Once an operator had that understanding of the Defence procurement process and delivery requirements, they could start targeting the medium-sized contracts in their own right, he said.

Mr Huff said also businesses should be aware that Defence required a local industry capability plan for all contracts.

“We’ve always done it, but now it is mandated in your tender documents,” he said.

“You have to complete a plan or schedules saying what you are going to do to involve local industry, and capability - where you purchase materials, who you employ, how you can be delivering economic and social benefits back to local communities.”

Mr Huff said the Defence works program moving forward in North Queensland was significant, and attracting an increasing amount of competition.

“There are a lot more companies trying to establish within the Townsville region because of the Australia-Singapore Military Training Initiative,” he said.

“That’s a significant spend, about $800 million up here, and you have the mid-term refresh program of $120 million to kick off in 12 months’ time - so there is a lot of interest in Defence works up here currently.

“The level of competition is increasing, but the volume of works is also increasing - so it’s an attractive market.”

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