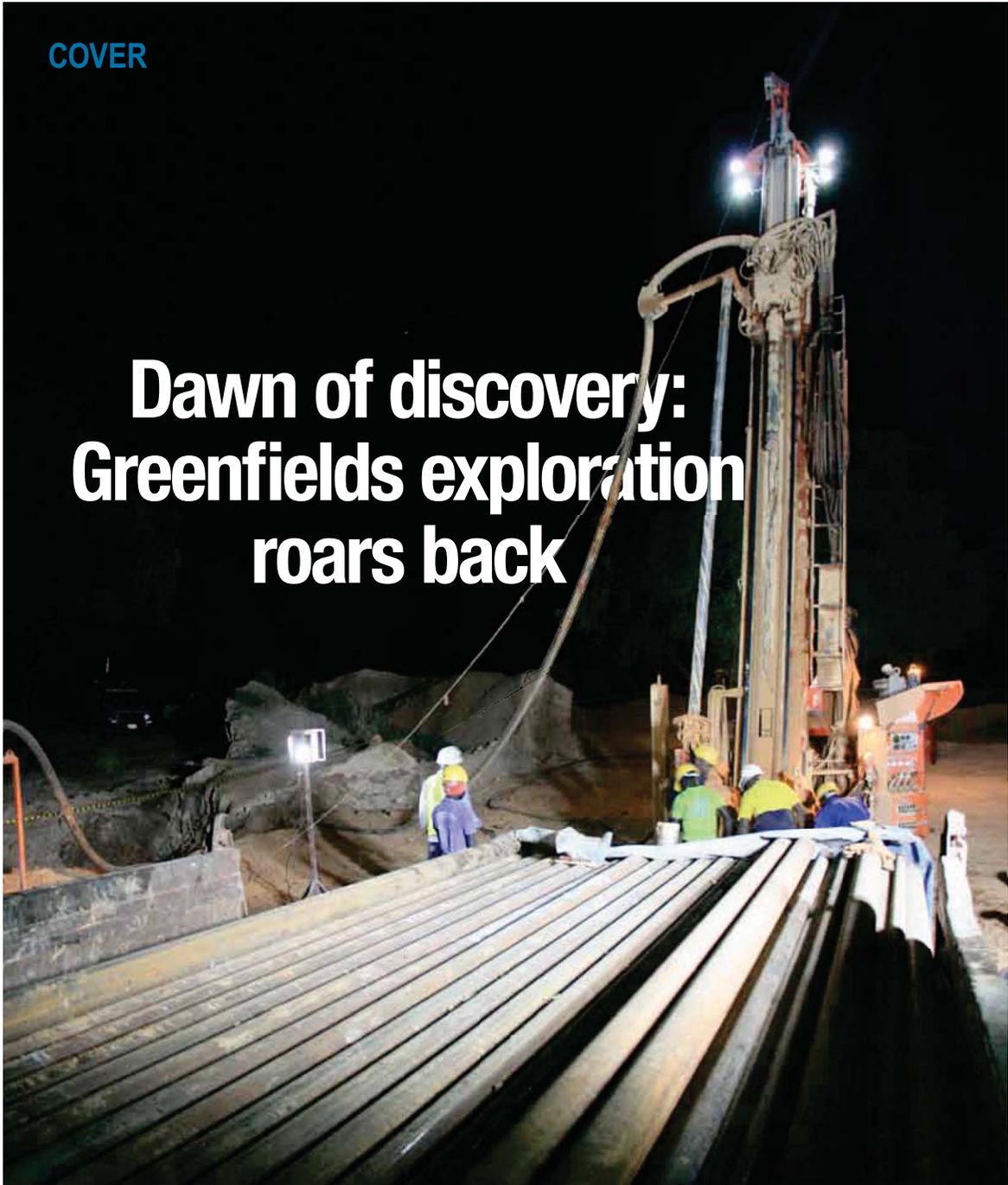


COVER

# Dawn of discovery: Greenfields exploration roars back



**W**idespread market uncertainty, a general lack of appetite from majors and a poor recent track record of discovery; it appeared 2020 was set to be a forgettable one for the Australian exploration sector but then, seemingly out of nowhere, companies with diverse projects across precious and base metals set the market alight with a series of high-profile discoveries.

**D**e Grey Mining Ltd, Legend Mining Ltd, Chalice Gold Mines Ltd, Rox Resources Ltd and Musgrave Minerals Ltd all posted multiple gains on the ASX in the March and June quarters thanks to success at the drill bit. Their strikes followed impressive discoveries by Greatland Gold plc (Havieron), Stavelly Minerals Ltd (Thursday's Gosson) and Alkane Resources Ltd (Boda) last year.

At the same time, the majors are reinvigorating their exploration departments. Rio Tinto Ltd and BHP Ltd are competing to make the next Australian copper district in Western Australia and South Australia respectively, Newcrest Mining Ltd is trying to catch up to Rio Tinto in WA's Paterson province and Anglo American plc has just picked up more than 3,000sq km of ground in WA based on Chalice's early PGM finds.

"Compared to the mining boom, there's a lot higher quality of work being done now," Stavelly executive chairman Chris Cairns said. "I think because times have been lean that maybe the cream has risen to the top and a lot of the crap is falling away. It is a double-edged sword in the market though. If you haven't got a compelling story in terms of near-term discovery or good people aren't seeing you on a pathway to development, then it's very, very difficult to raise capital."

It feels like the dawn of a new age of exploration, but a closer look suggests 2020's achievements are just the latest in

found the Nova nickel deposit and then again when Gold Road Resources Ltd unearthed the Gruyere gold system.

But were they outliers among a general trend or outriders for a new generation of Tier 1 and 2 discoveries in Australia? Will 2020's explorers match their development and transition from exciting discovery to world-class operation?

Industry conditions are actually in favour of junior explorers. Majors and particularly the mid-tier gold producers are dripping with cash but, given they slashed their development pipeline following the last downturn, have no projects to spend it on.

The cycle, it appears, is turning in favour of greenfields exploration.

"I think we beat ourselves up to some extent; it is actually a really interesting time for exploration in Australia," Gold Road executive director Justin Osborne told *Paydirt*. "In the period 2012-16 there wasn't enough greenfields exploration. Some of that is cyclical and you can see the cycle happening, especially with the majors. They went from doing no greenfields, to putting money into juniors, then doing JVs themselves and now all of a sudden you have got the likes of New-



**Julimar, 70km north-east of Perth, has been a standout discovery this year**

8.37g/t palladium and 1.11g/t platinum, including a massive sulphide zone of 13m @ 3.15% nickel, 1.19% copper, 8.85 g/t palladium and 1.09 g/t platinum. Despite the market oscillations created by the coronavirus pandemic, investors leapt in, taking shares more than 400% up since the announcement.

A \$30 million capital raising soon followed and the company is now getting down to business on testing of the 1.6km-long, 700m-wide mineralised system at Julimar.

Chalice managing director Alex Dorsch has certainly recognised the change in investor mood towards greenfields drilling.

"There is more appetite for exploration success and all of a sudden there is a push from everyone to join in the fun as we are coming out of the COVID restrictions and people are getting back to work," he told *Paydirt*. "Investors are looking through the results beyond width and grade. Width and grade in a drill intercept doesn't make a discovery, orebodies are made when you see continuity over large scale."

"I think the investor is becoming more familiar with that and where companies are demonstrating scale and continuity but where they're not and announcing holes that are not particularly wide spaced with any sort of continuity they are not getting the reactions."

"The discoveries that we are seeing are not always guaranteed to become mines but when they do they do spur the next explorer to go after the analogue or use that model to chase the look-a-like."

Experiences elsewhere are also guiding investors back to greenfields exploration. Over the last decade, greenfields exploration has been ignored in favour of

**“I think we beat ourselves up to some extent; it is actually a really interesting time for exploration in Australia.”**

a growing crowd of discovery successes in the country.

There has been concerns voiced about the state of Australia's exploration sector ever since there was one, but in the last decade the lament has grown louder as the flood of cash generated from the commodities super-cycle failed to translate into new Tier 1 discoveries. When JV partners AngloGold Ashanti Ltd and IGO Ltd announced the Tropicana gold find in 2005, industry experts tagged it an outlier. They did the same when Sirius

and Newcrest spending on greenfields, Rio Tinto with Winu and Anglo [American] pegging ground in the Yilgarn. It had ground on the edge of the

Yilgarn a few years ago but is only now beginning to rank it highly again following Chalice's discovery at Julimar."

Chalice is perhaps the most intriguing of the new wave of discoveries.

Found just 70km north-east of Perth, Julimar may have appeared an oddity to some but its discovery confirmed a long-held belief in exploration circles about the PGE potential on the fringes of the Yilgarn Craton.

The discovery hole at Julimar returned 19m @ 2.59% nickel, 1.04% copper,

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Chalice could have raised in excess of \$75 million primarily on the back of the Julimar find



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brownfields redevelopment stories but after a series of disappointments in this space, (see Gascoyne Resources Ltd, Dacian Gold Ltd, Blackham Resources Ltd, etc.) investors are beginning to re-evaluate the relative risk profiles of greenfields and brownfields stories.

The market movements of explorers in recent months suggests exploration is in the ascendency.

Chalice, De Grey and Legend are still early in their assessment of new discoveries but are already encouraged by common threads linking them to recent major discoveries. Like Tropicana, Gruyere and Nova before them, Julimar, Hemi and Mawson have sprouted for new or forgotten regions which, in the case of the latter two, are masked by considerable depths of cover.

Such cover makes exploration difficult, time-consuming and potentially expensive but according to IGO managing director Peter Bradford, penetrating transported cover will be crucial to future discoveries.

“Where we are on the Fraser Range is

not easy terrain as there is a lot of cover, which is characteristic of much of Australia,” he said. “Some 70% of the country is under deep cover and we need to develop the tools, the technology, to see through that cover.”

Western Mining Services' Jon Hronsky agrees major new discoveries are increasingly coming from the edge of known mineral provinces or even beyond.

“If you look at where the really big gold deposits have come from in WA over the last few years – Gruyere, Tropicana, etc. – these are frontier areas and I think we are seeing some success in those frontier areas and that is what I think we need to see continue.

“There is a bit of a tendency in our industry to be most comfortable looking where there is quite a lot of information and data which is not necessarily the most exciting or prospective. We look to see where we can look, not where we need to look.”

Rapid advances in geophysical technology and applications are lowering the

time and expense of exploring under cover, opening new search spaces in provinces in Australia traditionally ignored by explorers.

Bradford said technology was key to IGO's exploration strategy.

“We've tried to embrace all technology available to us,” he said. “We made decisions on what were the best geophysical tools for this type of terrain, identifying Spectrum as the best airborne tool and low and high temperature SQUID for ground geophysics. We trained our own people in it and are very few companies with that in-house capacity.

“On geochemistry, we have covered the whole of the Fraser Range with air-core drilling, that is a huge amount of data and we have been working to improve skills in-house to utilise the data we are collecting. It is a 63-element screen and all of those elements are potential indicators to mineralisation. It then becomes about how best we interpret those results.”

For Osborne, the vast array of information available to geologists requires the

**Dr Bryan Smith has been acknowledged with a Member (AM) in the General Division Member of The Order of Australia for his service to the minerals and mining research and exploration sector.**



requisite interpretation skills.

"Gold Road has increased our own technical capability, bringing in industry experts and we're already seeing the benefits of that in advancing the wider Yamarna project [host to the Gruyere mine]," he said. "An understanding of how important and how much impact of good quality information – whether taking high-quality geochemistry on aircore or structural information on diamond drilling for instance – is crucial.

"We have so much data now we don't know how to handle it or look at it. We are fabulous data collectors but not data users. Having some thinking time now during the lockdown could make a huge difference. There will be a junior explorer out there with a geologist who suddenly has a lightbulb moment during this."

Hronsky agrees that data alone is not enough unless it can be married with fundamental geological thinking.

"I have never seen an example of a successful exploration programme where people were data hunting without trying to build a greater integrated geological picture," he said. "Exploration [is about] building a coherent geological story and how that story guides you to discovery, rather than any individual data set providing a big flashing red light saying: 'drill here'.

"EM in nickel is a good example. It is becoming quite a mature technology and most massive nickel sulphide deposits will have one of these anomalies and we are getting better seeing them at depth but understanding what's an important anomaly and what's not."

The other similarity between the new wave of discoveries and recent successes is the size of projects, each explorer has boasted dominant ground positions in the respective areas.

"In greenfields, you might have one specific target or magnetic anomaly, but even then you probably want a larger position just in case it turns out if you are successful not all the mineralisation is associated with that one anomaly," Hronsky said.

Osborne points to Gold Road's success at Gruyere, which was the third

**Dr Smith has contributed to exploration geoscience in Western Australia – and to regolith geochemistry and landscape development in particular – over more than 40 years. For the last 25 years, Dr Smith has contributed to the governance of geoscience organisations, and in addition, has chaired or been a member of influential, executive-level, industry policy committees within the Association of Mining and Exploration Companies (AMEC), representing it on policy advisory committees of the Western Australia Department of Mines and Petroleum, including the Department's Mining Industry Liaison Committee.**

He has also been a member of the Geological Survey Liaison Committee since 1995. With Dr Ross Fardon, Dr Smith co-authored an influential report for Government in 2000 which led to a large increase in GSWA's funding.

**Paydirt** deputy editor Mark Andrews spoke to Dr Smith to get his thoughts on the state of the Australian exploration sector.

#### **On the challenge facing the industry...**

"The problem with the exploration industry is the fact that you have to look deeper and deeper below the surface; the days of walking around the bush knocking rocks at surface and running up orebodies are long gone. You must have techniques to see well below the surface which in WA is highly weathered. It is a matter of developing skills that allow you to interpret that, you might be looking at very low values of elements or very poor representations of the geology. The ability to do that has allowed the advancement of exploration over recent years.

#### **On the rate of discovery...**

"It is falling right off, mainly because of the difficulties and the expense involved. The spend on exploration is increasing but the number of discoveries has fluctuated quite a lot. The techniques – deep drilling and geophysics – are all expensive but geologists must develop the skills to look for more subtle indications of mineralisation using them.

#### **On where to explore in WA...**

"The Eastern Goldfields continues to be exciting, things always seem to turn up there. If you look at Bellevue [Gold Ltd], Musgrave [Minerals Ltd] and so on, they are quite significant high-grade finds in areas that have been looked at before, but they are going deeper and deeper and using more sophisticated techniques making those discoveries. Also around Winu [Rio Tinto Ltd's recent discovery], there are some significant copper finds being made there but there is still a lot of work to be done there.

#### **On greenfields exploration...**

"Over the last few years companies have become much more conservative, putting money into brownfields areas where risk is reduced. People are shying away from higher risk exploration in remote areas. Exploration hasn't really started to come back in any significant way in greenfields areas, companies have been pretty conservative.

#### **On advice to the next generation of explorers...**

"You can learn everything from just making better observations, getting out there and being involved in programmes, looking at data and so on and studying things quite carefully. In a lot of areas in WA the indication of mineralisation is very subtle. You must recognise what those important symbols are. You are getting people coming out of unis that don't have a great amount of skills as far as dealing with highly weathered material; they like to have it all computerised and have a great huge database. The amount of data generated by analytical or geophysical techniques is huge so there is definitely a strong case for better systems of using that data but there is still a great need to make good geological observations in the field with basic field work; there is a lack of people doing that type of work these days.

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**Gold Road's discovery of Gruyere – now plus-5 moz gold – followed a familiar pattern of dominant land position on an under-explored, overlooked belt**



deposit found by the company on the Yamarna belt but the first to prove economic.

"For good greenfields exploration you need big, belt-scale landholdings because there is still a huge amount of hit-and-miss associated with exploration," he said. "You need a heap of technical targets and the technical expertise to rank them and even then, it still requires a huge amount of luck and serendipity.

"The biggest impact on your own success comes from narrowing down that search space from large-scale, 100sq km targets, to 5-10sq km. That is the scale the deposits sit at. But you need that big area to start with. We had that at Yamarna, Sirius/IGO had it at Nova and De Grey has it in the Pilbara."

IGO has patiently put together JVs and other corporate deals in several provinces. Bradford said it was a deliberate approach prompted by the company's overall exploration philosophy.

"It is about working out what terrains we want to be in, then starting to look at how we get a position on those belts," he explained. "It is rare for an exploration area to be open, so you can't peg it. That took us down the road of JVs."

Legend has carved out a sizeable po-

sition on the Fraser itself and is one of the last juniors standing after the initial post-Nova rush.

"The Fraser Range was broken up like grandma's patchwork quilt; different companies with smaller tenement holdings, but one by one they learned the lesson that size matters out here," Legend managing director Mark Wilson said.

"If you haven't got a big enough package to look regionally it is very hard and expensive...actually it is not hard if you have the money. It is expensive exploring small packages."



Dorsch sees the trend for larger ground positions continuing.

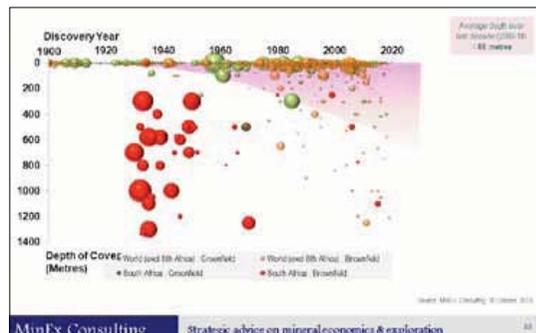
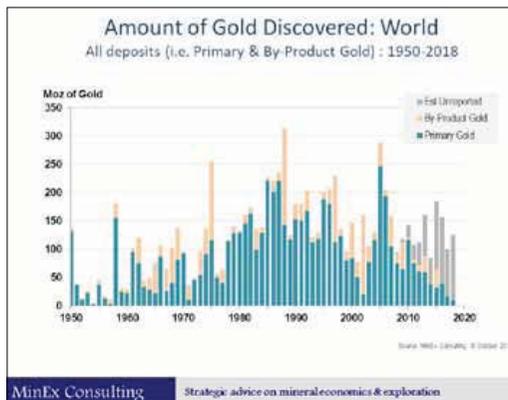
"Fewer companies with larger land packages ... time and time again, we see companies able to make a difference and move up the leagues in terms of valuation if they take a long-term view and are willing to generate the targets over a large area," he said. "That means going out away from the known into the unknown, I think that is where the new discoveries are coming from in the greenfields areas. Those that control the large land holdings in the new areas are going to be the ones to dictate the strategic areas."

Coupled with a big physical presence is a big-picture mentality, according to Osborne, who credits his experience with Gold Fields Ltd as key to identifying the true scale of Gruyere.

"I think big company experience is a real advantage. With a big company, you're exposed to big projects and taught how to target and assess big projects and understand what things need looking at and the importance of good data and good interpretation.

"De Grey has done a fantastic job. Most of that exploration team came from AngloGold Ashanti and they have done a very similar job to Gold Road; they took

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MinEx Consulting Strategic advice on mineral economics & exploration

Although representing gold exploration only, MinEx Consulting research for NewGenGold 2019 highlighted the increasing depth of new gold discoveries across the world

their time to do the work, spending a couple of years on targeting.

“It is that mindset of ‘let’s take a step back and trust our instincts to test targets’. It requires a certain faith and strength of conviction that your targeting is robust, based on good fundamental geological targeting and structural geology.

“On the flipside, in big companies you’re not necessarily allowed to go out and do the work because of corporate restrictions but when you are then freed up in a smaller company you can do that. The ability of a junior to do it off the smell of an oily rag is amazing. A good mix of the two makes a big difference.”

Both Gold Road and IGO have worked hard to get that mix. Bradford wears it as a badge of honour.

“Our geoscience team is the best in class,” he said. “In the copper-nickel space, our JV partners recognise the advantages of having IGO as a partner and our ability to add value.”

Osborne shares a similar sentiment.

“We have been focused on getting really good technical people to do the work with us, bringing in people like Kevin Cassidy, having that intelligent capacity available is invaluable.”

Hronsky has also been vocal on the

subject of industry expertise, urging his fellow geoscientists to adapt to a changing world.

“There’s no doubt our mineral exploration industry is becoming more demanding of skills as we go through this century,” he said. “That is a natural direction which we are seeing in petroleum and we need people to get that appropriate training.

“One of the things I am passionate about in the industry is developing an educational framework – lifelong learning and micro-credentialing – where geologists, from the time they graduate to the time they retire, are continually getting upskilled in all the aspects that need to be known to be mineral explorers.”

A future of frontier exploration on big land packages, using new technology and sophisticated interpretation looms then, but will future junior explorers be following in the footsteps of the current crop’s exploration success stories?

“I think the days of hundreds and hundreds of companies with early-stage exploration plays are behind us,” Dorsch said. “Companies need to be realistic about the scale they need to achieve exploration plays. I remain sceptical about the model of having hundreds of small companies with small market caps trying

to raise money, which is a challenging position and no amount of discoveries will change that.”

Hronsky has proposed changes to the exploration funding model and is unconvinced the current market interest in exploration will translate into major discovery.

“It is kind of that boom time thing where people are focusing more on the sizzle than the underlying value proposition,” he said. “To be honest, I think the energy we are seeing in the junior gold sector has a little bit more of that flavour about it. Hopefully some of these things will go onto significant outcomes but there is a bit of caution for the investor in that.”

IGO has a stable of juniors it is hoping can help it achieve exploration exceptionalism but Bradford is still cautious.

“It is great that we have had a rush of recent discoveries, whether that is indicative of things changing remains to be seen,” he said. “I think what is has shown is that if you spend the money and apply the science, you will make discoveries. Perhaps that’s the trend we are seeing; companies spending the money and applying the science.”

– Dominic Piper