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The big debate

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COMMENT

The Editor

Not so skimpy this year

What a difference 12 months can make. When Aussie miners were preparing last year for the annual Diggers & Dealers conference in the gold-mining heartland of Kalgoorlie, Western Australia, many managing directors would have been wondering if it would be their last.

For those in the younger generation of mining leaders, their last with their current company. For industry veterans, they would have wondered whether they’d seen their last boom and were signing off on their career. If they were, well, what a boom to go out on!

One of the widely quoted figures at that time was the number of ASX-listed equities with less than A$1 million (US$760,000) in the kitty. We were told there were many and equity markets offered little hope for ASX-listed stocks.

And so we enter ‘Diggers’ with smiles for the first time in near-on half-a-decade. Those veterans who enjoy a beer and something else in the Pal- ace Hotel this year may be tempted to come back in 2017.

And those veterans who enjoy a beer and something else in the Palace Hotel this year may be tempted to come back in 2017.

The longer it remains subdued at current levels, the bigger and more prolonged the spring back. And so we enter ‘Diggers’ with smiles for the first time in near-on half-a-decade.

Those quoting the number of balance sheets in crisis are few. And so equity markets have opened, with gold and lithium equities pouring in June.”

FINANCE

Hedge junkies get their fix

Gold miners hedged another 1.62 million ounces of production in the March quarter of 2016 as 33 companies became net hedges during the first three months of the year. The gold price, currently at US$1,341/oz, has moved up so rapidly this year that the top ends of the zero-cost collar instruments put in place only months ago are being tested, or have already been surpassed.

The largest new hedger was Newcrest, which hedged 530,749oz of production from its Telfer gold mine out to mid-2018 at an average price of A$1,737 per ounce (US$1,328). Since that hedge was signed, the spot gold price has gained almost A$200/oz and remains close to all-time record prices of just over A$1,800/oz. Australian-focused Evolution Mining added 150,000oz of gold production to its existing hedge book during the quarter at an average Australian dollar gold price of A$1,764/oz. The overall delta-adjusted hedge book stood at 8.69Moz by the end of March, the largest amount of total hedged ounces since the middle of 2010. But still a long way from the 1999 peak of more than 100Moz.

TRADE

‘Next bull run is coming’

The supply picture has materially improved following a lack of investment in new capacity in most commodities and the emergence of potential supply shocks, according to a note by brokerage Jefferies. Excluding Europe, the demand outlook

EXPLORATION

SolGold’s ‘world-class’ intercepts

SolGold has drilled out some “world-class” intercepts that have gained it even more attention. The latest highlight came from hole 17 at the Alpaca deposit, which saw a 948m intersection grading 0.54% Cu and 0.53g/t Au, or 1.01% Cu-equivalent, from 330m depth. Within this was a 562m width grading 0.7% Cu and 0.75g/t Au from 702m depth. This hole, along with the 16 that preceded it, has confirmed mineralisation over 450m width, 700m length and 1,800m vertically, in the meantime redefining Cascabel as a gold deposit, as opposed to the copper asset SolGold initially thought it had on its books.

PRODUCTION

Banro’s record production

Congo-focused gold producer Banro Corp has announced a record quarter of gold production as output at its Namoya mine edged towards steady-state levels. Production from the two mines is expected to be over 210,000 ounces in 2016. The company’s two gold mines in the Democratic Republic of the Congo produced a total of 49,673 ounces in the three months to end-June, and 93,965oz in the first half of 2016, the largest amount of total hedged ounces since the middle of 2010. But still a long way from the 1999 peak of more than 100Moz.

Banro’s Namoya mine, DRC: 9,000oz of gold was poured in June

World markets: stock markets

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World markets: currencies

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<td>CAD per USS</td>
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BRIEFING

The TOP stories

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Banro’s Namoya mine, DRC: 9,000oz of gold was poured in June
may be improving as well, it said. The coal supply picture was described as bullish due to significant Chinese production cuts. Elsewhere, a nickel supply shock triggered by the new anti-mining government in the Philippines could send the price up further. But Jeffries cautioned that risks were on the high side. A sustainable, fundamental recovery was more likely in 2017-18. Despite a number of positives, production growth in copper and iron ore in the second half was a concern. However, the broker added that though the timing of the next bull market was uncertain, if history was a guide, “it is coming”.

COMPANIES
Endeavour’s growth plans
Mexico-focused Endeavour Silver has decided to increase capital spending, boost production and ditch a plan to put El Cubo on care and maintenance “to reflect higher metal prices and a renewed focus on growth”. Capital investment guidance has been increased to between 9 million silver equivalent ounces and $15.649oz for silver-equivalent production of 2.6Moz using a 70:1 silver-gold ratio.

EXPLORATION
Energia ploughs on in Italy
Colonna Zorzone is continuing to perform for ASX-listed Energia Minerals, with the latest intersections from the prospect expanding the potential size and confidence in its Gorno project in northern Italy. Energia is looking below existing workings to find the next zinc mine at Gorno. The company’s inferred resource of 2.9Mt at 5.8% Zn, 1.5% Pb and 23g/t Ag includes a portion of Colonna Zorzone, but the latest hits show this zone has plenty more mineralisation to come. Drill hits such as 14.9m grading 17.6% Zn, 3.4% Pb and 40g/t Ag (or 21% Zn+Pb combined) from 80.5m depth, 7.1m averaging 26.5% Zn, 2.5% Pb and 95g/t Ag from 129.8m depth give shareholders plenty of food for thought.

FINANCE
Tahoe puts faith in Lake Shore Gold
Three months since Tahoe Resources took over Lake Shore Gold, it is showing how far it is willing to back the former management’s growth plans. After completing the US$681 million deal in April, Tahoe was forthright in its strategy, saying it wanted to expand the Ontario gold assets it acquired with the transaction to 250,000 ounces per annum by 2020. Tahoe has now put some meat behind these words. It has acquired the 2% net smelter royalty (NSR) Goldcorp had on the Bell Creek mine in Timmins for C$12.5 million (US$9.7 million), freeing up future revenues from a potentially dilutive stream. Second, the company has agreed to swap the 30% interest Goldcorp had in Tahoe’s Whitney project for a 2% NSR, giving the company 100% of the asset. With near-surface mineralisation at Whitney already expanded through a Lake Shore drill programme earlier this year, acquiring the remaining piece of the project allows the company full control.

COMPANIES
Market takes to Cardinal
Ghana-focused gold explorer Cardinal Resources has seen its shares increase more than 130% this year with official resource numbers pending at Namdini in the country’s north. The company’s management and shareholder pedigree, plus renewed West Africa gold fervour and what Cardinal’s drilling has revealed to date at Namdini, are obvious reasons for the run on its shares. The company has about A$5 million (US$3.8 million) in the bank, so fully funded through its definitive feasibility study phase including, poten-

Best and worst performers (June 29 - July 13)

<table>
<thead>
<tr>
<th>Top 10 risers</th>
<th>Local closing price (July 13)</th>
<th>Zkw share price move (%)</th>
<th>Country</th>
<th>Industry group</th>
<th>Sector</th>
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<tr>
<td>1 Western Areas Ltd</td>
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<td>Misc Base Metals</td>
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<td>Belgium</td>
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<td>Diversified</td>
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</table>
Newmarket Gold onto a winner

Newmarket’s shares are up 228% in a year

One of the few TSX-listed stocks offering exposure to Australia’s booming gold sector is set to retain its premium valuation as a focus on cost per tonne continues to pay off. Newmarket Gold’s three operating mines in Ghana gold explorer (and resource-estimating activity includes logging of independent consultants signing off on JORC, NI 43-101 and other standard reports. RSC records shows that in the 21 months since October 2014 (when it started tracking activity) SRK consultants certified almost double the number of reports of nearest rival CSA Global – with unnamed smaller independents collectively sitting at number two on the table. Roscoe Postle Associates (RPA), Giroux Consultants and AMC Consultants rounded out the top five.

Newmarket Gold

Newmarket beat expectations months to the end of June – the three operating mines (and tandem with higher gold prices, Australian dollar. Such performance, in tandem with higher gold prices, has resulted in a 228% share rise in the past 12 months.

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SERVICES

SRK tops the reporting table

Scale and its diverse geographical and commodity expertise has kept SRK Consulting well and truly on top of the global consulting-sector league during a much busier 12 months for the sector (to the end of June), an industry scorecard shows. RSC Mining and Mineral Exploration’s authoritative tracking of worldwide public reporting of mineral-exploration drilling and

resource-estimating activity includes logging of independent consultants signing off on JORC, NI 43-101 and other standard reports. RSC records shows that in the 21 months since October 2014 (when it started tracking activity) SRK consultants certified almost double the number of reports of nearest rival CSA Global – with unnamed smaller independents collectively sitting at number two on the table. Roscoe Postle Associates (RPA), Giroux Consultants and AMC Consultants rounded out the top five.

TECHNOLOGY

EY: ‘How miners can fight volatility’

Mining companies must move faster to generate cash and strengthen balance sheets to successfully navigate volatility, according to an EY report. Paul Mitchell, EY global mining and metals advisory leader, said: “Too many have viewed cost-reduction measures and productivity initiatives as a one-off, when they need to embed continuous improvement in their DNA. They need to challenge themselves to find the next 10-20% of productivity savings.” The report noted working capital as one area to improve, with aggregate levels in the sector of more than US$200 billion, and pointed to processes and systems across the supply chain as the biggest area for miners to make gains.
APPOINTMENTS

LBMA appoints Fisher chairman

Paul Fisher has been appointed as the new non-executive chair of the London Bullion Market Association (LBMA), replacing executive chairman Grant Angwin, the president of Asahi Refining. Fisher has been a senior figure at the Bank of England for 26 years. He was a member of the Monetary Policy Committee for five years, the interim Financial Policy Committee for two years and the PRA Board for six months. He will take up the role on September 5. He is due to retire from the Bank of England at the end of July. Angwin, will continue to work alongside Fisher as a co-chairman for the remainder of 2016 to provide support and continuity for the market.

Rutherford to chair Dalradian

Northern Irishman Jim Rutherford has been appointed non-executive chairman of Dalradian Resources, a year after joining the board as a director. Patrick Anderson, the outgoing chairman, will remain as CEO and president, and as a director. “The board felt that this was the appropriate time to split the role of chairman and CEO, thereby bringing the governance structure of the company into line with the UK Corporate Governance Code,” according to a statement. The company owns the Curraghin-alt underground gold project in Northern Ireland. Rutherford has more than 25 years of experience in investment banking and investment management, both as an institutional investor and analyst and, since November 2013, has served as a non-executive director of Anglo American.

Atalaya appoints Sanchez as CFO

Atalaya Mining has appointed Cesar Sanchez as group chief financial officer, effective immediately. Sanchez has served as CFO of various companies in both the mining and financial industries, including Iberian Minerals Corp, formerly a public mining company with interests in copper assets in Spain and Peru. Atalaya said Sanchez played a key role in Iberian’s equity and debt raisings. He previously worked as an auditor and financial adviser at Ernst & Young, where he gained broad experience in restructurings, IPOs, mergers and due diligence processes.

McAlister joins ZincOx as FD

ZincOx, an AIM-listed zinc recycler, has appointed Donald McAlister as finance director with immediate effect. McAlister is a seasoned executive, having previously been FD of a number of London-listed firms including Mwana Africa, Ridge Mining and Reunion Mining, the latter of which involved developing the Skorpion zinc mine in Namibia with ZincOx’s current CEO Andrew Woollett. He has also been involved with the economic evaluation of gold and base-metal mines and the arranging of project finance for feasibility studies and mine developments.

Changes at the top for Kefi

Kefi Minerals, the gold exploration and development company with projects in Saudi Arabia and Ethiopia, has unveiled a number of boardroom changes with Africa veteran Mark Wellesley-Wood to join as a non-executive director. He will also serve as chairman of the newly created technical review committee, while Professor Ian Plimer will become chairman of the exploration review committee. The existing roles of deputy chairman and senior independent director will pass from Prof Plimer to Wellesley-Wood as from January 2017. John Leach has agreed to join the senior executive team as finance director as the company begins its transition towards production. The board will comprise two executive directors (chairman Harry Anagnostaras-Adams, pictured below, and Leach), and three non-executives (Norman Ling, Plimer and Wellesley-Wood).

New investor chief at Barrick

Barrick Gold has appointed Daniel Oh as senior vice-president of investor engagement and governance, effective July 18. Oh has more than 16 years of experience covering corporate governance, capital markets, accounting, investment valuation, portfolio management and business strategy. He joins Barrick from BlackRock, where he was VP of investment stewardship. Angela Parr, VP of investor relations, will report to Oh, as will Michael Leonard, who has moved over to the team from his role as director of forecasting and performance measurement after Susan Muir, also VP of investor relations, left the company.

Flanagan leaves Atlas Iron

After salvaging the company from near-extinction, Atlas Iron managing director David Flanagan has decided to stand down from the ASX-listed iron ore miner. Flanagan, who founded the company, will remain in place until a replacement is found, or his six-month notice period is served, whichever comes first. He came back into the Atlas Iron hot seat close to a year ago and managed to negotiate a novel pact with contractors to get its iron ore mines back into production, while reducing the debt load of the company amid falling prices for the steel raw material.

New directors join Mariana

Mariana Resources, with projects in Turkey and South America, has strengthened its relationships with partners Lidya Mining and Sandstorm Gold by appointing Mustafa Aksoy from Lidya and Ron Ho from Sandstorm as non-executive directors. Lidya is the current 70% owner and operator of the high-grade Hot Maden gold-copper project in northeastern Turkey. Sandstorm recently participated in the company’s private placing and now has a 7.5% interest in Mariana.

Former Rockwood duo join Lithium X

Argentina-focused Lithium X has made chemical engineer Eduardo Morales its chief operating officer and Andres Barrientos its new project general manager of South America operations. Morales was previously president of the Latin America arm of Rockwood Lithium, where he led the development, commissioning and operation of the company’s Salar de Atacama project. He later served as general manager of the operation before leaving Rockwood in 2014 following the company’s sale to Albemarle. Barrientos is also a former Rockwood employee, having had the role of engineering and research superintendent of its Chile operations until 2012. He later moved onto BHP Billiton to work at its Escondida copper mine.

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Barrick Gold has appointed Daniel Oh as senior vice-president of investor engagement and governance, effective July 18. Oh has more than 16 years of experience covering corporate governance, capital markets, accounting, investment valuation, portfolio management and business strategy. He joins Barrick from BlackRock, where he was VP of investment stewardship. Angela Parr, VP of investor relations, will report to Oh, as will Michael Leonard, who has moved over to the team from his role as director of forecasting and performance measurement after Susan Muir, also VP of investor relations, left the company.

Flanagan leaves Atlas Iron

After salvaging the company from near-extinction, Atlas Iron managing director David Flanagan has decided to stand down from the ASX-listed iron ore miner. Flanagan, who founded the company, will remain in place until a replacement is found, or his six-month notice period is served, whichever comes first. He came back into the Atlas Iron hot seat close to a year ago and managed to negotiate a novel pact with contractors to get its iron ore mines back into production, while reducing the debt load of the company amid falling prices for the steel raw material.
MOD Resources (ASX: MOD) managing director Julian Hanna has been in the right place at the right time before. The former Western Areas chief oversaw the Australian nickel miner’s rise in the 2000s to consistent profit generator and dividend payer on the back of two high-grade mines and China’s insatiable appetite for the steel-hardening metal. Nickel prices reached the stratosphere and Western Areas’ market cap burst through A$1 billion.

Many Australian mining leaders who headed offshore to pursue opportunities during that period are again extolling their home country’s risk-free investment status, outstanding geology and more competitive cost base. But Hanna’s focus has shifted to Botswana, and copper.

He’s upbeat about where the price of the red metal is heading over the next two years, but he’s positively buoyant about MOD’s Kalahari copper belt prospects due to the results flowing from T3 – only the second drill target on a list of 10 Hanna, his Africa exploration general manager Jacques Janse van Rensburg, and one of Hanna’s chief former Western Areas collaborators, Terry Grammer, drew up earlier this year at a coffee shop opposite the MOD office in Perth.

Grammer is chairing Metal Tiger (AIM:MTR), MOD’s JV partner in the Kalahari. The pair picked up extensive exploration ground previously held by failed Boseto copper producer Discovery Metals. Their main Kalahari neighbour, Cupric Canyon Capital, got its hands on mine infrastructure probably worth $200 million, including a three million-tonnes-per annum concentrator, and resources, for about $35 million.

“Discovery Metals never really had the firepower to deal with this properly because they were hell bent on production and getting Boseto settled in”

Now Cupric dominates the Maun end of the sand-covered copper belt, MOD and Metal Tiger the Ghanzi end. The latter is a regional centre of a few thousand people.

“There has always been this myth that all the copper is up in the eastern end of the belt and it’s completely wrong,” Hanna told Mining Journal. “This belt runs into Namibia – across the border there are copper deposits all through the Namibian end of the belt. And this area [south-east Botswana Kalahari] is covered mainly by shallow sand [and a] lot of cat-
ticle farms. In some places you go 5m through sand and calcrete straight into fresh rock; fresh sulphide.

“Discovery Metals never really had the firepower to deal with this properly and explore it methodically because they were hell bent on production and getting Boseto settled in.”

A fourth drill rig has just started work at T3, where MOD’s third drill hole hit 52m grading 2% copper and 50g/t silver included in a scoping grading.

Wherever you go in the Kalahari, you’re looking for the footwall sandstone and the hanging wall siltstone/mudstone and bang, you know that’s where the goodies usually are”

“T3 is just part of the T3 Dome – a fraction of the strike length here – and we’ve got three rigs going backwards and forwards drilling out a resource just on that panel there.”

Below the calcrete and still fairly shallow drilling is picking up veining and disseminated chalcopyrite and bornite, with the density of vein distribution variable.

“More veins equals more bornite equals better copper grades and more silver,” Hanna said. “So we like these bonanza veins. We’re not really sure what direction they’re heading in in the core – we’re starting to get a better idea of that.

“We are learning about this deposit almost on a daily basis … and realising [more about] the potential that exists outside of the area that we’re drilling at the moment.

“We’ve said there’s high-grade moly numbers … and there’s some very weird intrusions in the basement as well. The porphyry copper analogy is very interesting. The IOCG-type alteration in the footwall, no one knows what they are, and the moly … no-one has done any work on that.

“There has got to be a source for the metals.

“Wherever you go in the Kalahari, in Namibia or Botswana, you’re looking for the footwall sandstone and the hanging wall siltstone/mudstone – the prospective contact – and bang, continues on page 10
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“All of the deposits to date in the belt have shown that it really doesn’t matter how deep you drill, they just keep going at depth”

“People are reporting these sorts of copper intersections.”

MOD’s classic exploration approach of using modern geochemistry and geophysical surveying and imaging (induced polarisation, or IP) to generate viable drill targets and then “drop anchor” and accelerate drilling activity when the trail heats up has produced great results for Hanna, Grammer and their investors elsewhere.

Looking down the track, Hanna has hopes of bringing other key learnings from more than two decades of mine finding and development in Western Australia across to southern Africa. That covers everything from contract mine development and operation, to bulk concentrate transport.

“For me personally what I’m very driven by is the prospect of developing mines in Botswana. It is just the best jurisdiction,” he said.

“You’ve got a government that wants to build a copper industry. They can see a long-term decline – over 20 years maybe – in the diamond industry that underpins the economy, so they’re looking for alternatives. And that includes a desire to build a copper smelter in-country. So there is that potential as well. And they’ve got a very large copper belt in the backyard. So we’re working with the government and keeping them very closely informed of what we’re doing.

“As we said at a resource conference at Gaborone a few weeks ago all we want to see is a big power transmission line running down the side of the road [Ghanzi Highway], because at the moment the key to a long-term sustainable copper industry here is getting grid power extended up into this area. Bearing in mind Maun is the tourist capital of Botswana … so there is a very strong desire on the part of the government to extend grid power grid up to there, all from coal sources [in the country], and then ultimately down this road to Ghanzi.

“It is a core cattle area and a developing region.

“We’re anticipating power up into this part of the world around late 2019.

“In the meantime if we were to set up a process plant here short-term we’d probably be looking at diesel-generated power. We’re just 10km in off the main road here. So we’ll see how this thing evolves.

“I think with Western Areas we got lucky … with the timing – the rise of China in 2002 [and] 2003. We discovered Flying Fox then Spotted Quoll came along. The nickel price just responded perfectly. It was the perfect match for the China boom really.

“Now I’m very positive about copper. The focus is so much on the Chinese demand and not enough on long-term, viable supply lines.

“And the other thing about Botswana too that’s … relatively rare globally … is that all of these deposits where testwork has been done [and including Boseto when it got into primary sulphide ore] produce extremely high-grade, low-impurity concentrates: anywhere up in the 40%-plus copper range.

“We can produce from our Mahumo deposit, for example, 50% con grades, and some banana silver credits. There’s no cobalt, no arsenic. It’s a pretty simple product and smelters love it for blending.”

MOD, which had a market capitalisation this week of about A$39.5 million (US$30 million), and Metal Tiger are aiming to get a maiden resource number for T3 out this quarter and finish a scoping study on openpit mining by the end of the year. A prefeasibility study would follow.

Hanna said the partners were juggling resource drilling, with wider T3 exploration, and then regional exploration, as study work led by experienced metallurgist and project manager Royce McAuslane fired up.

“I’m hoping that when we get a resource out it provides some basis for investors to value the company,” Hanna said.

“And then in the same timeframe as we’re getting that resource out we’re pulling out all the stops on looking for other satellite deposits around it.

“Towards the back end of this year we’ll borrow one of the diamond rigs from T3 for a few weeks and put some deep holes in and start scoping out the depth extensions.

“All of the deposits to date in the belt have shown that it really doesn’t matter how deep you drill, they just keep going at depth.

“The T3 scoping study will run in parallel with the resource drilling. We’ve already done a conceptual pit model and that’s given us the encouragement to do the drilling that we’re doing now. And the resource is coming along at speed.

“So we’re just going to run everything that we can in parallel, because we think we’re going to hit a nice window in about 18 months time with copper.

“That’s about where we’re trying to get to.”

"From contract mine development and operation, to bulk concentrate transport."

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“That’s about where we’re trying to get to.”

Make that four … four rigs now drilling at T3

"continues from page 7"
SITE VISIT

Keno Hill restart hinged on streaming

Renegotiating an existing streaming agreement could be the key to Alexco Resource Corp restarting production from Canada’s only primary silver district at Keno Hill in Yukon.

With the silver price rising to around US$20 per ounce and a mill already in place, the company is poised to restart production, however, a streaming agreement that saw Silver Wheaton provide the company with C$50 million (US$38 million) to restart is holding Alexco back from restarting production after it was suspended in 2013 on the back of a weak silver price.

“We would not be here without Silver Wheaton. Silver Wheaton gave us C$50 million to put the project into production and it gets 25% of the silver from the district,” said CEO Clynton Nauman.

The mineralisation at Keno Hill has historically had strong lead and zinc content underpinning the project economics, but with the base metal make up forecast to be lower during future operation, “the Silver Wheaton influence has grown,” Nauman said. This has meant the streaming pact starts to eat into free cash flow, making it harder to generate profits. “To Silver Wheaton’s credit, they want this to move into production and we are in dialogue to achieve this,” he said.

Since the streaming deal was put in place Alexco has made several discoveries in the 233km² district – which historically produced 217 million ounces of silver – notably the Flame & Moth and Bermingham deposits.

Alexco is looking to restart production at an estimated 3 million ounces per annum from the Flame & Moth orebody but a production decision will wait until the company has a better understanding of the Bermingham discovery it made last year and has renegotiated the Silver Wheaton agreement.

Flame & Moth contains about 30 Moz of silver in a resource grading over 500 g/t Ag, 1.9% Pb and 5.4% Zn within a total resources base at Keno Hill of over 55 Moz silver.

A 2014 preliminary economic assessment outlined production of 812,900 tonnes grading 754 g/t Ag, 0.4 g/t Au, 2.71% Pb and 4.53% Zn. The Flame & Moth deposit was discovered in 2010 with the discovery hole cutting 6.55m grading 571 g/t Ag. With 176 holes now drilled, totalling over 41,000m, vein mineralisation has been established over a 1,010m strike length and 450m down dip.

“A PEA will be completed this year with an expanded Flame & Moth resource and an additional resource calculation from Bermingham,” said Nauman.

The capital expenditure to start production at Flame & Moth is estimated at C$20 million of which CS10 million would go towards the six-month development to drive in a decline next to the mill.

At Bermingham, some 22,000m was drilled through the end of 2015 with assays up to 5m grading 7,462 g/t Ag. An 8,000m drill programme planned for 2016 was recently increased to 11,000m to infill and expand the resource base.

The results will provide the basis to complete an updated Bermingham resource estimate to be included in an updated PEA in the December quarter that will also include revised and optimised development and mining plans for the Flame & Moth, Bellekeno and Lucky Queen deposits.

“The ore at Bermingham is higher grade than the concentrate shipped from the mill in the past. At US$20/oz silver it is a no-brainer to go into production but we will not move forward until we understand what is happening at Bermingham as this will have a significant impact on the economics,” said Nauman.
Cardinal sings golden tunes

Despite the incredible number of gold hits at Cardinal Resources’ (ASX: CDV) Namdini project, it could be overshadowed by the increasingly promising Kungongo prospect, also in northern Ghana. Ngaire McDiarmid reports

This gold-focused exploration and development company currently counts five major global institutions as cornerstone investors, thanks to the excitement being generated by its Namdini gold project in northern Ghana.

Cardinal Resources’ managing director Archie Koimtsidis is expected to be announcing an exploration target at Namdini in September 2016 and is quick to point out the drill rigs are still spinning.

In the first six months of 2016, Cardinal reported a growing number of wide mineralisation and visible gold hits at Namdini, with the most recent step-out diamond drilling extending a 200m-wide gold zone to a vertical depth of 290m.

Koimtsidis says Namdini’s potential to host a world-class gold project continues to be confirmed by the intersection of long mineralised zones, including 54m at 2g/t gold.

This potential has been recognised by cornerstone investors such as US Global Investors, Macquarie Bank, Canada’s Dynamic Fund and, more recently, Switzerland’s Precious Capital Global Mining and Metals Fund and Australia’s long-term award-winning Colonial First State.

“The cornerstone investors can see the team is right and the project’s right,” Koimtsidis said, emphasising the significance during a meeting with Mining Journal in Perth.

“They’ve each made a significant investment, pre-resource.

“That’s key – it’s not common in the current market to have those kinds of cornerstone investors in pre-resource juniors.”

The Namdini project lies 6km south of the producing Shaanxi gold mine near Bolgatanga in northern Ghana.

Namdini has a current strike length of about 900m and four drill rigs were at work in the June quarter, drilling 41 holes and generating more than 11,000 samples.

Cardinal has split its core submissions between SGS Laboratories in Burkina Faso and Ghana to accelerate the receipt of assay results.

Once all the results are received, the drill data will form the basis for Cardinal to provide guidance on an exploration target, which Koimtsidis expected to report in the September quarter.

But Koimtsidis said Cardinal would not sit back and become a desktop company in the coming months, just waiting the backlog of assay results.

“Firstly, we will be working on getting Namdini to a JORC resource, then a bankable feasibility study on the existing orebody,” he said.

“Whilst working on JORC resource and bankable feasibility study, we’ll be drilling along strike to the north and south at Namdini, and we’ll also be drilling on our other projects, so we can add to the volumes and ounces that Namdini has.

“So we’ll be drilling in the background as usual, spinning out results because of the sheer size and prospectivity of the package.”

Namdini is one of four tenements in Cardinal’s 100%-owned Bolgatanga project totalling almost 800sqkm in northern Ghana, along with the Ndongo, Bongo and Kungongo prospects.

To the south, Cardinal has the 64sqkm Subranum project, 240km north-west of the capital Accra.

Koimtsidis said there were promising targets throughout all the tenements and the company had to decide how aggressively it would explore them, while also increasing confidence through further drilling at Namdini.

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Koimtsidis said there were promising targets throughout all the tenements and the company had to decide how aggressively it would explore them, while also increasing confidence through further drilling at Namdini.
“It’s looking like we’ve got gold targets out there, so you’ve got to say to yourself: do we tiptoe around the tulips or grab the bull by the horns?”. 

“Geophysical data is providing us with more confidence so it looks like we may have to bring in several rigs again and start drilling.”

Koimtsidis believes the Kungongo prospect, west of Namdini, could be the first cab off the rank in terms of fresh drilling.

“We’ve completed some geophysical work and the preliminary data is quite exciting,” he said.

“We’ve identified potential gold-bearing targets over a distance of 6km. It’s huge, but it’s also great challenge to have.”

An airborne geophysical survey over Kungongo delineated two target areas, and the recent Gradient Array Induced Polarisation and ground geophysical surveys delineated the targets along the 6km zone.

After Kungongo, Koimtsidis said Ndongo could be the second area for regional exploration, while Bongo needed further work on developing drill targets and it was also a matter of getting south to Subranum to better evaluate the previously discovered gold mineralisation in its 5km strike length.

Koimtsidis is confident about Kungongo’s prospectivity, playing down the certainty of Namdini being Cardinal’s company-making project.

“Let’s see what Kungongo brings in over the next three to six months,” he said. “Namdini definitely has to be tested along strike but Kungongo may surprise us all because of its sheer size.”

“We’re going into a phase of studies for Namdini,” Koimtsidis said.

“We need to understand what we have within the existing orebody, and we’re planning a large exploration programme around it as well as on the other prospective ground we have.

“When gold went out of flavour four or five years ago, we went out and bought another rig and we’re one of the few gold explorers that has not stopped working.

“We haven’t stopped drilling and exploring and being well supported by our shareholders, because we actually have gold in the ground and it’s now all coming together for open-cut mining.

“Gold has just begun swinging back in our favour but we wouldn’t have changed anything we are doing on the ground and corporately.”

Koimtsidis said the company had strengthened its board in the past year and also appointed Dr Julian Barnes as the project’s technical manager, to take Namdini through to a bankable feasibility study.

Dr Barnes has 34 years’ experience in more than 52 countries in a variety of commodities, and over 25 years’ experience in due diligence studies for major global resource lending institutions and mining companies.

“His skills will be invaluable in progressing the company’s objectives,” Koimtsidis said.

Chairman Mark Connelly, who joined the board late in 2015, has extensive experience in developing and operating projects in West Africa, Australia, North America and Europe.

“We’ve got the right mix of people on the board and management, who have the experience to take this right through to production, as a well-rounded team,” Koimtsidis said.

“We have a strong presence in Ghana assessing drilling results on a daily basis, and I’ll be spending more of my time in Perth to progress the plan of having a bankable feasibility study completed within the two-year timeframe we have set.

“We could complete a bankable feasibility study for Namdini within two years and that potentially could put us into development in late 2018. Meanwhile, the drills will keep spinning 24/7 and results will just keep on flowing!”

“ ”

When gold went out of flavour four or five years ago, we went out and bought another rig and we’re one of the few gold explorers that has not stopped working”

— Archie Koimtsidis
MANAGING DIRECTOR
Firestone Diamonds could begin production as early as October as the company nears completion of construction of its Liqhobong diamond mine in Lesotho.

Following a visit to the site, Patrick Morton, analyst at Macquarie placed a 12-month target of £0.45 (US$0.60) per share on the stock, about 45% above the current share price of £0.31/share.

“We have rolled forward our model to FY2017E, now that most capex is behind the company, our NAV increases by over 25% to £0.52/share and our target price increases by 50% to £0.45/share,” said Morton.

Construction at Liqhobong is said to be 85% complete

The NAV is highly sensitive to prices, moving by 28% on the back of a 10% move in diamond prices.

“The NAV is highly sensitive to prices, moving by 28% on the back of a 10% move in diamond prices. Morton is also confident the vast management experience bodes well for the start-up and ramp-up of the 1Mctpa mine.”

Research suggests Firestone undervalued

Staff reporter

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Macquarie is using diamond prices 18% below the 2014 feasibility study estimate of US$131 per carat, due to the subsequent market downturn.

“The NAV is highly sensitive to prices, moving by 28% on the back of a 10% move in diamond prices. Morton is also confident the vast management experience bodes well for the start-up and ramp-up of the 1Mctpa mine.”

Key figure

85%

Production complete at Liqhobong diamond mine

A large-diameter drill rig in operation at CH-7

“A large-diameter drill rig in operation at CH-7

15.6 million carats of inferred resources down to 260m and 240m respectively. Both remain open at depth.

Peregrine CEO Tom Peregoodoff said: “As we develop Chidliak further, we expect to identify further upside to the economics of the project through optimisation studies of the phase-one mine, including the expansion of the CH-6 resource to depth and through the development of a potential, phase-two resource expansion from the numerous other kimberlites on the property of which six currently show economic potential.”

Diamond pricing was based on estimates from WWW International Diamond Consultants and escalated annually from 2016 at 2.5%.

A value of US$149/ct was estimate for CH-6 production and US$114/ct for CH-7. A total of 11.6Mct would be extracted at a life-of-mine annual average of 1.2Mct.

In 2001, Peregrine paid C$9 million for BHP Billiton’s 51% stake in Chidliak, giving it full control of the project.

Key figure

C$471mn

After-tax net present value for Chidliak
St George mining keeps hitting nickel but must do more to sate investors

John Robertson*

A succession of impressive drill results places St George Mining among Australia’s most exciting mineral explorers.

St George was described in a recent Mining Journal company profile as “the next Western Areas”.

The company’s chairman John Prineas is keen to highlight the provenance of the nickel properties at the heart of his exploration efforts. They had been in a joint venture with BHP Billiton. According to Prineas, those with on-the-ground experience at the big miner had held out high hopes for their future. BHP’s head office decision to shed its nickel interests was a mixed blessing for St George. It lost the heft that would have come from a partnership with the world’s biggest miner.

On the other hand, it ended up with control of assets characterised as out of the ordinary not only by some of the most astute explorers within BHP but also by others in the industry with a keen understanding of regional geology.

The style of mineralisation sought by the company is consistent with well-known deposits at Kambalda, Forrestania and the Agnew-Wiluna nickel region.

Systems of this type are now rarely discovered from single point exploration holes from surface. St George’s large and growing number of mineral targets arising from a systematic exploration effort means an unusually long-term exploration commitment.

The company began drilling in November to test promising geo-physical exploration targets at its Windsor and Desert Dragon prospects in the Laverton region of Western Australia.

It completed acquisition of the BHP interests in its Mt Alexander project in January. BHP had drilled three electromagnetic conductors at the Cathedrals prospect finding high-grade nickel-copper sulphide intersections. St George subsequently drilled another seven conductors at Mt Alexander southwest of Agnew with all reporting nickel-copper sulphides.

In mid-June, the company reported an intersection of 1.17m at 8.75% Ni, 3.37% Cu and 6.16 g/t PGE from a depth of 30.17m at Cathedrals, situated on a contact between felsic and ultramafic rocks. A deeper geophysical target and a related intersection were also reported.

St George has more recently reported initial exploration results from the Stricklands target, an extensive east-west trending domain approximately 1km west-southwest of the earlier massive sulphide intersections reported at Mount Alexander.

The company’s three intersections from three holes at Stricklands were spread over 300m with fresh sulphides at 42-54m below surface. Their presence is consistent with the earlier exploration outcomes at Mount Alexander.

The Stricklands target remains the largest geophysical anomaly at Mt Alexander and broadly on strike from earlier, equally promising, exploration results.

The Stricklands result raises the probability of a significant mineralised deposit. More drilling, including off-hole targets, will have to follow. Once these results are collated, a second programme to test deeper targets will most likely ensue.

Already, St George is performing better as an investment than Western Areas had done in its early days. At the time of writing, St George had a market value of A$38 million (US$29 million) after having raised $18 million. In mid 2002, Western Areas had raised $8 million to underpin a market value of just $10 million.

Western Areas would have been in a similar position in its corporate life cycle in 2002 as St George Mining is today and amidst another cyclical trough.

The former director of Western Areas reported in Mining Journal as making the comparison with St George Mining would have been visualising St George also evolving from explorer, where Western Areas was in 2002, to being a prominent regional nickel producer.

Over the ensuing 14 years, the Western Areas market value has risen impressively from $10 million to $582 million at the end of June. Quite frequently, companies will attempt to highlight their investment potential by comparing market values without acknowledging the relative contributions to capitalisation changes of more shares and higher share prices.

Between 2002 and 2016, Western Areas raised $437 million through the issue of new shares suggesting a net positive price impact on value equivalent to a more modest $135 million.

Western Areas paid regular dividends between 2010 and 2015 adding up to $107 million to complement the positive price effect. The company’s cash holdings at the end of March 2016 were $29 million.

To sustain the business and produce the $680 million valuation for investors through a higher share price and dividends, the company has had to use $408 million in capital from shareholders.

Spread over 14 years, the Western Areas creation of wealth for shareholders represents a return equivalent to having bought a bond in 2002 with a yield of 4.8%. That is hardly the worst return from within the sector but does not adequately compensate for the range of risks typically encountered by a development company.

Over the same period, the average Australian government 10-year bond yield was coincidentally 4.8%. Arguably, the Western Areas return was around 10 percentage points lower than it should have been to justify its call on capital.

Companies typically begin to lose ground as investments when it comes time to spend on mines. St George will not only have to translate its exploration excitement into a meaningful mining development but also produce a far more competitive return on capital than the Western Areas outcome.

Signs within the industry that the approach to capital management has changed offer hope. Low capital project alternatives are being defined increasingly as a matter of course with the option of larger scale developments left for the time being to depend on future changes in market conditions.

Despite the comparison with Western Areas being a well-intentioned endorsement of the quality of the St George holdings, it misses the mark. To justify itself as an investment, St George needs to translate its exploration successes into something more than just the next Western Areas.”

John Robertson is the chief investment strategist for PortfolioDirect, an Australia-based equity research and resource stock rating group. He has worked as a policy economist, business strategist and investment professional for nearly 30 years, after starting his career as a federal treasury economist in Canberra, Australia.
COMPANY PROFILE

A CLAY PIT NEAR MECKERING in Western Australia is the key to Altech Chemicals’ high-purity alumina (HPA) project – a project which will have a pre-tax NPV of US$357 million according to its bankable feasibility study.

Altech is already in finance discussions to develop a low-cost vertically integrated business, mining its 100%-owned kaolin clay and turning it into high-value HPA at its planned processing plant in Malaysia.

The company aims to become one of the world’s leading suppliers of 99.99% HPA at a considerably lower cost to other producers and its project has a forecast life of more than 250 years.

The advantage Altech poses over competitors is its high-purity deposit and its low-cost, single-plant processing.

In a strong vote of confidence for the company’s plans, Japanese giant Mitsubishi’s Australian subsidiary has signed an exclusive offtake sales agreement for 100% of the first 10 years of Altech’s HPA production.

Mitsubishi Australia will be the exclusive global distributor and buyer of the full 4,000tpa production capacity.

Altech managing director Iggy Tan said the agreement signed in April was an important milestone and bolstered the company’s credibility as it continued finance discussions.

"High-purity alumina will be part of the next ‘new age’ materials boom like rare earths, lithium and graphite," he said.

He was quick to point out that HPA was not a new material but it was in growing demand thanks to its role as a critical ingredient in artificial sapphire, which is used in LED lights, watch faces and smartphone components. Lithium-ion battery producers are now also using HPA for the battery’s separator.

"It’s used in sodium lamps, medical applications, optical lenses, electronic substrates, and even the military where they toughen up the vehicle’s windows to make them bullet-proof,” Tan said.

"The biggest growth is in the LED [light emitting diodes] sector, which can produce the same wattage as regular light bulbs with less energy – and a lot of countries are now mandating a move towards LEDs.

"On the pie chart of HPA uses, lithium batteries and smartphone screens don’t even feature yet, so that’s another growing market.

"There is no substitute for HPA in making artificial sapphire.

"The current market of HPA is about 20,000tpa worldwide – it’s not a big market yet but it’s high value and it’s growing about 25% year on year.

"Altech’s 4,000tpa HPA plant will position the company not only as one of the world’s largest producers of HPA, but also as one of the world’s lowest-cost producers."

Tan said typically, bauxite was processed to create smelter-grade alumina (SGA), which was turned into aluminium, which HPA producers then purchased and re-processed to create a high-purity alumina.

"Our HPA process is quite a disruptive technology," he said.

"We’re taking it straight from the ore to the 4 nines (99.99% purity) in one single step without going through the aluminium metal stage.

"And the only reason we can do that is our kaolin orebody has had a lot of impurities leached out, and we will ship it to Malaysia to be converted into HPA through a thoroughly tested and proven hydrochloric acid leaching process.

"So we’re using that established technology to meet this new demand in the electronics sector, we have a high-purity deposit and we’ve brought together very experienced people."

Tan and general manager operations Dr Jingyuan Liu were
Altech’s 4,000tpa HPA plant will position the company not only as one of the world’s largest producers of HPA, but also as one of the world’s lowest-cost producers”
– IGGY TAN
MANAGING DIRECTOR

Above: HPA is the vital ingredient to artificial sapphire substrates found in LED lights. Left: Altech’s high-purity feedstock – its kaolin clay from Meckering, Western Australia

instrumental in establishing Galaxy Resources’ Mt Cattlin spodumene project in WA and associated lithium carbonate processing plant in China.

Comprehensive testing has proved Altech can produce a 99.99% HPA product through the established hydrochloric acid leaching process.

Tan said the growth in LEDs alone was expected to grow demand for HPA from 20,000tpa to 48,000tpa by 2018.

“The next area of growth is in lithium-ion batteries,” he said.

He said HPA was used as a fire retardant on separators inside larger batteries like those in electric vehicles.

The future is in the smartphone market, where artificial sapphire scratch-resistant screens are becoming more common.

“We forecast by 2025 this lithium battery sector will require 15,000tpa of HPA and that is nearly four times the 4,000tpa plant we intend to build in Malaysia,” Tan said.

“So what we’re saying is that we’re entering a market where there’s high growth and we’re not going to be fighting for market share, we’re going to fill the growth demand.

“About 70% of the demand for HPA is in the Asia-Pacific region and we think we’re well placed to meet that demand because our deposit is in Western Australia and our plant is in Malaysia.”

He said Altech chose to build in a chemical park in Malaysia that had port access and government incentives.

Altech’s updated bankable feasibility study (BFS) puts the capital expenditure costs for the plant and mine at US$80 million with a payback of less than four years.

“Our NPV on discounted cashflow is US$357 million and it’s not often you have a project where the NPV is four times the capex,” Tan said.

“The internal rate of return is about 33% and with an operating cost of about US$9,000/t and an anticipated margin of about $14,000/t, the project throws off about US$55 million in EBITDA.”

The BFS covers a 30-year minelife, which will process about 1.3 million tonnes of kaolin and Tan said the project had up to a 250-year life.

The company has raised about A$5 million since March 2016 and also welcomed Malaysian insurance, investment, credit and finance group MAA Group Berhad as another cornerstone investor.

Altech expects to close project financing by the end of 2016 and start siteworks at both Meckering and Malaysia early next year.

With about half of the Johor plant using German technology, Altech has sought funding support from German bank KfW IPEX-Bank and export credit agency (ECA) Euler Hermes Aktiengesellschaft.

“We’re producing a product at the high-end of the market and from that point of view, German engineering and equipment is world-class,” Tan said.

The company’s banking partners KfW IPEX-Bank are now in the process of finalising the senior debt finance package for the project.

Tan said the possibility of accessing low interest rate, long-term project financing that could be available under ECA funding was compelling.

“So we believe we’re in the right place at the right time, with the right deposit and the right technology to feed this business going forward – and the right people on board,” he said.
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It’s been a long time since anyone got excited about titanium minerals but when share prices jump by more than 40% in a day it’s a wake-up call too loud to be ignored.

Base Resources, an Australia-listed miner of ilmenite, rutile and zircon in Kenya was the company that delivered this performance early this week from what appears to be an industry-wide revival triggered by a series of reports pointing to higher prices for titanium dioxide and zircon in China.

Long neglected because of low prices for its products, which are mainly consumed in less than exciting industrial applications such as paint pigment and the glaze on tiles, Base shares rose by A$0.055 (US$0.04) to A$0.185, a gain of 42.3% with that closing Monday price a 12-month high.

Looked at over a long-term timeframe and the rise of Base is even more remarkable, up 825% since it hit rock bottom at A$0.02 just six months ago.

Base wasn’t an orphan. Other titanium and zircon stocks joined in with Iluka, an industry leader, adding A$0.70 or 10.8% to A$7.16, Mineral Deposits was up A$0.04 (15.7%) to A$0.295 and Sheffield Resources was up A$0.04 (7%) to A$0.58.

What’s woken the titanium and zircon sector of the mining market is a combination of factors, including production cutbacks doing their work in reducing stockpiles, along with increased demand for paint and ceramics in China thanks to a revival in construction after the latest bout of government economic encouragement.

Those forces lie behind a series of investment bank reports that have enticed investors back into the titanium and zircon sectors. The reports include a study by the Australian firm Ord Minnett, which noted “signs of tightening in titanium feedstock markets” and another from Morgan Stanley late last week that said miners and pigment producers were “seeking to lift prices”. But, to get a clearer picture of what’s happening it’s important to look back to February when the titanium and zircon industry was in the depths of a downturn.

Back then, Iluka reacted to an over-supply of its products by mothballing its best mine, the Jacinth-Ambrosia project in South Australia that, at its peak, is capable of supplying between 25% and 30% of global zircon demand.

The aim, according to an Iluka statement on February 16, was to restore an over-supplied market to balance by forcing the consumption of stockpiled material, which is exactly what’s happened.

Depending on market conditions, Iluka said, the mine would remain closed for between 18 to 24 months, though, given what seems to be a solid recovery in market conditions, Jacinth-Ambrosia could be back in production sooner than expected.

Morgan Stanley’s view of the market is based on reports that the US-based titanium dioxide pigment maker, Tronox, was seeking a price increase for zircon sold in China, and that Chinese titanium dioxide manufacturers were continuing to lift prices.

The changing market conditions were felt in the share price of New York-listed Tronox in late June when the stock jumped from US$3.92 to US$4.33 on June 28, and have continued marching higher over the past two weeks, rising by 10.7% last Friday to close at US$5.05.

Morgan Stanley said it was doubtful whether customers would accept a proposed zircon rise of US$60 a tonne with US$20/t a more likely increase.

“Even so, it is encouraging to see another supplier (Tronox) seek to lift prices, an indication that zircon prices may have indeed stabilised, countering early April’s US$100/t price cut,” Morgan Stanley said.

It’s a similar story in the titanium dioxide market where Chinese pigment producers are reported to have raised prices for the eighth time this year.

The improvement in market conditions correlates with commentary from major western chloride pigment producers, as outlined in Iluka’s May market briefing paper, which mentioned US$150/t to US$175/t price increases (around 6%).

Ord Minnett joined the cheer squad early this week with a sweeping upgrade of the titanium dioxide and zircon stocks it researches.

The 12-month share price target for Base received an astonishing upgrade from A$0.05 to A$0.24, and perhaps an even more astonishing decision to retain a ‘hold’ recommendation on the stock which has delivered a share-price performance to rival the best of the red hot gold and lithium sectors.

“Pigment producers have been increasing prices and sales in the latest quarter, which is likely to improve titanium dioxide feedstock consumption and provide confidence for re-stocking,” Ord Minnett said.

“We have already seen evidence of price rises in lower-grade feedstocks, with Base Resources passing on a US$15/t rise for the September quarter.”

The ball is now in Iluka’s court. Having mothballed Jacinth-Ambrosia earlier this year it appears to have engineered a zircon price rebound.

In theory, Iluka could reverse the situation just as quickly by re-starting mining operations at the mine but whether that would be in the interests of the company (and the rest of the industry) is a question management will be mulling.
Discordant mood music in Philippines

What’s in the future now a strident anti-mining president has been sworn in?

Richard Wachman

The Philippines has been a hard sell for years, bedevilled by regulatory uncertainty, high taxes, widespread anti-mining sentiment and worries about armed insurgency in parts of the country where resources are plentiful.

But it hasn’t looked this bad for a while. The election of new president Rodrigo Duterte and his appointment of mining-unfriendly resources minister, Regina Lopez, has left the sector reeling.

And that, despite the World Bank forecasting GDP growth this year at 6.4% for the wider economy.

Duterte has said he will review all mining licences on environmental grounds and has threatened to continue the policy of his predecessor by not issuing issue new ones. Local entities would be favoured, he said.

Lopez, meanwhile, has made known her improbable hostility to openpit mining, which she described as “horrible for the environment”. So any lingering hopes that regional bans on such operations could be lifted appear dashed.

Philippines-listed miners have seen their shares plummet, while the local chamber of mines has expressed something akin to despair.

And yet, it doesn’t have to be like this. The Philippines is well-endowed geologically. An Oxford Business School (OBS) report last year said the Philippines boasted some of the vastest precious metals reserves in the world, valued at around US$840 billion in 2010 prices, equivalent to 14 times the country’s external debt as of January 2014.

“Its unique geographic location along the confluence of the Eurasian and Philippine tectonic plates has resulted in a wealth of geologic formations, with the country widely believed to have the third-largest gold reserves in the world, the fourth-largest copper reserves and the fifth-largest nickel reserves,” said OBS.

So, surely Manila is missing a trick as mineral resources barely contributed 1.5% to GDP (United States Geological Survey 2013). This could easily be increased, said experts, if the government adopted a policy framework that encouraged foreign direct investment into a sector that could contribute hundreds of millions to government coffers in the short-term.

Despite the unappealing political backdrop, not everyone is downcast. Australian geologist and SE Asia mining veteran Bill Howell is chairman of London-listed ECR Minerals, which has a right to earn a 50% interest in the Danglay epithermal gold project in the north of the country. Believe it or not, Howell is a fan of the Philippines, though he acknowledges there are difficulties.

“The not so good news is the that the ongoing Aquino administration issued Executive Order 79, which has had the effect of closing a number of areas to mining and imposing a moratorium on the grant of new mineral agreements.

“Although it does not affect the grant or extension of exploration permits, it has cast a shadow of uncertainty.”

On the other hand: “The incoming president himself has said he would support responsible mining which, in his own words, ‘should just follow the Australian standard, just take care of the environment’.

“So I am optimistic overall that, done properly, there is a future for mining in the Philippines,” said Howell.

Eufracia Taylor, an Asia analyst at risk consultancy Verisk Maplecroft, said the Philippines had faced a backlash against mining following several accidents. For example, in 1996, a tunnel leak at the Canadian-owned Marcopper Mining Corp’s copper mine in Marinduque dumped 1.5 million m³ of tailings into surrounding waters, contaminating rivers.

Disasters like those have persuaded Manila to combat popular anti-mining sentiment by delegating the granting of mining rights to local authorities.

“So even if you get the go-ahead from national government, there are no assurances on a local level,” said Taylor. She said mining FDI had declined sharply over the last decade or so because of the risks involved.

Big names have pulled out. Glencore sold its controlling stake in the giant Tampakan copper-gold project in 2015. The US$6 billion venture was halted in 2010 by a ban on openpit mining in Mindanao, where communist and Islamic insurgencies are ongoing.

On the ground, ECR has moved ahead, announcing last month it had been invited by the Philippine Mines & Geosciences Bureau (MGB) to sign a renewed exploration permit, expected to be issued “in due course”.

Ian Holzberger, chairman of AIM-listed Metals Exploration was asked by Mining Journal about his experience of the regulatory environment.

“It takes time and that’s not uncommon in developing countries, in fact it’s not uncommon in developed countries. Early exploration into production in 10 years is not out of the norm,” he said.

But the company has needed 400 permits. Isn’t that rather a lot?

Replied Holzberger: “It doesn’t matter what jurisdiction you are working in, the regulations required of us, especially in our sector, have gone through the roof. Yes, 400 is a very large number of permits and more than we expected … but the more I look around, the more I realise that business is becoming hyper-regulated.”

On royalties and tax he said there was a tax-free period to allow Metals Exploration to recover its capital. After that, the government’s “normal” tax rate of 30% kicked in, as well as what the authorities call an “additional government share”, which nominally takes it to 50%, but after offsets was more like 36%.

Holzberger said: “Look, I’m not trying to be cute about it. The reason you are in these countries is because they are resource rich, but they come with a set of rules and conditions that you have got to be prepared to work around. It is their sandpit, we have chosen to go and play in their sandpit, either we learn to work in their sandpit or we shouldn’t be there.”

Another Philippines operator is Melbourne-based Oceana-Gold, stewarded by CEO Mick Wilkes.

The company owns the gold-copper Didipio mine on the island of Luzon. It hasn’t all been plain sailing with the group served with temporary injunctions in 2008 and the miner targeted by indigenous groups and...
environmental activists. But the latest news from OceanaGold has been rather good, reinforcing Holzberger’s view there are dividends to be reaped by those who stay the course.

Didipio exceeded its 2015 gold production guidance with 127,086 ounces produced. Wilkes said: “The operation is now operating on grid power and expects lower processing costs than in previous years. Development of the Didipio underground mine continues to progress.”

Philippine-owned and Manila-listed Atlas Consolidated Mining And Development, which operates the Toledo copper mine is one of the Philippines’ largest copper operations. According to a recent SEC filing it has been shipping its copper concentrate to smelters in China and South Korea.

But you can’t get away from the fact the Philippines is far from a cake walk.

Unsettling statistics aren’t hard to find. USGS said foreign and local investment in the Philippines had decreased significantly in the past several years to about $160 million in 2012 (the latest year for which information was available) from about $620 million in 2011 and about $950 million in 2010.

One positive has been the country’s existing nickel mines continue to ship out vast quantities of raw ore, primarily to China, where it is processed into nickel pig iron used in Chinese stainless steel plants.

A World Bank report said: “In 2013, the Philippines was tied with Indonesia as the largest nickel producer in the world, but when the latter banned exports of the metal in 2014 in an effort to promote local industry, it was a boon for other nickel producers such as the Philippines.”

While the outlook is uncertain, to say the least, there was one encouraging morsel from Duterte’s inauguration speech on July 1.

He called on officials to reduce rules that delayed the approval of government projects and applications to agencies. And he demanded transparency and fairness in government contracts.

Amid gloom and outright desperation, a hopeful sign to end on, although, as always, the proof will be in the pudding.

**ASIA**

**Vietnam could do with a wake-up call**

SE Asian country failing to tap into its geological potential

Richard Wachman

Vietnam is a development success story, but unfortunately the mining sector has not been swept up in the economic upswing.

According to the World Bank, economic reforms (launched in 1986) have transformed the country from one of the poorest in the world, with per capita income around US$100, to lower middle income status within a quarter of a century with per capita income of around $2,100 by the end of 2015. GDP was among the highest of the ASEAN states at 6.7% in 2015, according to the World Bank.

Hanoi recently announced the country would drop all further coal-fired power plant projects and move towards cleaner energy.

But for western groups Vietnam represents a hard slog. An Australian government briefing paper published in 2015 said the country had serious potential with more than 60 types of natural resources, including coal, bauxite, titanium, iron ore, chromite, oil and gas, copper, gold, rare earth, and tungsten.

But the bad news is that despite the broad endowment, current annual production is largely focused on only a few core commodities (coal and oil).

Further exploitation and downstream industry development is required in order for Vietnam to improve its energy security and maximise commercial exploitation,” said the paper.

Bill Howell, CEO of Vietnam-focused Triple Plate Junction has been trying to develop the Pu Sam Cap gold mine for many years. He is also head of the mining working group at Vietnam Business Forum. He told Mining Journal: “The geological endowment is not really known, because there has been virtually no modern systematic exploration. “The challenge is to develop mining legislation that encourages foreign investment, utilising the world’s best technology and practices to find the larger, deeper deposits. That’s not the case at the moment, with some of the highest royalty rates in the world [gold, 17%] and a cumbersome mineral law.”

A spokesman for Verisk Maplecroft said investment impediments in extractive industries included “a lack of legal certainty, quite frequent changes in export taxes and royalties. The result is a lack of transparency in the regulatory regime.”

As a result, there are no major foreign mining companies coming to Vietnam at present, and there are only three mines that are being operated to international standards and managed by internationally-experienced personnel (mostly Australian). The most prominent is Masan Resources, a Vietnamese publicly-listed company producing tungsten at Nui Phao that accounts for 30% of the total world supply. Masan said it was “one of world’s largest identified tungsten deposits outside China, with mining reserves of 66 million tonnes of ore with an average WO3 (tungsten trioxide) grade of 0.21%.

Nui Phao is also among the world’s largest producers of acid-grade fluor spar and bismuth.

The other two notable operations involve nickel sulphides at Ban Phuc (TSX-listed Asian Mineral Resources); and gold at Phuoc Son (Besra Gold).

Most of Vietnam’s mining industry is dominated by state-owned companies using, in many cases, “inefficient, wasteful and environmentally damaging mining methods”, said Howell.

Howell said: “Growth is largely driven by FDI, but in the minerals sector there seems to be resistance, possibly because of entrenched state and provincial control of minerals, and to some extent there may be a lingering but unrealistic perception that Vietnam’s mineral wealth should be kept for future generations.”
It is straightforward to decide which two countries lead world mining: Canada and Australia.

Other countries compete in various industry sub-sectors: London is arguably the mining finance centre of the world; South Africa has exceptional mining pedigree; the DRC apparently has more minerals in the ground than any other country; the US is a METS sector leader; and Finland could claim to have the leading risk and legislative framework.

But none of these countries, or any other, is able to offer the complete suite of mining industry components on anything like the scale at which they are offered in Australia and Canada.

What is more difficult to do is separate which of those two countries is better, that is: which country can claim to be the best mining nation in the world?

Both have a proud mining history full of mining booms and big characters, be they miners themselves or promoters and financiers.

Both are naturally disposed to extractive industries with a vast mineral-rich landmass, much of which suffers extreme environmental conditions – Australia’s deserts versus Canada’s Arctic – ensuring a limited populous that might object to digging great big holes.

Both have dynamic and voluminous equity markets providing financial fuel for the industry from the micro-cap through to the majors.

Both offer established and proven mining frameworks enshrined in stable and workable mining codes and supporting legislation. They are also culturally hospitable first-world addresses with abundant and appropriate infrastructure, which keeps risk at a minimum.

And both have subsequently built thriving supporting service industries and technology hubs that have then spread their wings to become international firms.

In each of these key areas – history/pedigree, geology/production, finance/regulation, legislation/risk, and services/technology – Mining Journal has made a considered judgement, where appropriate farming in external expertise.

Over the next six pages, we will determine who is the industry’s leading mining nation.

### Australia vs Canada: annual production

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* Ranking in world top 10 country producers
Most recent year in which comparable numbers are available (mostly 2015)
Boom on boom

The respective mining pedigrees of Australia and Canada can be gauged by their booms

Michael Coulson

Mining booms usually take place against a favourable background for metal prices and demand. However, one of Canada’s more recent booms, the diamond boom, often referred to as the Klondike rush, mining empires out of the discovery of quartz, and Timmins in central Ontario, was a major mining discovery in the late 19th century. The Klondike rush, mining today is minimal. The target for many mining booms is gold and silver, and Canada saw a number of major gold discoveries in the 20th century, starting with Kirkland Lake and Timmins in central Ontario, where gold mining continues today. In the 1930s, we saw the Red Lake discoveries in the area, and in the 1980s the Helim Augustus discoveries, which became the Ekati diamond mine developed by BHP Billiton and Rio Tinto’s Diavik mine. During the boom’s peak (1992-95), huge sums of speculative money were raised in Canada and Europe but, as so often happens, most of it found nothing economic.

Though not geographically a Canadian mining event, around the same time Canadian explorer, Bre-X, was involved in what initially appeared to be a giant gold discovery in Indonesia, sucking in huge sums of speculative North American money. In the end, the ‘discovery’ proved to be a fraud but during the run Bre-X shares rose by 3,300% before collapsing to zero.

For discoveries which became the Ekati diamond mine and Timmins, we have the nickel boom, the seeds of that boom were sown when Western Mining discovered nickel near the nickel basin in 1883 and George Hannen in Kalgoorlie, Thomas Armstrong in the Pilbara iron ore discoveries, who was both prospector and consolidator. The town of Broken Hill grew hugely as is the wont with mining boom towns, and, like with most booms, it was often the service providers rather than the prospectors who made the real money.

In the late 19th century, the town’s population was around 20,000; today, it is a little smaller than that but remains a mining community more than a century after the first discovery – in some contrast to Dawson City.

Another of Australia’s great mineral provinces, Mount Isa in Queensland’s outback, was discovered in the 1920s but took huge amounts of capital to open up and did not attract a large rush of prospectors as a classic boom would have done. Nonetheless, it remains a major producer of copper and other base metals to this day.

Personalities Mining booms typically throw up key figures in the form of the early prospectors, such as Paddy Hannen in Kalgoorlie, Thomas Froud in Ontario’s Sudbury nickel basin in 1883 and George Carmack in the Klondike.

The real personalities, however, were the consolidators who followed and built corporate mining empires out of the discoveries.

Verdict

As to which of Australia or Canada in terms of mining booms was the most potent location, it is difficult to separate the two, and probably unknowable if one is a visitor to both countries. That said, Australia could be said to tip the scales based on the longevity of its major mining success stories.

What one can say is that both countries have given us and the market considerable excitement over the past 100 years or so. However, arguably, the greatest mining boom of them all didn’t happen in Canada or Australia but in South Africa on the Witwatersrand, where gold was first found in 1874.

The goldfields of the Witwatersrand are still alive today although peak production was reached in 1970, 100 years after the first discovery, and for decades South Africa was the largest source of gold in the world.
Who rocks the hardest?

Chris Cann

Canada

Canadian Shield: The Canadian Shield is a big chunk of geology, covering half of Canada and acting as the leading source of just about every mineral the country produces.

The Abitibi Belt is the largest gold belt extending across northern Ontario and Quebec, which major mining districts Timmins, Kirkland Lake, Val d’Or, Doyon-Bousquet-LaRonde, Rouyana-Noranda, Larder Lake and Malartic call home.

The largest nickel-copper-mineral district is the famous Sudbury Basin. The deposit was formed by the impact of a meteorite that hit Earth 1.85 billion years ago, creating a layered igneous complex rich in mainly mafic elements such as nickel, chrome and PGMs, along with base metals and gold.

The Geological Survey of Canada first took a wander around Sudbury in the 1850s, confirming “the presence of an immense mass of magnetic trap”. Other mafic districts include the Thompson Belt and Voisey’s Bay, one of Robert Friedland’s most publicised success stories.

Uranium deposits are mainly found in the fluvial siliciclastic Athabasca basin of Saskatchewan and Alberta, where the vein-hosted mineralisation has underpinned some of the highest-grade uranium mines in the world, at around 20% U3O8.

Kimberlite deposits were discovered in the Slave Province of the Northwest Territories in the 1980s and Canada became a major diamond producer in 1998, with several mines including Ekati, Diavik, Snap Lake and Victor.

Interior Platform: The Interior Platform saddles Ontario and Saskatchewan, the latter of which in turn hosts the world’s premier potash-producing basin with 32% of global exports. The evaporite deposits are the result of a major barrier that created higher salinity levels to its east, subsequently precipitating calcium carbonate, halite, gypsum, and potash in evaporative conditions.

The Cordillera: The Cordillera and the adjacent Western Canada Sedimentary Basin form a region running the length of British Columbia and Yukon. This area hosts most of Canada’s copper, gold and molybdenum porphyry deposits along the west coast. It also hosts a proliferation of volcanogenic massive sulphide (VMS) deposits such as the 300 million tonne Windy Craggy occurrence – Canada has some 350 of the 1,100 known VMS deposits worldwide.

Many of those 350 deposits are found on the other side of the country within the Appalachian Orogen region and, specifically, the Bathurst Mining Camp in New Brunswick.

Australia

WA greenstone belts: The Yilgarn Craton dominates the geology of Western Australia and includes an incredible 30% of the world’s economically demonstrably recoverable reserves of gold. These are hosted within several greenstone belts, expressed as deformed and metamorphosed linear belts of mafic, ultramafic and felsic volcanics, intercalated with sedimentary sequences.

They host small- to medium-sized structurally controlled lodes, shears and quartz veins best seen in the deposits of Kalgoorlie, Goldfields, Mount Magnet, Boddington, Laverton and Wiluna.

Coal in the east: Australia’s great coal assets are found on the east coast across New South Wales and Queensland, with the north-south divide dictating the likelihood of digging coking (QLD) or thermal (NSW) coal, respectively.

Historically, the Sydney Basin in NSW has been the most important with its consistent outcrop, near-surface nature, and access to ports at Wollongong and Newcastle making it efficient to develop. More recently, the mantle of Australia’s chief producing region has been stolen by the Bowen Basin in QLD, which is actually within the same larger structure that includes the Sydney Basin.

Unlike most Northern Hemisphere coal, which gives the Carboniferous period its name, the coal in Australia’s east coast stronghold is of Permian age.

The Pilbara: It is hardly a geological conquest, given its discovery was made by an agriculturalist looking out of an aircraft window, but the Pilbara iron ore region in WA is arguably the most important mineral occurrence in Australia. The area from a geographical perspective covers more than 500,000km², with about 25 major mining operations ongoing.

The region is the playground of mining majors Rio Tinto (13 mines) and BHP Billiton (six mines), along with the self-proclaimed ‘New Force in Iron Ore’, Fortescue Metals Group (two mines). The region is home to some 24 billion tonnes in resources that, at current mining rates, should see off another half-century of operations.

Like most commercial iron deposits worldwide, the Pilbara region is underpinned by banded iron formations deposited 1.9-2.4 billion years ago when oceanic cyanobacteria introduced free oxygen to the Earth.

Olympic Dam: The huge Olympic Dam discovery was by most reports an educated fluke, if you will, but it remains one of the richest and probably the world’s most diverse major deposit. It is something known as an iron-oxide-copper-gold deposit, which generally also have uranium and are described as metamorphic expressions of large crustal-scale alteration events driven by intrusive activity.

Olympic Dam last year produced some 125,000t of copper cathode, more than 100,000 ounces of gold, 725,000oz of silver and 3,100t of uranium oxide. An expansion project mooted as the world went into the economic crisis almost 10 years ago proposed increasing the mining rate from 12Mtpa to 60Mtpa.

Verdict

In common, both countries enjoy the geographical and geographical advantage of wide, largely inhabitable but mineral-rich open spaces. This is the geographical advantage of wide, largely inhabitable but mineral-rich open spaces. This is the geographical advantage of wide, largely inhabitable but mineral-rich open spaces. This is the geographical advantage of wide, largely inhabitable but mineral-rich open spaces. This is the geographical advantage of wide, largely inhabitable but mineral-rich open spaces. This is the geographical advantage of wide, largely inhabitable but mineral-rich open spaces.

Separating them is more of a challenge. The key differentiators are the presence or absence of some minerals and the general mineral abundance. While Canada can lay claim to PGM production and being the world’s largest potash producer, in the production of global quantities of key base and bulk metals, it is regularly eclipsed by its Southern Hemisphere counterpart.

For pure weight of production numbers and with more exceptional world class operations, it is Australia for the win with 9, easily accounting for Canada with 7.■

Scorecard

Australia: 9
Canada: 7
Building on solid foundations

The policy and law that underwrites investment

Daniel Gleeson

There is a reason these countries have ended up attracting the most mining and exploration dollars in the industry. You cannot move a deposit, but you can make it easy to develop and operate a mine through investor-friendly practices. Canada and Australia know this all too well.

Risk

The two nations are going through an evolution right now; the former is repositioning for growth in sectors outside mining and resources and the latter moving from conservative to liberal rule. These changes have affected investment risk, according to analysts from risk consultancy Control Risks.

“While this doesn’t translate into the government discouraging continued business growth in the mining and resources sector (it remains an important pillar of the Australian economy), it does indicate shifting priorities for economic management that can, and has, resulted in some regulatory uncertainty for foreign investors,” Lauren O’Neil of Control Risks said.

Increased delays in environmental approvals, a potential re-introduction of an emissions trading scheme and the likely introduction of additional environmental approval requirements for major mining projects are just some of the issues affecting investment in Australia.

Canada’s government, meanwhile, has mooted revisions to environmental approvals and a stronger voice for first nations in mineral developments adding complexity to the investment climate, according to Control Risks’ Michael Moran.

“One of the uncertainties facing extractive firms in Canada today is the extent to which the liberal victory in the 2015 elections will impose new regulations,” Moran said. Royalty and licence fee increases and the cancellation of a number of large pipeline projects criticised by environmental groups have all been spoken of by members of parliament, spooking potential investors.

Adding these up, Australia pips its rival here, offering more certainty over key investment frameworks than Canada.

Policy

The Fraser Institute’s policy perception index (PPI), a composite measuring the effects of government policy on attitudes toward exploration investment, put Canada’s 12 jurisdictions ahead of Australia’s seven regions on a combined basis, but the individual states, territories and provinces all carried different scores in the Canada-based research company’s 2015 survey.

The PPI gave potash and uranium-rich Saskatchewan (95.10/100) the lead in 2015, just ahead of oil heavyweight Alberta (92.24), as the jurisdictions out-paced the top-performing Australian jurisdiction and iron ore hub of Western Australia (91.53).

The worst PPI performers were the Northwest Territories (64.46) in Canada and New South Wales (NSW) (69.12) in Australia, which despite hosting some world-class diamond and coal mines, let the sides down.

Legislation

One would assume legislation and policy scores would be one and the same in Canada and Australia, but mining code expert MineHutte thinks otherwise. Still, the London-based firm, like the Fraser Institute, sided with Canada in this battle.

“Generally speaking, the Canadian legislation offers far greater security for tenure to the miner, less room for government interference or discretion to enter into the legislation and as such greater certainty and lower risk,” Emma Beatty of MineHutte said.

South Australia, home to the massive Olympic Dam mine, topped MineHutte’s Australia rankings with 68 points out of 100 with its mining code considered a ‘model’ piece of legislation. With MineHutte only ascribing weighting for four jurisdictions in Canada (Ontario, British Columbia, Saskatchewan and Quebec), it was harder to get the complete picture, but the worst province – Quebec (67) – was in fact only one point behind South Australia.

Ontario, British Columbia and Saskatchewan all rank in MineHutte’s global top five, receiving scores of more than 80 points apiece and offering the kind of ‘certainty’ investors crave before making big investment decisions.

While MineHutte did not assess the NWT’s legislation, it was critical of NSW and Victoria, which scored below 50 points and led to an “uninvestable” classification by the London-based firm’s reckoning. Of NSW (44), it said: “Scoring inadequate ratings in many of the categories considered, the level of discretion within the NSW regime is highly problematic.”

Quebec’s mining legislation, meanwhile, was held back by the discretion of the minister to impose or alter conditions to a mineral lease; provisions “more likely to be found in Africa than the Americas.”

These two countries cover more than 17 million km² of land so it is no surprise individual jurisdictions’ reception to mining and exploration is vastly different. That said, Canada has the edge over its smaller (by land mass) rival in this equation, with forward thinking mining codes that are easier to follow and bring certainty to a very uncertain sector.
Show me the money

And the country with the most dollars on offer is...

John Robertson

Canadian and Australian companies face very similar regulatory and financial conditions, with one important exception: proximity to US investors.

A selection of 15 US actively managed precious metal and mining mutual funds with assets of US$10.3 billion has a 74% weighting of US companies at early stages of development, compared with 8% weighting for Australian listed companies.

Australian companies have potential access to a larger pool of domestic household savings – currently growing at an annual rate of A$85 billion (US$64 billion), or 3% of GDP, compared with C$44 billion (US$34 billion), or 2.5% of GDP, in Canada.

The expansion of compulsory superannuation linked to wages and salaries has given Australian companies a potential funding edge over their Canadian counterparts.

In both Canada and Australia, restrictions on financial advisers are reducing the finance flow to earlier-stage mining companies, which have historically relied on individuals for their funding.

Having to work from strictly controlled approved product lists prevents financial advisers from proactively identifying companies at early stages of development for recommendation to clients. In practice, these

companies, in both Australia and Canada, are confined to a diminishing share of investible funds.

Listing location has not affected investment returns materially. Over the course of the cycle from January 2011 to December 2015, the median annualised return from the universe of Australian-listed resource companies was -37.8% with a 22.1% standard deviation compared with -37.2% and 23.1%, respectively, for Canadian-listed resource companies.

The flowthrough share system is the most often cited difference in funding available to companies in the two countries. The Canadian flowthrough tax regime can offer an expenditure write-off for individual investors of as much as 133%. While Australian companies would welcome a similar initiative, the short-term tax benefit potentially distorts the flow of funds without necessarily creating a corresponding commitment to the funding of longer-term industry developments.

In Australia, companies engaged directly in exploration may receive tax rebates designed to stimulate research and development spending and specific territories and provinces in Canada offer similar incentives.

Liberalised share purchase rules for existing shareholders and reduced documentation requirements for rights issues have eased restrictions on fund raising by Australian companies but recently poor historical returns have limited interest by investors eligible to participate in these offerings.

Crowdfunding is an emerging fund raising mechanism with potential to widen access to the global pool of investible funds.

Regulations are evolving in both Canada and Australia where two existing platforms are able to match companies with investors. The world’s first equity crowdfunding platform was established in Australia.

Canada and Australia have reporting frameworks designed to add rigour to the way in which companies describe mineral exploration outcomes and project development potential.

The Canadian 43-101 reporting regime was intended as a securities standard whereas Australia’s JORC Code is an industry standard adopted by market operators and regulators. As a consequence, the information contained in a 43-101 report for a comparable deposit or project is usually more extensive.

Both codes rely heavily on the skill and experience of technically qualified individuals responsible for the content of reports. The Canadian report is widely seen as more complicated and time-consuming to prepare than Australia’s JORC requirements and a costlier burden for cash-strapped companies.

Under the Australian continuous disclosure rules, all material information must be disclosed as soon as it is available to the company. The Australian approach delivers less more quickly, while Canada’s superior detail comes with a delay.

Australian investors must usually rely on a company’s summary of a feasibility study or economic evaluation, where a 43-101 report is released in its entirety.

Regulators in both countries are concerned with eliminating misstatement of resource potential or insufficient backing for statements about future production through standardised reporting but a 43-101 report typically contains more emphasis on project economics. There is less emphasis on policing valuation methods and descriptions of investment returns in Australia.

For even a modestly sized project, commentary on environmental and social aspects of a project in a 43-101 report may go to several pages. Under JORC reporting, on the other hand, a few words may be all that is presented in practice (although the intent of the drafters of the code was probably for something more extensive) without any evident policing of standards by regulators.

While listing in Australia is generally more expensive than in Canada for an early-stage mining company, in both places prices are pitched to attract listings. Neither jurisdiction has taken action to remove companies which no longer have sufficient funds to conduct exploration activities or undertake developments which had been the basis for their listing.

Every thrust has a counter in this bout, but 43-101, proximity to US investors and a flow-through option gives Canada a points advantage.

*John Robertson is the chief investment strategist for PortfolioDirect, an Australia-based equity research and resource stock rating group. He has worked as a policy economist, business strategist and investment professional for nearly 30 years, after starting his career as a federal treasury economist in Canberra, Australia.

**At listing, issuer is required to pay the listing fees, plus pro-rata annual fees, so a new listing for a $10m capitalised company could be as high as A$85,000**

Source: Jennifer Boyle, Corporate Finance Velocity Trade Ltd

Listings fees

For a $10m capitalised company

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For a $100m capitalised company

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For a $1bn capitalised company

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**Basic fees

Source: Jennifer Boyle, Corporate Finance Velocity Trade Ltd

Scorecard

Australia: 7
Canada: 9

Accumulative

Australia: 33
Canada: 33
Vital Aussie METS middle ground

Richard Roberts

Australia has a more youthful, vibrant and aggressively expansionist mining equipment, technology and services (METS) sector than Canada, and leading small-to-mid-sized companies are currently back in offshore growth mode at a time when their Canadian peers have retreated to traditional markets close to home.

Australia showed during the 2003-12 mining boom it was the world’s deepest METS equity market, with consulting, drilling, mining, engineering, manufacturing and technology company listings outpacing those in Vancouver and Toronto by about five-to-one.

While North America has the industry’s largest mining equipment makers, miners’ engineer- ing and construction contractors, and some of the world’s top mining ICT firms, ASX-listed CMMC, Orica and Baot Longyear (US-headquartered) are the world’s largest surface mining contractor, explosives supplier and drilling contractor, respectively.

Canada has the world’s biggest underground mining contractor in Redpath, but Australia’s Byrnecut Mining and Barminco are growing more aggressively internationally. ASX-listed small-cap underground diamond driller Swick Mining Services has moved into North America and has its sights on growth in other parts of the world, but similar-sized Canadian companies have contracted, literally, and pulled back from markets such as Australia, Africa and Asia. Australia’s Ausdrill is still eyeing international markets, despite its difficulties at home over the past three years.

But it is Australia’s legion of small-to-mid-sized METS companies, including many with significant offshore revenues, that define and differentiate the country’s METS sector. They include niche-market leaders in technology and services fields, and particularly in areas that will be at the forefront of global mining industry progress in future such as safety, remote control, semi-automation and automation, simulator training, software, big data analytics and exploration data management, IT-OT integration, supply chain modelling and optimisation, insitu mining and deep exploration.

Australia has also been the world’s leading nursery for new METS firms over the past two decades, reflected in the high rate of M&A involving Australian firms before and during the recent boom, compared with activity involving companies from other parts of the world. Australia has been the primary target for older, bigger US, UK, Scandina- vian, Japanese, Chinese and South African corporates.

Mining technology and innovation hubs in Queensland, South Australia and Western Australia are proving to be effective incubators for the next generation of METS start-ups.

A senior Canadian mining executive said Sudbury had been an important mining innovation hub for the country’s mining sector in the past.

“When INCO was there, they had a large research department and today there are a number of companies working on ways to innovate,” he said.

But Toronto is the country’s major mining financial centre and shares top billing with Vancouver as an address for most of Canada’s vast army of junior explorers and developers. It is seen as an important future mining innovation and METS financial centre.

“Toronto has been known more as a mining finance centre than as a research centre,” the mining executive said.

“An innovation centre needs new ideas, [and] firms that adopt quickly, support and finance new technologies. I don’t see that happening here yet, but the desire exists.”

Canadian METS entrepreneur and president of tech firm Minal- yxix, David Perez, said it was vital in the meantime – to Canada’s future mining industry competitiveness – that Sudbury maintained its position as one of the world’s main mining technology and innovation hubs.

“Sudbury has a number of globally recognised operating mines within a relatively small geographic radius, and has been a centre for hard rock mining for more than 100 years,” he said.

“Over the course of this history the region has developed a very talented and engaged workforce. A number of strong academic and research institutions have also located in Sudbury with a heavy focus on mining, including Laurentian University, Cambrian College, College Boréal, CEMI, CAMIRO, MIRAR- CO, etc. Sudbury is also home to a non-profit innovation centre named NORCAT which has an operating mine that is available to companies to design, develop, test and showcase new technologies in an operating mine environment.

Within the region, there are approximately 275 local mining supply and services companies that contribute in the area of US$4 billion to the local economy and provides roughly 13,500 jobs (8% of city employment).

“There is an organisation named SAWISSA (Sudbury Area Mining Supply and Service Association) which aims to foster the Sudbury Mining Technology cluster. This organisation as well as other networking events and opportunities within the city help to promote synergies between the many enterprises in the area.

“Some examples of this may be hardware companies partnering with software companies to provide new products, or for start-ups to link with companies that have international sales and distribution channels to globally promote their products.

“All of these factors contribute to Sudbury being an internationally recognised and relied upon mining technology cluster.

“I think this is important in order to ensure the future sustainability of mining. The collaborative effects that clusters have on product development will help to ensure that there is a vibrant innovative community that is continually advancing mining technology and making it safer and more productive.”

International consulting firms, including North American groups, comprise most of the world’s biggest mining engineering and technical consulting groups, but again it is Australia’s SMEs that are growing most aggressively and distinguishing the Australian and Cana- dian consulting sectors.

“TIt think there are significant differences,” said CSA Global managing director Jeff El- liott. The company is in the process of merging with a Canadian firm – effectively taking it over.

“In Australia, the mid-tier consulting sector around geology, resource, mining and environmental, geotech, etc, is all much more mid-sized businesses – they’re SMEs rather than really large ones.

“In Canada, there is this huge gap between the majors and the independents. In the middle ground, there is RPA and a couple of others – not much.

“SWe see that middle market in Canada and the Americas region being wide open and that is presenting us with a lot of op- portunities.”

Scorecard

Australia: 9
Canada: 7

Accumulative

Australia: 42
Canada: 40
The verdict

After six rounds of toe-to-toe combat, we reach a decision on points...
**GOLD**

**As good as it gets**

The only thing better than gold at the moment is gold in Australia

Chris Cann

There’s never been a better time to be a gold miner in Australia or, for that matter, be building a gold project or just exploring.

Margins are at historic highs and share price valuations are reflecting genuine market appreciation as well as a lack of alternatives, with the exception of lithium, and more recently zinc.

More than 100 ASX-listed gold stocks – the majority of which are Australia-focused – saw share price growth over the first six months of the year, with a remarkable 36 companies enjoying returns greater than 100%.

Almost half of those saw gains of more than 200%.

Six companies had returned more than 300% on their year-opening share price, two companies finished the first half with plus-400% returns and another two were basking in share price appreciation of more than 500%.

These performances are in large part a factor of the gold price. Since the start of the year, gold is up more than 25% from US$1,082.25 per ounce to US$1,354.25/oz on growing financial uncertainty – first on the slowing Chinese economy and then on the back of the year and beyond, with the exception of lithium, and more recently zinc.

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The next major fiscal spectre on the horizon, as if we needed most recently on Britain actually voting to leave the European Union, and its drag on global GDP, then on the possibility of Britain voting to leave the European Union, and most recently on Britain actually voting to leave the EU.

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The current crop of CEOs is more about capital discipline and operating-cost focus to deliver the right outcome – the fact they’ve now got this tailwind of high gold prices makes it a double-whammy.

The managers of gold producers today are the best there has been. They’re dog-hungry for value. It looks to me like there’s a new interest in these people and their focus on value and shareholder interest. That’s something that has happened in the past four or five years and that’s different in gold.

“It’s great for investors.”

Finlayson, who is already part of this crop of company chiefs, said one thing, in particular, gold companies had been keen to avoid in the current boom was unnecessarily tapping equity markets.

This restraint had kept existing shareholders happy and forced institutions to invest in developing gold companies and explorers in order to gain Australian gold exposure, enhancing the overall health of the sector.

This attitude is unlikely to change any time soon, with Finlayson dismissing the idea that the period of conservative cost cutting was at an end and investors would soon be looking for growth through M&A.

“Expansion for expansion’s sake is very much what got us into trouble last time round and so people are very wary of that,” he said. “Exploration and organic growth have been very successful in the past few years and I think that will continue ahead of aggressive M&A.”

Finlayson said the balance sheet was the first priority, as those with debt at- tempted to purge themselves of it and those debt-free looked to “build a stable balance sheet”.

Those with stable balance sheets are then focusing on the dividend pay-out and, once that was under control, the final priority was “to organise spend on drilling and development”.

“There are some companies with the Hollywood problem of the balance sheet growing too big, too quickly, but I think you’ll see special dividends before poorly thought-through M&A.”

Finlayson was careful to point out that value-accretive M&A would always be considered but said companies in Australia were focused inwards.

With earnings going through the roof, why wouldn’t they be?
Aussie gold stocks on the move

The top-five rising yellow metal equities on the ASX for H1 2016

Chris Cann

Gold has been a leading light for a resources sector during what has been something of a recovery over the first half of the year, with investors who piled into a handful of top-performing companies early in the New Year seeing sensational gains for the first six months.

- **Middle Island Resources**: ▲ 539%. MIR had a subdued start to the year but shot into orbit in early May when its agreement to buy the Sandstone gold operation in Western Australia for A$2.5 million (US$1.9 million) along with a $400,000 raising – shares soared northward by 300% over three days to $0.04.

  The company subsequently said it would raise up to $5.05 million through a rights issue and conditional placement to fund a feasibility study and further exploration. The rights issue for a targeted $1.45 million closed in late June, netting almost $1.85 million and helping the shares higher still – MIR had put on another 50% in early July.

  The company plans to fast-track refurbishment of the operation, which has some 480,000 ounces in resources, “significant brownfield exploration targets”, and a 600,000 tonne per annum processing plant on care and maintenance.

- **Barra Resources**: ▲ 516%. We’ve maintained Barra on this list given its exposure to the rising gold price through its Phillips Find and Burbanks gold exploration properties in Western Australia. However, one can’t help feel it is its plan to develop the Mt Thirsty nickel-cobalt property (50% Barra; 50% Conico), also in Western Australia, has had more to do with the equity’s meteoric ascent as investors tune in to the demand story for lithium-ion batteries, which are hungry for not just lithium but cobalt and nickel, too.

  - **Resolute Mining**: ▲ 471%. Resolute’s 2016 performance has followed the gold price ascent, while the gold miner’s progress across its Africa and Australia portfolio has continued to provide the leverage for which gold stocks are typically bought.

    The company put on 228% over the first five months of the year then, as June approached, kicked strongly to add another 70% in a month as it announced early debt redemptions, a restart at the Ravenswood openpit (Australia), and the completion of the Bibiani feasibility study (Ghana). The definitive feasibility study at Syama ( Mali) came in on July 1.

- **Gascoyne Resources**: ▲ 423%. The improvement for the six months was impressive but the peak performance for Gascoyne actually came in early May when it reached $0.69 on the back of two key milestones. First, a prefeasibility study was published for its 80%-owned Daigaranga project in Western Australia that outlined a 100,000oz per annum operation with two openpits feeding a 2.5 million tonne per annum plant for an initial six years. Then, Gascoyne completed a heavily oversubscribed $15 million placement to fund a full feasibility study and continue “aggressive” exploration of its broader Western Australian gold portfolio.

- **Exterra Resources & Alicanto Minerals**: ▲ 362%: Alicanto’s progress started has been pegged to Barrick Gold’s decision to proceed with a plus-$13 million earn-in agreement for 65% of the Arakaka project in Guyana; while Exterra signed an innovative profit-sharing agreement with contractor Pybar over its Second Fortune development in Western Australia. The latter has also picked up some lithium ground, which has helped.

For the full top 100 list, please visit: www.mining-journal.com

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**Top 50 ASX gold movers (to June 30)**

<table>
<thead>
<tr>
<th>Ticker</th>
<th>Company</th>
<th>% rise</th>
<th>Market cap</th>
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<tbody>
<tr>
<td>MDI</td>
<td>MIDDLE ISLAND RESOURCES</td>
<td>539%</td>
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<td>GASCOYNE RESOURCES</td>
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<tr>
<td>EXC</td>
<td>EXTERRA RESOURCES</td>
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<td>AQI</td>
<td>ALCANTO MINERALS</td>
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<tr>
<td>NMM</td>
<td>NOBLE METALS</td>
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<tr>
<td>PGO</td>
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<td>ST BARBRA</td>
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<td>WGO</td>
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<td>DMG</td>
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<td>NEWCREST MINING</td>
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<td>13,782,479,872</td>
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<tr>
<td>AHK</td>
<td>ARK MINES</td>
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<td>KAI</td>
<td>KAIROS MINERALS</td>
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<td>GOLD ROAD RESOURCES</td>
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<td>MLU</td>
<td>MEDUSA MINING</td>
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<td>PERSEUS MINING</td>
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<td>CHN</td>
<td>CHALICE GOLD MINES</td>
<td>76%</td>
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Ticker Company % rise Market cap

For the full top 100 list, please visit: www.mining-journal.com

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Evolution assuages production fears

Company reveals plus-800,000 ounce profile out to FY2019

Gareth Tredway

Evolution Mining has filled in the gaps on how it plans to maintain the 800,000 ounce per annum production level that it will soon report for the year to end-June, 2016.

The company has transformed itself since last April when billionaire Naguib Sawiris’s gold vehicle, La Mancha, placed its Australian Frog’s Leg mine into Evolution for a 31% interest in that company.

La Mancha soon proved to be a valuable investor by injecting A$112 million (US$79 million) to maintain its 31% stake in Evolution when the company acquired the Cowal gold mine from Barrick Gold. Cowal, with some 250,000oz of annual production, is now a cornerstone mining asset within the seven-mine, Australia-focused group.

And so, since May 2010, when a handful of ex-Sino Gold employees took on a new challenge, Evolution has forged a major growth path into and through the downturn and is about to report a quarterly production record of 213,000oz for the three months to end-June, and an 800,000oz total for the full financial year.

This annual production level is now expected to be maintained, and even exceeded through the 2019 financial year, plus costs are expected to decrease.

“Our teams have worked exceptionally hard at integrating our two new mines and improving efficiencies at all of our operations,” said executive chairman Jake Klein on the back of the positive guidance.

The company’s all-in sustaining costs are expected to come in at $1,000/oz for the year to end-June, while a range of $945-1,045/oz has been provided for the coming year. They are then expected to track even lower towards $930-990/oz in the following year and then $910-980/oz in the year after that.

Following the news, an RPC research note upgraded the stock from ‘Underperform’ to ‘Sector Perform’ while increasing the share price target to $2.60 from $1.90 previously.

“Evolution’s medium-term guidance of circa 800,000oz represents a significant uplift against our previous numbers, and removes a key plank of our previously cautious view (declining production),” said analyst Paul Hissey in the note.

He added: “As we incorporate the details surrounding the long-term production, cost and capex plans at EVN’s assets, our NAV and cash flow estimates increase materially.”

Given a current Australian-dollar gold price of plus-$1,800/oz, the potential margins are extremely attractive.

This is already reflected in the net mine cash flow estimate for the full year of $405 million, compared with just $138 million in the prior year.

At the end of June the company had outstanding debt of $285 million, down from $322 million at the end of September 2015.

Thanks to these strong margins, RPC’s cash-flow projections predict that the company would be debt-free by March 2017.

Evolution announced that reserves at Cowal had increased by 976,000oz in an ASX announcement, Finance director Paul Layson said: “We have now met or exceeded guidance for four straight financial years. Meeting our undertakings to the market is at the core of our business and we look forward to delivering further growth as outlined in our five-year plan.”

Key takeaways of the statement were record full-year production of 188,656oz (Carosue Dam 157,191oz; Thunderbox 31,465oz), at the upper end of the 175,000-195,000oz guidance range.

Gold sales for the final quarter of the company’s financial year were 67,693oz at an average sale price of $1,649/oz for total revenue of $112 million (24,555oz delivered into the hedge book at an average price of $1,518/oz). Commercial production was declared at Thunderbox in May after a capital investment of $63 million. The ongoing ramp-up will double group gold production to about 300,000ozpa at a forecast all-in sustaining cost of around $1,075/oz.

Like other gold producers, Saracen has reaped the rewards of a weaker Australian dollar and lower energy and labour costs.

Above all, the company has grown at a time of renewed interest in Aussie gold companies as the spot price has risen and stabilised, lifting sentiment.

Saracen unveiled record production in the financial year to end-June along with confirmation that the balance sheet is not only debt-free, but carries net cash and bullion to the tune of A$40 million (US$30 million).

The financials demonstrate the success of Saracen’s new stock-in-trade strategy of funding project development from internal cash flow. And the production numbers offer reassurance that the company under Raleigh Finlayson is as good as its word.

In an ASX announcement, Finlayson said: “We have now met or exceeded guidance for four

Key figure

A$40 million

Cash in the Saracen account at end-June

GOLD

Saracen smashes production record

Staff reporter

Australian gold producer Saracen Mineral Holdings is having quite a year with shares up more than 130% in the past six months as Thunderbox ramps up and the ounces keep flowing from Carosue Dam.

But it seems the market has got used to the good news. The stock price barely moved after

In April, Evolution announced that reserves at Cowal had increased by 976,000oz
Eureka moment at Zuleika

Torian Resources (ASX:TNR) is applying its exploration nous to fast-track development at its growing asset base in Western Australia’s highly prospective Goldfields Region. Ngaire McDiarmid reports

GOLD-FOCUSED EXPLORER
Torian Resources is cashed up with a busy programme ahead to progress its promising high-grade projects in the Goldfields.

It is about to follow up on exciting gold results at its flagship Zuleika Joint Venture, and conduct drilling to improve confidence at its existing gold resources near Leonora.

Torian is also keeping an eye out for further consolidation and acquisition opportunities and will continue to assess the best way to leverage value from its four WA gold projects.

Strong high-grade results from Torian’s initial drilling programme at Zuleika have the company fast-tracking work towards establishing a resource definition.

The Zuleika JV lies 50km north-west of Kalgoorlie in a sought-after gold mining region. The joint venture is with Cascade Resources, a privately held company.

Torian managing director Matthew Sullivan said the Zuleika JV lay partly along strike of several major gold mines including Evolution Mining’s Frog’s Leg gold mine and the multi-million ounce East Kundana Joint Venture owned by Northern Star Resources, Tribune Resources and Rand Mining.

Torian’s phase one drilling programme at Zuleika wrapped up in March and established a 1km-long mineralised zone along strike of East Kundana.

Historical drill results on the Zuleika tenements included 1m at 58.8g/t gold from 1m and 3m at 22.72g/t gold from 66m as well as 1m at 50.4g/t gold from 84m.

“These results show that our ground is highly prospective for high-grade gold deposits,” Sullivan said. Matthew was involved in the discoveries of Kanowna Belle and East Kundana and knows the area well.

“It’s elephant country out here and most of our ground is along strike from Kundana,” he said.

“A number of other companies are having a lot of success around us – Northern Star’s high-grade Pegasus discovery is more than 1 million ounces at a grade comfortably above 10g/t gold.”

Sullivan said the Zuleika region had seen more than A$1 billion worth of acquisitions in recent years and Torian’s increased landholding and systematic exploration put it in an excellent position to capitalise on this.

The company has become the second-largest landholder in the area, increasing the JV project size by 75% since May 2015 to about 222sqkm through more than a dozen acquisitions.

Torian is about to start the second of a four-phase drilling programme at Zuleika as part of its aggressive growth strategy.

The company is well-funded for this next stage of exploration after a successful A$3.3 million placement to sophisticated and institutional investors in early July.

Torian non-executive chairman Andrew Sparke said the company was delighted with the demand and pleased to welcome a number of high-profile institutional investors to the register.

The company’s second exploration target area is at the high-grade Mt Stirling Well resource 40km north-west of Leonora, within Torian’s 100%-owned Mt Stirling project.

The outcropping JORC inferred resource contains 41,300 tonnes at 8.54g/t gold.

A 51-hole drilling programme was completed in March at Mt Stirling Well with numerous intersections greater than 10g/t gold.

Highlights included 2m at 30.35g/t gold from 35m, including 1m at 47.4g/t.

Sullivan said importantly, the recent drilling did not close off the resource.

“We're going to assess the project’s viability as a standalone mining operation,” he told Mining Journal from Kalgoorlie.

“We have always believed in the potential at Mt Stirling.”

He said the existing resource did not take the recent drilling results into account and he was confident
it had the potential to grow significantly. Infill and step-out drilling is being designed to increase confidence as the company moves towards an internal economic study. It is also undertaking metallurgical test work for Mt Stirling Well. Torian has made a number of strategic partnerships to progress its projects, including setting up a drill for equity arrangement. “We’ve got a number of really great supporters,” Sullivan said. “With the softening of the iron ore price, contractors are being more realistic about rates and availability. “And with the global uncertainties pushing the gold price up, it’s a great time to be in gold.” Sullivan said Torian had been approached about a possible farm-out of its Bardoc and Malcolm projects which showed just how much interest there was in the area but that nothing was settled and discussions were ongoing. The company acquired the Bardoc project in April where Cascade also has a number of tenements. The 38.6sqkm project lies 3km north of new producer Excelsior Gold’s Kalgoorlie North gold mine. Sullivan said the company had also been approached about its Zuleika project by several major mining companies with a variety of proposals. “It’s safe to say that a number of people have been talking to us about the possibility of getting involved,” he said. “We’re assessing these proposals and want to work closely with our neighbours and other groups with the objective of achieving mutually beneficial outcomes.” He said while no formal agreements had been made, discussions were continuing. Meanwhile, Torian’s ongoing exploration at Zuleika means the company is achieving its earn-in milestones for the joint venture with Cascade, where Torian can earn up to 49% interest. “We’ll keep discussions going about potential future partnerships and farm-outs. “The company wants to find the gold mines of the future and we’re really excited about the potential not only at Zuleika but at our other projects as well. It keeps us very busy.” — MATTHEW SULLIVAN MANAGING DIRECTOR "It’s elephant country out here and most of our ground is along strike from Kundana. A number of other companies are having a lot of success around us – Northern Star’s high-grade Pegasus discovery is more than 1 million ounces at a grade comfortably above 10g/t gold’’

TORIAN RESOURCES AT A GLANCE

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<th>HEAD OFFICE</th>
<th>Torian Resources Ltd</th>
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<td>Email: <a href="mailto:info@torianresources.com.au">info@torianresources.com.au</a></td>
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<td>Web: <a href="http://www.torianresources.com.au">www.torianresources.com.au</a></td>
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| DIRECTORS | Andrew Sparke, Matthew Sullivan, Elissa Hansen, Glenn Jardine |

| QUOTED SHARES ON ISSUE | 94.5 million |

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<td>Johns Corporation Pty Ltd 3.13%</td>
</tr>
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<td>Cityscape Asset Pty Ltd 2.33%</td>
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Mining Journal • mining-journal.com • July 15-28, 2016
Golden triple for explorer

Explaurum Ltd (ASX: EXU) has an exciting exploration story to tell about its 90%-owned gold deposit, near Narembeen in Western Australia’s wheatbelt. **Ngaire McDiarmid reports**

The time has come for the Tampia gold project to shine. The high-grade gold exploration project already had a 310,000 ounce JORC resource virtually sticking out of the ground in the middle of WA’s wheat-growing region.

Then in June, the exploration target area tripled to 1.3km long and 950m wide, thanks to high-grade drilling results, including 5m at 7.62g/t gold and 5m at 10.42g/t gold, 500m west and 500m north, respectively, of the existing resource.

The Gault deposit contains an established 2012 JORC inferred resource of 4.7 million tonnes at 2g/t gold for 310,000 ounces, including a higher-grade area of 1.6 million tonnes at 3.4g/t gold, based only on historic drilling.

New drilling in the ‘starter pit’ area at the end of 2015 struck significant mineralisation, including 7m at 30.1g/t gold and 5m at 21.5g/t gold.

These results are feeding into an advanced scoping study, due out in August, that is focused on the potential of a shallow, high-grade ‘starter pit’ to generate cash flow through toll treatment options at existing gold operations within haulage distance.

The study will be a welcome insight into the potential for development options, highlighting the potential for Tampia to be in production much sooner than many peers.

Explaurum managing director John Lawton has long believed in Tampia’s potential and brought it to Explaurum via the unlisted public company Auzex Exploration, with which it successfully merged in September 2015.

“Tampia is an exciting gold exploration story which is just coming to light,” Lawton said.

“A high-grade and shallow resource such as Tampia in which mineralisation is open in all directions is not common in Australia today.

“The acquisition of the project by Explaurum has really given us the impetus and momentum to progress exploration on a much faster basis.”

The company raised almost A$1 million in an over-subscribed share placement in April to progress a potential project starter pit zone at Tampia that could be toll treated at nearby ore-hungry plants.

“The market has changed significantly since the beginning of this year – there’s much more interest, particularly in gold, and investors are much keener to see the potential scale of this project,” Lawton said.

Explaurum has a two-pronged approach to Tampia’s development – updating and upgrading the known resource and exploring the 12km-long zone of anomalous gold in soils for further upside.

“The area of the resource has potentially tripled in area to approximately 130 hectares as a result of the last drilling programme with widely spaced high-grade intercepts,” he said.

The average historical drilling depth at the project was only 40m and Lawton said a gravity survey conducted earlier in 2016 had given the company a greater understanding of Tampia’s potential.

“That gravity work gives us scope to expand our exploration effort to at least a 4km range from the known resource,” he said.

“We’re drilling in completely unexplored areas, getting intercepts that no one has come anywhere near previously.

“The upside potential is open from an exploration perspective and that’s exciting as far as the market in concerned.”

Aside from the exploration efforts beyond the known resource, Lawton is keen to see the results of the scoping study that will focus on the ‘starter pit’ which could generate cash through toll treatment.

“There’s plenty of upside as we see it,” Lawton said.
“Our work at the moment is focused on establishing the scope and scale of the project, so it’s really exciting times.”

Explaurum divested its Queensland and New South Wales prospects late in 2015 to turn its full attention to developing Tamptia.

“Tamptia is very much our focus and I think the market appreciates that sort of focus as well,” Lawton said.

“It’s a pretty straightforward story – it’s an exciting project and with a need for gold that there is around the market, we’re obviously one of the projects the market is really interested in understanding and following.”

Interestingly, just as the company’s exploration target has tripled, so too has its share price in the six months to early June.

“We hope to build on that,” Lawton said. “We’re an explorer that’s not high on the radar of the market generally and in the view of some brokers is trading at a share price which is at a discount to our peers.

“But we are getting known and benefiting from an increase in our market cap and the people who are aware of us are following with real interest.”

Explaurum owns 100% of the bulk of the project area, and 90% of the two mining leases covering the Gault deposit. Explaurum is free-carrying the minor party to the completion of a feasibility study.

The Tamptia gold project is next to the small town of Narambeen, about 300km south-east of Perth. It is on private land close to sealed roads, power, water, accommodation, services and labour.

Lawton said there is considerable community support for the project.

“We’ve made it clear that we’ll be drawing on the local community as much as possible if and when the project develops,” he said.

“The scoping study will provide process design options, resource estimation and mine design, baseline environmental studies, heritage and groundwater studies in what is really quite a new area as far as mineral exploration goes,” Lawton said. “Our current resource is over 300,000 ounces, but that doesn’t include drilling data from any of the drilling we’ve completed. The resource will be updated as part of the scoping study.

“Our understanding of the resource – it’s structure and metallurgy – has increased dramatically with our exploration efforts, and we want to increase the confidence level in the resource then establish an ore reserve.

“The scoping study will determine the best way we can optimise profitability for our project and our shareholders.”

Lawton noted it was a perfect time to progress a precious metals project, given the uncertain times in the market prompted by Britain’s vote to exit the European Union, which has pushed up the Australian dollar gold price.

“All resources are showing a bit of an uptick but I don’t think you should have any doubt about the future for gold,” he said.

“I think gold is a great commodity to be in.”

Explaurum is now set to benefit from the golden trifecta of market interest, a strong gold environment and continuing exploration success at both its resource and beyond.

Lawton said the market now had a greater appetite for quality exploration stories and Explaurum was keen to deliver.

“Although the project was discovered a generation ago and missed the last gold bull market, our technical understanding of the project now has given the project a new lease of life to the point where we can see the project’s potential exceeding 1 million ounces, the cost of discovery of additional gold being low, and building on a resource where people can see development happening in the not-too-distant future,” he said.

“We see Tamptia as a potential low-cost operation, and given that it’s shallow and high-grade, that’s a reasonable expectation.

“So really, it’s now onward and upward in establishing what this project can deliver.”

“The acquisition of the project by Explaurum has really given us the impetus and momentum to progress exploration on a much faster basis”

– JOHN LAWTON
MANAGING DIRECTOR

EXPLAURUM LTD
AT A GLANCE

EXPLAURUM LTD

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Chris Baker, John Lawton, Mark Calderwood, Stephen Stroud.

COMPANY SECRETARY
Paul Frederiks

QUOTED SHARES ON ISSUE
231 million

MAJOR SHAREHOLDERS
Misty Grange Pty Ltd 9.08%
Jervois Mining Limited 4.00%
Mr Kieran Slee 3.44%
JP Morgan Nominees Australia Ltd 2.80%
HSBC Custody Nominees (Australia) Limited 2.69%
COMPANY PROFILE

His Western Australia-based gold company represents a unique opportunity for investors, according to Gascoyne Resources’ managing director Mike Dunbar.

“We are one of only four independent gold developers left on the ASX who are looking at producing 100,000-200,000 ounces a year (the others being Gold Road Resources, Dacian Gold and Blackham Resources),” he said.

Gascoyne kept its head down during the tough times for juniors and has worked hard to progress its two projects – emerging at a perfect time, as the Australian dollar gold price soars while construction and diesel costs drop and there is a keen labour market.

Dunbar said Gascoyne was in a prime position for growth and further re-rating.

“I have to keep pinching myself,” he said.

“During the tough years, we kept our head down and worked on de-risking both projects and we were incredibly frugal.

“All staff voluntarily took a 20% pay cut and it’s meant that we’ve come out this side far more prepared than we otherwise would be.”

The first project Gascoyne plans to bring into production is the 1.05 million ounce (Moz), 80%-owned Dalgaranga gold project, 60km north-west of Mt Magnet, producing an initial 125,000 ounces of gold in its first year.

Dalgaranga’s robust pre-feasibility study released in March outlines high margins thanks to an all-in sustaining cost of A$913 an ounce, an internal rate of return of 90%, low capital expenditure of $75 million (due to existing infrastructure) and payback within 12 months.

Its resource is split between the historically mined Gilbeys’ Pit and the Golden Wings deposit, and the lease’s many prospects – with names inspired by various gins – are also proving just the tonic for Dalgaranga.

Gascoyne has identified mineralisation at Hendricks of 12m at 2.2g/t gold and 18m at 3g/t and 15m at 1.5 g/t in the fresh rock and is busy drilling targets including Vickers and Beefeater.

“We’ve seen a 40% increase in the resource at Dalgaranga since November, it’s now a 1Moz deposit and it’s still growing,” Dunbar said.

“While we are yet to confirm what the ultimate size of the resource will be, we believe that like all other gold mining projects, the mine life will extend well beyond the initial mine life, with potential for 8-10 years plus.”

The company is debt-free and cashed up – after releasing its Dalgaranga PFS, it raised $15 million via a private placement that was more than three times oversubscribed.

Dunbar also paid tribute to the generosity in the gold industry which helped give Gascoyne a strong headstart in developing Dalgaranga.

He approached Dalgaranga’s previous owner and operators, Equigold, and Nick Georgetta in particular, who had been at the helm before he went to low-cost gold producer Regis Resources.

He asked for information on what had and hadn’t worked at Dalgaranga, and received “a remarkable data set” from monthly processing data to grade control and reagent consumption data.

“It gave us a huge head start,” Dunbar said.

Gascoyne then engaged Mintrex Pty Ltd, which had built all three of Regis’ plants and were involved in refining Dalgaranga’s plant, which has since moved off site, to design Dalgaranga’s 2.5 million tonne processing plant, armed with the historical data and recent testwork.

“Due to the excellent relationship between Mintrex and Regis, we were also able to tour Regis’ Moolart Well processing plant and speak to the operators about how the plant was working, what they would do again and what they would change if they had the opportunity – it was very enlightening,” he said.

“It gave us a real insight into how Regis, widely considered...
to be ‘best in class’ at operating lower-grade open cut mines at one of the lowest costs, operates.

"I think you have to be prepared to ask the people who are considered the best at what they do for their advice and then listen and learn from them."

"Because of our headstart with the additional information, it means Dalaranga is easier to develop particularly as it’s Gascoyne’s first development and it is derisked the most,” Dunbar said.

"A rapid payback of the project is expected within about 12 months, although it could be sooner depending on the gold price and debt structure.

"We’re weighing up our financing options that will offer the best result for our shareholders and our development.”

Gascoyne’s 20% JV partner is currently free carried to completion of the feasibility study, when he will then have to either contribute to all capital expenditure and operating costs or revert to a 2% net smelter royalty, which has been assumed in the PFS and incorporated in the AISC of $913 an ounce.

Dunbar said Gascoyne was now staffing up to a sustainable level and bringing on board the appropriate skill sets to transition into a gold producer.

"To say we’re busy is an understatement,” Dunbar said.

"We’re looking forward to the exploration results at Dalaranga – even another 50,000oz could turn our early production into 125,000 ounces a year for the first three years, which will unlock much more value”

– MIKE DUNBAR
MANAGING DIRECTOR

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Stan Macdonald
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John den Dryver

重大股东

MAJOR SHAREHOLDERS
Board and management 15.3%
Colonial First State 6.1%
1832 Asset Management 5.0%
JP Morgan Nominees 4.9%

GASCOYNE RESOURCES
AT A GLANCE
ST BARBARA IS MOVING beyond its turnaround into a gold mining success story and is in prime position for its next chapter of growth.

The company notched up record annual gold production at its two gold mines during the 2015/16 financial year, at Gwalia in Western Australia’s Goldfields and Simberi in Papua New Guinea. Simberi achieved its annual target of 100,000 ounces a month before the end of the year.

As managing director and CEO Bob Vassie explains, St Barbara is now an ASX200-listed company and ready to begin its next phase of considered growth.

At the time of going to press, St Barbara was reviewing its Simberi operations and examining expansion options at Gwalia to take one of the world’s deepest trucking mines deeper still.

“We've got record production at both our operations, a record share price at the moment, record financial performance in terms of cash flow and profitability but importantly, we’re getting all those things in both operations, at the same time as we’ve reached record low injury frequency rates at both operations, so that’s really pleasing,” Vassie said.

He said the company was well placed thanks to its strong cash flow, the strong gold price, its debt reduction strategy, reduced production costs and the quality of its assets and its people.

“We're in a really good position to consider how we substantially grow,” he said.

“It’s an exciting time in the gold industry, all gold companies are doing well and we’ve just got to maintain our focus on costs and performance and sensible growth so we don’t destroy value.”

He said at Gwalia, a series of operational improvements had maximised tonnage and reduced costs and they were yet to hit the “sweet spot” of higher grade in the orebody.

“We’re just knocking productivity out of the park, it’s just a fantastic performance in getting tonnes out of the ground there,” he said.

“The amazing thing is that back in financial year 2012, the mine produced 185,000oz and at virtually the same grade this year, we’re going to produce in excess of 260,000oz of gold from the operation.

“People think we’re getting higher grades and we’re about to, but this higher rate of production is really down to productivity.”

Vassie said mining levels had changed from 20m to 40m, the waste ore was being disposed in previously mined stopes to reduce trucking to surface, and ore passes were installed to increase tonnage.

“That allows us to run through shift changes and blasting times because we can run the loaders remotely and just tip into the ore passes, so we’re getting more tonnes per hour and more hours a day loading,” he said.

Gwalia’s ore reserve at June 30, 2015 was 1.6 million ounces at 9.4g/t gold and deep drilling from surface is building a case for an ore reserve update.

“We’ve already got a reserve life that’s the envy of our peers and to be able to extend that through deeper mining is pretty exciting,” Vassie said.

“With the drilling we’ve done during the year from surface – we’ve drilled holes more than 2,200m long – they show that the orebody just continues, so the idea is to go ‘stronger for longer.’”

A highlight from deep hole GWDD17C included 1.3m at 72.6g/t gold from 2002mbs.

Vassie said further studies on deeper mining options were due in the September quarter and an investment decision would be made before the end of the year.

“We understand that we’re the deepest trucking mine in the world now, so we’re doing studies on the best way to go deeper – whether we stop trucking and become a shaft mine, or keep on trucking and introduce more ventilation,” he said.

“The way it’s looking, we’re expecting the lower capital cost of a ventilation solution will be the way to extend the minelife considerably.”
The company’s strategic review of Simberi was announced in February and St Barbara is considering divestment, joint ventures or continued development, including mining the sulphide ore below the existing oxide pit and investigating the gold oxide, sulphide and copper-gold porphyry potential on neighbouring islands.

“Simberi is outperforming and considering it produced 44,000oz in the financial year 2014, 80,000oz last year and this year it has already hit 100,000oz, we’ve made our targets which is very profitable and better than losing money, which is what we were doing before,” Vassie said.

Simberi had a sulphide ore reserve at June 2015 of 19.9 million tonnes for 1.3 million ounces of gold and the sulphide project indicates a mine life extension of eight years, according to its prefeasibility study.

St Barbara is also accelerating its exploration programmes on its licences at the neighbouring Tatau and Big Tabar islands to contribute to the strategic review.

“Things are going well at Simberi and there are opportunities to further invest in PNG; but I think for a company like ours, the board needs to strategically assess whether we invest in PNG, Australia or some other foreign clime,” Vassie said.

Meanwhile, the company is continuing exploration at two programmes in WA, around Leonora and at Pinjin north of the gold mining hub of Kalgoorlie.

Vassie said the company had held the Pinjin prospect for some time and now had the money to explore it properly, starting with a considerable aircore drilling programme.

“Suffice to say, we simply like the postcode and it’s evident there are few players in that area who like that tract of land,” he said.

“We’ll be putting quite a bit of effort into Pinjin in the coming year.”

The 1,358sq.km Pinjin tenements lie east of Saracen Mineral Holdings’ Carosue Dam gold mine.

At Leonora, Vassie is keen to bring new exploration technology to look at the area under Gwalia’s headframe and continue exploration on the Centenary leases 60km north of Leonora.

“We want to really look at new ways of targeting for orebodies that might be undercover,” he said.

On the financial front, St Barbara’s significant debt reduction has seen it re-rated by credit agencies, raised to B3 by Moody’s and to B by Standard & Poor’s.

By March 2016, St Barbara had repurchased US$82 million of its US$250 million senior secured note facility, leaving a balance of US$168 million, and Vassie noted that the remainder of the Red Kite debt facility had been paid out in June, 12 months ahead of schedule.

Aside from St Barbara’s record production levels, exploration potential and growing financial strength, Vassie is also proud of the company’s achievements in gender equity.

It was the only gold miner to be given “employer of choice in gender equality” status in both 2014 and 2015 by the Federal Government’s Workplace Gender Equality Agency (WGEA).

“Obviously, there should be no pay gap at all and that’s why I look at individual roles,” Vassie said.

“I’m a WGEA pay equity ambassador and I put my hand up to that and I’m keen to talk to others about how we get there.”

Another gap Vassie would like to address is the value difference between Australian gold companies and their North American counterparts, who are trading higher.

He said credit was due to the Australian gold players who had executed well on their various growth strategies.

Now St Barbara is in a prime position to do the same.”
Future glitters for star gold miner

Western Australia-based gold miner Ramelius Resources Ltd (ASX: RMS) has just doubled its life-of-mine and is entering a year of anticipated record gold production at its 100%-owned Mt Magnet project. Ngaire McDiarmid reports

The stars are aligning for Perth-based gold miner Ramelius Resources as it enters what is shaping up to be a stellar financial year.

Its operations centred in the Northern Goldfields notched up a substantial increase in production to June 2016 year-on-year, from 88,000 ounces to 110,000oz of gold, and managing director Mark Zeptner forecasts the next result will be even better.

“We’re a gold producer with increasing production and we plan to produce 135,000oz in the year to June 2017,” he said.

Importantly, we now have a new, four-year life-of-mine due to extensions at our existing operations, so we’re increasing production, and our life-of-mine, which we haven’t done for a while.”

Ramelius’ Mt Magnet mill is currently fed from its adjacent Galaxy mine’s series of open pits and two, new high-grade mines near Leinster: Kathleen Valley and Vivien.

“Vivien is now at full production and we’ve still got Kathleen Valley running, so it’s when all the stars line up to give us the best production this year,” Zeptner told Mining Journal in July.

Mt Magnet’s confirmed future is also in the stars – the new Milky Way deposit is giving the company the sought-after life-of-mine extension out to four years.

Milky Way’s maiden 241,000oz JORC resource was announced in May. The deposit lies under an open pit that was mined until 2000 by a previous owner and is just 3.6km from Ramelius’ Checker mill at Mt Magnet.

Zeptner said the Milky Way discovery represented a “quantum shift” for Mt Magnet’s life-of-mine plans and also demonstrated the significant porphyry potential that remained in the area.

The company was working to establish an ore reserve and has slated Milky Way for production in 2019-20.

Meanwhile, three new mines are coming into production at Mt Magnet as the long-running Percy (Perseverance) pit at Galaxy winds up in September.

Mining has just begun at Galaxy’s Titan pit, Blackmans will be another open pit 30km to the north, and Water Tank Hill will be the first underground mine at Mt Magnet since Ramelius began mining in 2011.

Blackmans has a 2g/t ore reserve for 16,000oz and will be mined in less than 12 months, while Water Tank Hill/St George has a total ore reserve of 335,000 tonnes at 4.9g/t gold.

Zeptner said Water Tank Hill was on the outskirts of the town of Mt Magnet and its high grade and close proximity to the mill meant it was likely to be the company’s lowest-cost project.

“It would be easier to mine at Mt Magnet if it was one huge pit but that’s the nature of the beast up there,” he said.

“It’ll be good to get back underground and have mixture of open pit and underground mines, and it’s the sort of field that lends itself to that.”

Above right: Vivien pit looking north.
Right: board and management at the Vivien decline, April 2016
“We were underground at Wattle Dam, Ramelius’ company-making mine, and we’re underground at Vivien, so we have the open pit and underground skills for small to medium-sized operations.

“Our mines may be on a scale that the big guys aren’t interested in but we’ll pick them up and make them work,” Zeptner said.

He said more drilling was planned at Water Tank Hill to potentially extend the project.

“As it stands, it will currently make about A$30 million in its two-year period so it’s pretty lucrative, we just want it to have more life,” Zepnter said.

Almost half of the company’s $10 million exploration budget is being spent at Mt Magnet and Zepnter is confident the project’s life will increase – not to mention the company’s potential at its other exploration projects in WA and in the Eastern States.

“The lion’s share is going to go into Magnet to extend the life there, we’re looking for more Milky Ways and we’ll be drilling under the Galaxy pits looking for underground opportunities,” he said.

Within a month of establishing Milky Way’s maiden resource estimate, extension drilling has intercepted highlights 3m at 21.68g/t gold and 20m at 5.85g/t gold.

Ramelius has also identified new prospects, Stellar West and Brown Cow, within 1km of Milky Way, which Zepnter said demonstrated the under-explored, highly prospective nature of the Boogardie Basin.

Recent drilling highlights include 14m at 3.96g/t gold at Stellar West and 7m at 7.36g/t at Brown Cow.

Zepnter said $1 million was also earmarked to drill within and below the current resource envelope at Vivien, where exploration highlights include 3.5m at 7.6g/t gold.

Vivien has already over-performed in tonnes and grade in its initial months of production and by late June had produced 22,332 tonnes at 8.02g/t.

“We’ve got increased confidence that the mine, which has just gone into stopping now, will still be open in four years,” Zepnter said.

“Our priority is on our operations and their extensions but we always try to keep options open to finding something decent outside of that.”

The company has greenfields projects in Queensland and the Northern Territory, where it has earned an 85% stake in a joint venture with Tychean Resources at the Tanami Gold Project.

Zepnter said they had just been granted access at Tanami and early stage exploration was under way.

“Within a month of establishing Stellar West, the guys have got better and more efficient at running the mill – it has a sub-A$20/tonne operating cost which is super-competitive.

“On almost every metric whether it’s been enterprise value per production ounce or resource ounce, we’re below average which gives us a fair bit of scope for a share price increase.

“And our new life-of-mine should give investors greater confidence.”

Zepnter is keen to meet with potential institutional investors on an overseas trip this month.

“I’m looking forward to sharing our story,” he said.

“We have our operations running smoothly and we’ve increased our life-of-mine significantly.

“There is probably no better time to be an Australian gold producer.”

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DE GREY MINING LTD
WESTERN AUSTRALIA

Gold development on the horizon for De Grey

De Grey Mining (ASX: DEG) is prioritising near-term development of its gold resources, while also progressing its two base metals deposits and pegmatite potential in Western Australia’s Pilbara. Ngaire McDiarmid reports

DE GREY MINING HAS consolidated its focus on its 100%-owned flagship Turner River Project in the Pilbara, where drilling is under way at the main Wingina Well gold deposit to increase the confidence in the resource at depth and advance the near-term development of the project.

The company regained full control of the Turner River tenements in February and has wasted no time in reviewing the three existing JORC gold resources and geological data, with a view to incorporating the high-grade potential around Wingina Well, the largest deposit.

The project lies just 50km from the mining hub of Port Hedland and has easy access to established infrastructure including sealed roads, communications, railway and accommodation.

Executive chairman Simon Lill said: “The company aims to start open pit mining at Wingina, supported by the two satellite resources at Amanda and Mt Berghaus, and set up a low-cost, small CIL processing plant at Wingina.”

A recent review by the new technical and management team, shows the Wingina gold deposit hosts numerous high-grade drilling intersections, many hits greater than 10g/t gold, below the main oxide resource. The team is very encouraged as it looks to test the underground potential of this high-grade mineralisation.

The Wingina Deeps drilling programme began in early July and Lill views it as a high-impact programme.

“The successful testing of this high-grade plunging shoot at depth will significantly increase our resource base and provide confidence that we can increase the potential mine life through underground operations,” Lill said.

The company appointed geological consultant Andy Beckwith to review the project and he firmly believes in the underground and near-term development potential.

“The previous mining studies, conducted during 2007-10, were completed in a significantly lower gold price environment of around $800 per ounce versus the current $1,700 pricing and were focused on heap-leach extraction,” Beckwith said.

“In my opinion, the current Wingina resource camouflages a nice, high-grade gold system and there is lots of potential at depth.”

Intercepts in the Footwall Central Lode below Wingina include some exceptional widths and grades like 4m at 10.7g/t gold and 10m at 15.1g/t.

“The question is: ‘how deep the grade will go?’” Beckwith said.

De Grey’s current 1500m diamond drilling programme aims to define a significant step-out resource extension at Wingina, provide more fresh bedrock material for metallurgical testwork and provide structural information about the three high-grade lodes.

The company believes the project holds strong potential for a low capex processing plant with an open pit and underground mining scenario.

Above right: RC drilling under way at the Discovery gold-silver-zinc-lead deposit. Below: the company is prioritising near-term development at its flagship Turner River Project.
The Turner River gold project contains a total JORC mineral resource estimate of 406,000 ounces, of which 268,000oz are at Wingina.

Within a 10km radius, the Amanda deposit contains 35,000oz and Mt Benbow 45,000oz.

Elsewhere in De Grey’s Turner River Project, two VMS-style base metals deposits have been discovered: the 1.7 million tonne Orchard Tank JORC resource contains 2.38% zinc, 78.6g/t silver, 0.99% lead, 0.06% copper and 0.27g/t gold; while the 1.2 million tonne Discovery deposit contains 2.34% zinc, 87g/t silver, 0.94% lead and 0.8g/t gold.

Drilling is now complete at Discovery to test its additional oxide gold and base metal potential, testing previous RAB drilling, including 11m at 3.1g/t gold from 3m.

It is important to also highlight that previous high-grade intercepts at Orchard Tank include 4.9m at 331g/t silver at 2.54g/t gold, 12.7% copper, 7.31% lead and 0.35% copper.

Meanwhile, De Grey is also buoyed by the pegmatite lithium-tantalum potential in its tenements.

Pilbara Minerals’ Tabba Tabba project lies north of De Grey’s 100%-owned holding and the world-class Pilgangoora lithium-bearing pegmatites, being developed by Pilbara Minerals, Altura Mining and Dakota Minerals, lie only 50km to the south-east.

De Grey holds a large, strategic 900sqkm landholding within one of Australia’s major lithium tantalum provinces and has made additional tenement applications to secure further potential.

Only 5% of its Turner River project has been assessed for lithium potential but the recent reconnaissance sampling confirmed an 8.5km-long zone of prospective pegmatite with elevated lithium, tantalum and other indicator elements.

De Grey doesn’t hold the pegmatite rights on its tenement immediately south of Tabba Tabba. However, Beckwith conducted first pass reconnaissance rock chip sampling on the adjacent tenement and confirmed pegmatite trends.

“I’ve driven over the area and identified small outcrops over 8.5km,” he said.

“The samples were anomalous but lithium weathered very quickly so a soil programme will be conducted over the more anomalous lithium-rich pegmatite zones.

“We’re building a programme of soils along the pegmatite trend and hopefully that will identify lithium targets to drill later this year.”

Lill said the prospectivity was highlighted in a review of historic stream sediment sampling which was carried out by CSR in the early 1980s.

“Until a few weeks ago, no significant pegmatites were documented to occur on the tenements,” Lill said.

“These early results are encouraging, based on the initial results and our significant land holding in prospective ‘lithium country’.

“We’re excited to continue adding shareholder value via increased exploration activities targeting the lithium potential within our land holding.”

He said the company’s large and under-explored tenements held considerable upside.

“We’ll continue to drive our gold development strategy as our pre-feasibility, with the addition of a specific exploration programme focuses on lithium across the Turner River Project,” he said.

“We’re building our baseline data to advance to a mining economics study.”

He said De Grey represented an underinvested investment opportunity, and compared the Turner River Gold Project to Pantoro Ltd’s Nicolsons gold mine and Doray Minerals’ Andy Wells gold mine.

Nicolsons had an initial ore reserve of about 80,000oz, while Doray’s stake in Andy Wells’ maiden reserve was about 200,000oz, he said.

Both companies have been significantly rerated by the market as the mining projects developed and Lill has high hopes that the Turner River gold project will create the same opportunity for De Grey.
With historic drilling results including 1m at 530g/t gold at a depth of 50m in the Lord Nelson pit, Alto Metals executive director Dermot Ryan is understandably excited about the potential at the Sandstone Gold Project.

Alto Metals completed its acquisition of Sandstone Exploration in June and has wasted no time in assessing historic data, or as Ryan describes it, “putting Humpty Dumpty back together again”.

Alto staff are creating 3D models of the numerous drilling results in the vast tenement area, based on publicly available information from the WA Department of Mines and Petroleum and ASX announcements by previous owners Troy Resources and Herald Resources.

The Sandstone tenement package covers 723sqkm in the well-endowed Murchison goldfield, which has produced more than 1 million ounces of gold to date.

Ryan said the volume of information, which included JORC 2004 Compliant resources, indicated there was both plenty of high-grade gold left beneath existing mined oxide pits, as well as further potential in brownfields areas including the Indomitable prospect area.

“The numbers will blow your socks off,” he says.

His office is filled with newly-created, dining table-sized maps and charts plotting the historic stellar drilling results.

Grades of +15g/t gold are common, and there are hits of between 36g/t and 82g/t lying below the Lord Nelson pit.

“Most junior companies just don’t have these grades to start with,” he notes.

The company’s focus on the gold project prompted a name change in May from Enterprise Uranium Ltd, which had been spun out of Enterprise Metals.

Alto still holds a number of uranium projects but is turning its full attention to Sandstone – a move that has been strongly supported in the market.

It completed an A$1 million dollar capital raising in June and welcomed Terry Wheeler, through his company Windsong Valley, as the company’s number one shareholder.

Wheeler is well known in the mining industry and worked for Western Mining Corporation before establishing Genalysis Laboratory Services in 1975, which he eventually sold to Intertek Group.

Alto is a tightly held stock – the top 20 shareholders held 77.31% in early July.

A shareholder purchase plan (SPP) is currently under way to raise A$1.7 million to progress Sandstone.

Ryan believes the Lord Nelson and Lord Henry bodies are high co-efficient of variation deposits, where very high grade quartz veins lie within a lower grade mineralised envelope.

He said the previous owners had mined the shallow oxide material but the mill, which is on a separate smaller lease acquired by Middle Island Resources, was not designed to handle hard fresh rock.

“Lord Nelson was mined by Troy to about 60m depth, and drilling indicates that the shear zones containing high-grade gold in pyritic quartz veins are open at depth,” Ryan said.

“Troy mined 1.45 million tonnes at 4.43g/t gold for 207,440oz, and the grade was 45% higher than their resource estimate.

Lord Nelson is just one of the...
highly prospective areas in the tenements and its remaining high grades are making it a top priority for Alto.

“At Lord Nelson along the vein, there are hits of 15g/t, 17g/t, and another 20m along there’s 114g/t and 95g/t in the pit wall, and these figures aren’t isolated,” Ryan said.

“I believe the low-grade mineralisation (that was mined in the pit together with the very high grade veins) are alteration zones, and we need to target these alteration zones below the pit to locate the very high grade veins down dip.”

He says it is a similar case at the nearby Lord Henry pit which was only mined to a depth of about 40m.

“And at the Bulchina deposit, the bottom of the pit has a relatively narrow 4-5m wide trench with a quartz vein containing high grades but they stopped mining at the base of oxidation because they couldn’t process the hard rock,” he said.

“Lord Henry and Lord Nelson were blind deposits and they were discovered during drilling.

“I think there is the potential to find other blind deposits under overburden.”

He sees a strong similarity between the planar structurally controlled shear zones at Lord Nelson and the shear zones hosting high-grade gold at Jundee Deeps.

“I worked at Jundee in the 1990s and we mined several hundred thousand ounces of gold from the oxide pits, but when we drilled deeper below the depletion zone, we found several million ounces within high grade shear zones,” he said.

Jundee is still producing gold from its underground operations for new owner Northern Star Resources.

Ryan was general manager of exploration for Great Central Mines/ Normandy Yandal Operations for five years to 2001, and has over 39 years’ experience in the discovery and successful evaluation of gold, base metals, iron ore, diamond and uranium deposits.

Based on his experience, he is also excited by the large-scale oxide gold potential at the Indomitable, Piper/Tiger Moth and Musketeer exploration targets to the north-west of Lord Nelson.

“Although the drilling to date is patchy, oxide mineralisation has been discovered over 4km of strike, from Indomitable in the north to Musketeer in the south,” Ryan said.

“The area is very deeply weathered down to 200m depth and could contain multiple vein hosted deposits like Kalgoorlie’s Super Pit.

At the time of going to press, Alto was still compiling the historic information to create one contiguous database for the Sandstone project.

“We’re using the existing drilling data and establishing targets along strike and down dip,” Ryan said.

“Previous explorers undertook some Induced Polarisation surveys and there are interesting anomalies indicative of deeper sulphide mineralisation along the Lord Henry and Lord Nelson trends that we’ll follow up.

“We’re going to do careful drilling; I see myself more as a sniper than a machine-gunner, there’s no point doing a series of ‘drill and hope’ holes.”

Having said that, Ryan said the exploration programme being planned would not hold back.

“Once the approvals are in place, you can expect to see multiple drill rigs at this project,” he said.

“I used to work for Great Central Mines and I’m not afraid to drill.”

Alto will work to establish new JORC 2012 resource estimates based on the remaining ore in the Sandstone pits and establish its exploration program, targeting extensions of known resources and other prospects.

“It’s very exciting times,” Ryan said.

“We have a great exploration opportunity and I’m enthusiastic because we’ve got high grade gold, and continuity and numerous drilling targets.”

— DERмот RYAN
EXECUTIVE DIRECTOR

“Lord Henry and Lord Nelson were blind deposits and they were discovered during drilling. I think there is the potential to find other blind deposits under overburden”

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A breakthrough in processing method may transform burgeoning lithium sector

Chris Cann

Platypus Minerals’ L-Max process is set to become a disruptive technology within a sector of the mining world in its own right proving disruptive to the global energy mix. That’s if it works.

L-Max is a patented lithium processing technology based on a process originally designed for Potash West by Strategic Metalsurgy to extract potassium from micas (K-Max). Potash West allowed private company Lepidico access to the technology in exchange for a significant shareholding 18 months ago, with a view to adapting the process for lithium extraction.

Lepidico successfully achieved that goal, designing a hydrometallurgical process that involves direct atmospheric leaching of lithium mica impurity removal stages with subsequent lithium carbonate precipitation.

Flotation of the micas produces a consistent concentrate as feed for L-Max, which starts with a sulphuric acid leach. Just about everything goes into solution, then a series of liquid-solid separation and pH adjustments remove various impurities and by-products to be left with pure solution. A carbonate salt is added to precipitate Li₂CO₃ from which a K₂SO₄ by-product can be extracted. An extra step could produce LiOH.

So impressed by the potential of L-Max was lithium junior Platypus, it moved to acquire Lepidico in March and closed the deal last month to establish an integrated small-cap lithium player.

The beauty of the process, according to former Lepidico managing director, now Platypus consultant, Gavin Becker, is its simplicity.

“It uses mainstream industrial chemicals and simple equipment – there are no fancy and unusual pieces of equipment needed or difficult to obtain chemicals, catalysts etcetera," he told Mining Journal.

The absence of processing bells and whistles, along with a fertiliser-by-product, has meant producing a tonne of Li₂CO₃ could cost as little as US$1,500. This is part of what makes L-Max disruptive.

Currently, the large-scale brine operations typically found in the southern US and Latin America are the lowest-cost producers at about US$2,000/t, while hard rock spodumene operations typically in Australia can attract operating costs up to US$6,000/t.

On that basis, Platypus would be entering the market as one of the lowest-cost producers. The other disruptive aspect of L-Max is the nature of its feedstock. Working off micas introduces an entirely new resource host to a lithium sector that has to this point been targeting only brines and spodumene-rich pegmatites.

“There are a number of projects that contain micas but they typically go out to the tailings dam or dumps because they aren’t the primary source of tantalum or lithium,” Becker said.

“There are also numerous projects around the world where geologists have been tripping over lithium micas for decades but they have never been drilled because they had no recognised value. “This technology makes those materials economic.”

That is of course, if it works. Lepidico previously proved L-Max using a mini-plant but Platypus will need to build a commercial-scale phase one plant to gain industry recognition.

That plant will probably be about 10% of the size of a full-scale facility. On that scale, the company reckons it could wash its face in terms of economics and commercially stress test L-Max, while also minimising risk.

“That will give us credibility as a lithium producer, not just a wannabe,” Becker said. “We can then bring people round the plant so they can touch and feel the technology and gain confidence in what we’re doing.”

To do this, there are three immediate challenges: decide on a feedstock, decide on a location for the plant, and raise the money to build it.

The first part of that equation could come from within Platypus’ international lithium portfolio but would more likely come from an existing operation already mining lithium-rich micas. The location of the plant, meanwhile, may not necessarily be near the feedstock but could be near the coast for ease of shipping.

How readily available the capital is will depend largely on how much Platypus is asking for.

Though Becker was tight-lipped on the expected costs, other comparable full-scale processing plants mooted in recent years have had price tags of around A$200 million (US$252 million) and so one could speculate that a plant 10% of the size might cost about A$20 million.

Based on the enthusiasm among investors for lithium equities over the past year, it does not seem too much of a stretch to raise this much from public equity markets, while private equity firms are also known to be sniffing around for exposure to the lithium space.

There is of course the option of partnering with an existing operation to process waste dumps on a profit-sharing arrangement for financial assistance setting up the facility.

That style of arrangement may hold the key to Platypus’ future growth: the ability to leverage into existing operations by offering L-Max to unlock lithium resources previously trapped in what companies considered waste rock.

“We’re absolutely convinced when we can prove this technology at a reasonable scale, we’ll be on a very strong path forward in terms of company growth,” Becker said.
MERGING GLOBAL LITHIUM player Platypus Minerals is well on its way to proving it’s not just another lithium junior.

The company is exploring for traditional and unconventional sources of lithium, in keeping with its reasoning for its acquisition in May of public unlisted company Lepidico and its provisionally patented lithium extraction technology L-Max®.

As Platypus managing director Tom Dukovcic explains, the low-cost L-Max® process has the potential to disrupt the industry by introducing a viable third source of lithium to the market: Li-micas, rather than hard rock spodumene or brines.

“Like spodumene, Li-micas such as lepidolite and zinnwaldite occur in pegmatites, sometimes in association with spodumene, but are essentially discarded as waste in the process of generating a spodumene concentrate. Elsewhere, these minerals have been ignored because they are not mainstream. "With L-Max®, we have the ability to turn people’s waste into ore, that’s the magic of it," Dukovcic said.

“It’s a beautiful, elegant process with multiple benefits – it extracts lithium while producing a range of value-add by-products, such as potash and other compounds, to effectively produce a clean, environmentally friendly waste." He said L-Max® had produced battery-grade lithium carbonate with a purity of 99.5% in the lab and was successfully tested in a mini-plant run. The next step is to prove the low-cost L-Max® process in a Phase 1 plant, a significant step that would put Platypus in the lithium producer ranks.

Although it is yet to be tested on a commercial scale, licences have already been sold to third parties, and European Metals Holdings has taken an option to use L-Max® at its massive Cinovec project, Europe’s largest lithium deposit located in the Czech Republic.

Dukovcic said L-Max® could be the catalyst for a major change in the global lithium industry, potentially adding value to existing operations and facilitating the development of greenfield opportunities.

Meanwhile, after a successful fully underwritten A$3.7 million rights issue, Platypus is set to start drilling at its Lemare project in the James Bay region of Quebec, Canada.

This is part of Platypus’s three-pronged approach to exploring for lithium: traditional sources (spodumene), non-traditional sources (Li-micas) and through joint ventures with companies with established experience in overseas jurisdictions (eg., Crusader Resources in Brazil; and Latin Resources in Argentina and Peru).

Lemare covers about 70sqkm in a proven lithium district about 25km from Nemaska Lithium’s developing Whabouchi project.

Platypus exercised Lepidico’s option in May to acquire up to 75% of Lemare from Critical Elements Corporation, which is developing the Rose lithium project in the same region, for $70,000 cash, $500,000 in scrip and future milestone payments.

“We’re keen get on the ground and drill Lemare,” Dukovcic, a geologist, said.

“Lemare is the first lithium prospect that we’re going to drill. We want to move quickly to define the size and scope of Lemare with the hope of establishing a JORC code-compliant resource by the end of the year.

“Lemare is a walk-up drill target and we intend to start field work in July. We know other spodumene pegmatites in the region host lepidolite as well, including Rose, and we’re yet to determine the mineralogy of Lemare.”

The company’s first non-traditional lithium target is at the historical tin field at Euriowie in New South Wales, north of the mining centre of Broken Hill.

Dukovcic said there was known lithium mineralisation within the project in the form of amblygonite in pegmatites.

“Amblygonite is nice because it’s the highest-grade lithium mineral with 10% lithium oxide,” he said.

“The challenge at Euriowie is to define large enough quantities of amblygonite, which is not known to occur in abundance – but is that a reality or is that because it has yet to be specifically explored for?”

Accordingly, Lepidico has also submitted an application for a provisional patent for a lithium extraction process for amblygonite.
Through Lepidico, Platypus has established joint ventures with two ASX-listed companies to explore for lithium in Brazil, Argentina and Peru. Dukovcic said the 50:50 joint venture with Crusader Resources was an ideal business model to demonstrate how L-Max® could potentially unlock value in projects where lithium-bearing micas had been overlooked as a primary source of lithium.

“We provide L-Max® and they bring local knowledge to the table so we don’t have to waste time and resources in reinventing the wheel,” he said.

The partners will initially explore the Manga project in Brazil for zinnwaldite, a lithium-rich mica. In a similar vein, Lepidico has also set up two joint ventures with Latin Resources to explore for lithium in Argentina and Peru.

“We want to increase our exposure to opportunities through joint ventures with companies that have local knowledge and we’re looking to continue to expand that business model elsewhere,” Dukovcic said.

Lithium demand is forecast to rise to meet the expected continued growing demand. Lithium batteries not just for electric vehicles and portable devices but also rechargeable household storage batteries for solar power.

“It’s not going to be a short-term boom,” Dukovcic said.

He added that brine projects had high capital costs and long lead times, and spodumene deposits were restricted by high operating costs.

Unlocking the third major supply of lithium to the market, by processing lithium-rich micas via a low-cost process, would help meet the expected continued growing demand.

“We’re not just another run of the mill lithium junior,” he said.

“We’re building a complete lithium business, from exploration for traditional sources of lithium, ie, spodumene, to brownfields exploration to build an inventory of lithium mica ‘waste’, and our point of difference, the application of L-Max® to either third party or our own lithium resources.

“We’re keeping all our lithium irons in the fire.”

Dukovcic has been with Platypus since 1999 and has overseen its evolution through a number of guises in that time to now be at the cutting edge of the rise and rise of lithium.

He said it was pleasing to now be in such a strong position, having weathered the market downturn and seizing the right opportunity to secure the company’s longer-term future.

“The acquisition of Lepidico was a great opportunity for both boards, and the timing was right,” Dukovcic said.

“When we first started talking in September there were maybe a dozen lithium juniors on the ASX, whereas now there are over 50. If they each raise $2-3m that’s around $100m spent on lithium exploration over the next 12-18 months.

“I think some of these might fade away when they use up the funds raised in the current fervour but that could give those left standing the pick of any resulting lithium discoveries.”

The Platypus board comprises Gary Johnson, Lepidico’s founder, as chairman, Dukovcic and Rocco Tassone.

“Gary Johnson has a distinguished career as an inventive metallurgist,” Dukovcic said.

“He was behind the development of the Activox process for treating sulphide ores while he was with LionOre, which was apparently a large reason for the takeover by Norilsk Nickel.

“Rocco Tassone brings experience in equities markets, making for a diverse and balanced board.”

Dukovcic said the board and management would be augmented in future in line with the company’s expected growth.

“We have money in the bank and opportunities galore,” he said.

“We’re spreading the risk, and over the next six months we expect to drill Lemare and Euriowie and aim to demonstrate the viability of L-Max® operating at a semi-commercial scale.

“It’s a very exciting period.”

“Lemare is the first lithium prospect that we’re going to drill. We want to move quickly to define the size and scope of Lemare with the hope of establishing a JORC code-compliant resource by the end of the year”

– TOM DUKOVCIC
MANAGING DIRECTOR
A dose of lithium reality

Things to bear in mind in the hottest sector in town

Lithium has most certainly captured investor attention. Producers, developers, explorers and landholders have all benefited from a rose-tinted view of the market in 2016, yet not all projects are worthy of such adoration.

It should not come as a surprise that speculators have jumped head first into this market. The sector has been calling out for a metal or mineral to get excited about after years of poor returns and false hope.

But, while demand for the metal is growing – from car manufacturers to battery producers – not all of the billed supply will be needed.

Those moving into the lithium investment game need a few of the fundamentals spelt out. First, one lithium product is not the same as another.

During the recent iron ore run, miners and promoters gave the impression steel mills were willing to take any product coming with more than 58% iron, but end-users were very picky over just what ore went into their furnaces, issuing those that didn’t meet the standards costly penalties, or asking for a refund.

The downstream lithium space is no different.

The idea of Tesla, Volkswagen, or Johnson Matthey ringing up a trader in Singapore and asking them for 30,000 tonnes of lithium hydroxide to be shipped to their port of destination in a week’s time is ludicrous.

Every gramme, let alone tonne, of lithium will be tested by consumers before any purchase is agreed. They will not use just any old material to produce their goods.

This is where existing producers – the likes of Albemarle, SQM, Orocobre – have an advantage over earlier-stage rivals. Still, offtake agreements like the ones Nemaska Lithium and Bacanora Minerals signed are in a better position than most.

Second, regardless of Tesla’s Gigafactory, the real buyers are from the East.

This leads onto the second point: According to a recent report by industrial metals research consultancy Roskill, Asia will continue to dominate lithium demand in the future.

“The upstream and downstream battery supply chain will remain a largely Asian phenomenon, despite the Gigafactory and similar large-scale battery plants planned or underway elsewhere, meaning Asia will remain the growth engine for lithium demand going forward,” it said.

Ties to Asian trading houses or end-users are important in sorting the speculators from the serious companies in the exploration space. Pilbara Minerals’ recent Chinese binding offtake gets the ASX-listed company serious investment points on this front.

Third, carbonate and hydroxide are not the be all and end all. “Product flexibility will be important, especially as battery technology evolves, with sulphide and metal potentially becoming more important lithium products longer-term,” Roskill said.

This point has not been missed by TSX-V-listed junior American Lithium. CEO Michael Kobler told Mining Journal: “Even though I am a lithium miner, I am also a boron and potassium miner. I don’t necessarily want to be a magnesium miner – as it is hard to get out of lithium – but if that is the case [and it is needed], I will become a magnesium miner also. It all depends on what the end product is going to be.”

For a company as early stage as American Lithium this is easy to accommodate, but all lithium-focused companies need to allow some product flexibility if their projects are to stay relevant for the duration.

Fourth, the price the product achieves is fundamental to investment.

A recent report from Stormcrow Capital estimated the price for 99.5% lithium carbonate would climb from US$7,780/t in 2016 to $12,790/t in 2025, while lithium hydroxide – 96%+ with low sodium content – is due for a 64% rise to $14,330/t by 2025.

This is some price growth, but not the monumental ascent some have mooted.

As a result, investors should focus on all-in sustaining costs and consider a project’s capital intensity before taking part in raisings and not just blindly assume prices will rise indefinitely making all supply economic.

Fifth, technology plays a bigger part in a lithium-focused investment decision than other more established sectors.

There are a number of new extraction and processing methods being explored by various players, which may well help this but past advances in the field have come with delayed ramp-ups, unforeseen complications and cost blowouts.

Orocobre made some miscalculations at its Olaroz brine project in Argentina, causing a longer and more costly ramp-up to its lithium carbonate production process, even if the ASX-listed miner is in better shape now.

Hard-rock projects in Canada and Australia will require new innovations to extract lithium, whereas brine assets in Nevada, or in the salars of Latin America where operations have been working to plan for many years should have more conventional flowsheets.

Processing is also likely to dictate just how low- or high-grade a project should be.

And, of course, the last consideration for investors – or should be – is that be the first – is the stage of production.

Speculators will move into the exploration space where every drill hole or metallurgical test can see a huge share price move with buying and selling opportunities. It will be those companies talking in tonnes of lithium equivalent production, rather than hectares of land that garner most long-term investment, though.

There are always exceptions to the rules, but while some companies missing some of these attributes will succeed in the lithium game, failures will all be lacking at least one element.
The mining industry’s explorers and developers have never quite gained the full respect of those that are in production. Those looking to bring on new supply of niche minerals such as graphite, lithium, cobalt, and rare earth elements are generally met with a three-phased approach: at first with raised eyebrows at their lack of knowledge and specific experience; then with contempt as the heavy promotion of the asset kicks in; and, finally, if the explorer progresses to a reasonable stage, fear.

Big commodities such as iron ore, copper and gold have been part of the mining industry’s exploration and development cycle for decades, but it has been a new concept to the niche or specialty minerals space in recent years.

For example, lithium was the first of the battery raw materials set to see an exploration surge which began in 2009 and took off in 2010. In little under one year, the number of lithium explorers globally went from nine – which included the likes of Rincon Lithium (Sentient Group), Galaxy Resources, and Western Lithium – to over 100.

The same lithium ‘gold rush’ has now returned but Australia alone accounts for the vast majority of companies, an estimated three-quarters of the industry’s exploration sector. The difference this time is that the sky-high lithium carbonate prices, which are three times higher than the last price spike, have allowed the focus to switch from brines to hard rock spo-

dumene, of which Australia has an abundance.

For graphite, the story was similar. I remember the days when Northern Graphite’s Bisset Creek and Ontario Graphite’s Kearney project were the only two mainstream exploration projects the industry had. Then, when the price spike of 2010-11 kicked in and flake graphite prices doubled in eight months, the exploration sector surged from single digits to triple digits in 18 months.

REEs were a similar but even more extreme story.

When prices of these niche elements rocketed higher by a hundred to a few thousand percent over a six-month period, it reached the headlines of the mainstream press, including the front page of The New York Times. This was mainly due to the politics behind the price hike – China initiated an REE blockade on Japan in retaliation for Japan in retaliation for the politics behind the price hike – China initiated an REE blockade on Japan in retaliation for the capture of a fishing boat. What all these examples have in common is the role of Australian explorers.

Though Australian explorers tend to be second out of the blocks behind their Canadian counterparts, they usually get more traction and develop more assets further down the line. It’s a curious case as to why. One can look at the cultural appetite for risk in what are niche industries – Australian investors seem more willing to fund leftfield mineral assets even in a post-REE boom world.

You can analyse where the bulk of Australian funding comes from (Sydney, Melbourne, Hong Kong and Singapore) compared with Canada (Vancouver, Toronto, New York and to a lesser extent London).

And I also think location plays a key role: Australian explorers are far more willing to go wide and far to search for the next ‘Pilbara of [insert mineral]’. This especially includes Africa, where pre-2011 no one had looked for the likes of graphite and now Syrah Resources has raised A$461 million (US$348 million) to build the world’s biggest mine.

There is a general dislike for junior mining companies in the active producing industry. And it is as much surprising as it is understandable.

“There is a general dislike for junior mining companies in the active producing industry. And it is as much surprising as it is understandable”

The mining industry relies on explorers uncovering the next generation of mines, offering up vast quantities of free drilling data to the incumbent producers and, most importantly, being entirely open to public scrutiny.

Explorers also force existing producers to re-evaluate their existing operations, their supply chains and the way they think – they have a fundamentally disruptive role on industries that have not changed in decades.

That is not to say the exploration sector does not have its issues – there are many. But to tarnish all mineral explorers with the same ‘over-promotion’ or ‘lack of experience’ brush is not only harsh but you do so at the producers’ peril.

And Australia has to take a lot of credit for that.

Simon Moores* is managing director of Benchmark Mineral Intelligence, an international price data and intelligence firm specialising in critical minerals and disruptive technology.
Independence to have its day

Diversified Australian miner Independence Group NL (ASX: IGO) continues to scale up its operations and is on track to produce ore from its huge Nova nickel mine in December.

Ngaire McDiarmid reports

**INDEPENDENCE GROUP (IGO)** is reaping rewards from the biggest gold and nickel discoveries in Western Australia in the past 15 years and is systematically unlocking value from all of its projects. It is increasing milling capacity at the 7 million ounce Tropicana gold mine, a joint venture with 70% partner AngloGold Ashanti, and it is set to produce nickel at its 100%-owned Nova project before the end of the year.

“We’re a diversified miner with exposure across the gold and base metal space and we’re currently unlocking the value in the Nova project through the development, that is on time and on budget for the production of our first concentrate in December,” managing director and CEO Peter Bradford said.

The company held Tropicana at its IPO in 2002 and following what Bradford describes as the “long journey of discovery”, the project commenced production ahead of schedule in 2013. It has since produced well over 1 million ounces of gold and is set to continue to deliver IGO more than 120,000oz a year going forward.

Production from IGO’s 30% stake in Tropicana currently represents about half of IGO’s profits – but that steady income stream will be dwarfed once the world-class Nova nickel-copper mine comes into production.

IGO acquired Nova in 2015 and at the end of May had the project 90% complete and started mining its first development ore in late June.

“Nova is going really well, it demonstrates what can be achieved at the bottom of the market when the best contractors, materials and labour are more readily available,” Bradford said.

The low-cost, high margin project has a 10-year minifile and lies about 160km east of Norseman in WA’s eastern Goldfields.

IGO has three-year offtake agreements in place, with Trafigura taking its entire copper production and the nickel being split 50:50 between BHP Billiton Nickel West and Glencore.

The 2km airstrip and 35km sealed road to meet the Eyre Highway are complete and the second phase of the power station was due to come online progressively from July.

In addition, a solar power plant is to be installed, reducing the project’s carbon footprint and power costs.

Bradford said IGO was now establishing its Nova workforce and had to increase its HR team to handle the strong level of interest.

“We’re looking to the local skill sets available in Norseman and Esperance,” he said.

“If we reach a critical mass, we could establish a fly-in, fly-out service from Esperance to tap into the strong mining experience in the region.

“We’ve also been working with the local Ngadju people to identify business opportunities for start-ups and create opportunities for employment.”

The nickel price is about half what it was five years ago but it hit a nine-month high in early July and Bradford foresees a bright future for the traditional stainless-steel-making ingredient.

“You’ve got to look at the fundamentals and we’re currently in a supply deficit and working through stockpiled nickel,” he said.

“Once that disappears, we’ll start to see the price rebounding – and on top of that there are three key areas for the outperformance of the nickel price.”

He said the supply deficit could deepen as high-cost producers went offline, while other opportunities could arise through socio-political events, such as the anti-mining sentiments being expressed in the Philippines.

The third is the new demand being created for nickel – in electric vehicle batteries, for example – that could help push up prices.

Bradford pointed to the comments made by electric car manufacturer Tesla boss Elon Musk in June, who said Tesla’s batteries should be referred to as “nickel-graphite” because the lithium content was akin to “the salt on the salad”.

“There are projections these batteries could represent about 5% of future nickel demand,” Bradford said.

“And as the price structures for electric vehicles come down, we expect the growth to far outweigh the conservative projections.”
Meanwhile, IGO’s two other high-grade, high-margin mines, Long at Kambalda and Jaguar in the Northern Goldfields, are continuing to perform well.

IGO has mined nickel at Long since 2002 but Bradford points out the mine has been in operation for 35 years with an average grade of 3.8% nickel. The 1km-deep mine has a remaining minelife of two years and its future will depend on new exploration dollars being spent once Nova is fully operational.

However, the future is more certain at Jaguar, where an updated reserve is imminent. IGO acquired Jaguar in June 2011 and the project has averaged grades of 9.4% zinc and 1.8% copper. Concentrate produced is exported via Geraldton.

Bradford said drilling beneath the existing reserve at the Bentley deposit was proving successful and he was excited about the potential for additional reserves.

“We firmly believe there are other VMS-style orebodies to be found in the area,” he said.

The company’s three main greenfields exploration areas are in joint ventures – at the Fraser Range belt, Lake Mackay in the Northern Territory and Byrah Basin in WA’s north-west. The Fraser Range is several hundred kilometres of highly prospective geology, that’s delivered two of Australia’s best gold and base metals discoveries in the last 10-15 years – Nova and Tropicana – and we’ve progressively improved the scale of mines we’ve invested in, from Long to Jaguar to Tropicana and Nova.

“Tropicana and Nova to generate the best understanding of the geology and mineralisation and be the group that makes the next big discovery on that highly prospective belt.”

Bradford said the Lake Mackay gold/base metals project had tenure covering about 400km of prospective geology with many anomalies to test, while at Byrah Basin IGO hoped to find a high-grade copper-gold deposit like near-neighbour Sandfire Resources’ DeGrussa project.

Exploration dollars were pulled back in early 2016 to focus on getting Nova up and running and sharing in the cost of the plant expansion at Tropicana, which will increase capacity from 5.8 million tonnes per annum to more than 7mtpa.

However, Bradford firmly expects exploration spending to increase again next year as the company continues to invest in its three core pillars – its people, its assets and its exploration.

It is currently assessing its 100%-owned copper-zinc Stockman project in Victoria which is at the permitting stage.

Bradford said the project didn’t benefit from close proximity to existing operations and management presence.

“We’re really mindful of the amount of management time and funding that some of these projects absorb, so we want to make sure we get the best bang for our buck,” he said.

“It’s been our strategy to focus on high margin projects that have potentially long minelife, and we’ve progressively improved the scale of mines we’ve invested in, from Long to Jaguar to Tropicana and Nova.

“There is still a lot to come for Independence.”

Bradford said building the business also included investing in people, for example, through the company’s structured graduate and apprenticeship programmes.

“One of the benefits of being a diversified business is that you’re exposed to a bit of upside every single year and if you’re going to be a strong company, you need to be able to invest through all parts of the commodity price life cycle,” he said.

“We’re enjoying strong cash flows from the gold side of the business at the moment but at a future point in time, we expect the nickel price to be higher and that will allow us to continue to invest in the pillars of our business – our assets, our people and our exploration.”

“We’re really mindful of the amount of management time and funding that some of these projects absorb, so we want to make sure we get the best bang for our buck”

– PETER BRADFORD
MANAGING DIRECTOR AND CEO

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QUOTED SHARES ON ISSUE
511.4 million

MAJOR SHAREHOLDERS
Mark Creasy 18.88%
FIL Ltd 9.92%
Van Eck 9.63%
Australian Super 6.04%

With the Nova project development tracking on budget and on schedule, Independence mined first ore in development in June 2016
**Uranium back on Australia’s agenda**

Three mines set to become more

Daniel Gleeson

When the federal government voted to abandon the ‘three mine’ policy in April 2007, Australia’s uranium sector was ecstatic. Finally explorers and developers could make the most of the land and dollars they had invested and grab a slice of the lucrative market. While to make action led to the development of the Honey-moon and Four Mile in-situ leaching mines (ISL) in 2011, the rule change has not been the catalyst many in the sector, and politicians, hoped for.

Today, the country has the same amount of mines it had before lifting of the ban with Ranger, Olympic Dam and Four Mile making up the trio.

Uranium oxide prices have proven to be the biggest hurdle for explorers.

The price rally from 2003 onwards would not have been missed by politicians backing a policy change in 2007. By the time they voted, spot uranium was above US$100 per pound, enough to make previously marginal deposits shine.

This was short lived. Prices dropped to more moderate levels over the next two years, but by the end of 2010 were rising again, with a bull market infused by increasing energy demand.

The Fukushima disaster of 2011 put a blunt end to this, closing reactors across Japan and making governments all over the globe reconsider the energy mix for their growing grids. As a result, the price has failed to get close to the US$65/lb marker many in the industry claim is needed to spur on new mines.

The country’s uranium resources, for the most part, have stayed in the ground. With China looking to clean up its energy policy, others like India shifting from coal-backed power and Japan making some symbolic moves to restart reactors, the future looks bright. Australia’s exploration industry is gearing itself up for this.

**Expansions**

Those likely to react first to a uranium price rise will be those already producing.

The longest continuing operating uranium producer in Aus-tralia, Rio Tinto’s Energy Re-sources of Australia, has been dealing with the fallout of a radioactive spill at its Ranger mine in the Northern Territory and how to keep a margin in a peri-od of weak prices. Its tactic has been to process existing stockpiles from its operation, deferring mining until prices recover.

It hasn’t completely abandoned growth, though, setting aside cash to keep its Ranger 3 Deeps and Jabiluka projects on care and maintenance in case the more than 400 million pounds of resources turns into feasible pounds to extract down the line.

Then there is the Olympic Dam expansion to put in the future mix.

If BHP Billiton pursues the multi-billion dollar expansion of its mine in South Australia, its uranium oxide capacity could jump from 4,500 tonnes (9.9Mt) of U3O8 per annum to 19,000tpa.

The future of the privately-owned Four Mile mine is a bit harder to gauge, but the publication of a 50Mt inferred re-source from its northeast de-posit in June last year indicates it also has room to grow.

**Honeymoon**

The first mine to come onto the scene in Australia is likely to be one that previously operated.

ASX-listed Boss Resources, in combination with Wattle Mining, acquired the Honeymoon ISL project from Kazakhstan’s Uranium One in November last year in a deal that could rise to A$15 million (US$11 million). It has been busy working on getting the asset ready for a re-start since the deal closed.

Uranium One previously put the asset into production back in 2011, but two years of falling prices led to the company pulling the plug as the size and scope of operation quickly made it non-core.

**Mulga Rock**

Not every company is blessed with as easy a development decision as Boss.

Vimy Resources and Toro Energy are fighting it out to be the first in the new crop of hard rock mines coming into produc-tion in a US$65/lb U3O8 market.

The former has been making significant headway in the past few years at its Mulga Rock pro-ject in Western Australia.

Led by former BC iron front man Mike Young, who was quick to pick up the scent and profit from an iron ore bull run back in 2006, Vimy shareholders are hoping for big things.

Since his introduction on the executive management team of Energy and Minerals Australia (Vimy’s former name) in February 2014, the company has upgraded the resource four times, pub-lished a maiden reserve calcula-tion, released two economic studies, made significant head-way on permitting and initiated a definitive feasibility study. In the process, it has stolen a march on its state rival Toro Energy.

Vimy’s overall resource base now stands at 76.2Mt of U3O8 grading 0.052%, making it the third largest undeveloped ura-nium deposit in Australia by its own reckoning. This resource is close to surface, meaning it re-quires simple openpit mining, and acid leaching technology is the most likely processing route.
A 2015 prefeasibility study indicates it could cost A$362 million to start-up and provide a pre-tax net present value (10% discount) of US$431 million at a US$65/lb U₃O₈ price.

If Vimy keeps making such headway, the company could be in a position to decide on development in the March quarter of 2017.

Wiluna
While Young has been making waves in Western Australia with Vimy, Toro Energy has been preparing its Wiluna project for a favourable turn in the market.

Toro already has two deposits permitted for mining – Centipede and Lake Way – but this is just a fraction of the 84Mlb resource it has delineated.

The project’s unique selling points come in the form of a shallow resource, with the majority located less than 10m from surface, some high grade potential – beneficiation test work has recently got the ore close to 1% U₃O₈ – and the potential for selective mining from four pits.

What is letting it down is up-to-date economics.

Only a preliminary economic assessment has emerged from the Toro camp and that was delivered in 2014.

Momentum is key in the mining game and while the company, led by Vanessa Guthrie, has done some sterling work ‘selling’ the project overseas, investors are awaiting new numbers to sink their teeth into.

Camco
Canada-based Camco could have a say on just how big Australia’s uranium future is.

One of biggest uranium producers in the world by output got its hands on two very promising uranium assets owned by the two largest diversified miners in the last decade, which will come into the future production mix if the mooted sea change happens.

Hosting 127.3Mlb of U₃O₈, the Yeelirrie project in Western Australia is one of the biggest undeveloped deposits in the world.

While Camco has been clear about not investing in the project during such a weak period, it opened up the public environmental review for Yeelirrie last year indicating the asset is still part of its long-term plans.

Kintyre, owned 70% by Cameco and 30% by Mitsubishi, is a slightly smaller beast in the state of Western Australia, with 64.8Mlb of U₃O₈ to its name. What it lacks in size it makes up for in grade, which at 0.58% U₃O₈ in the indicated resource category is up there with the best deposits Australia has to offer.

It already has environmental approval for development, meaning it can be funded and constructed quicker than Yeelirrie.

Even early stage options in Australia are being pursued by Cameco. It recently completed its 51% earn-in to the Kintyre Rocks project, close to Kintyre in Western Australia, and elected to take another 19% of the project from junior Mega Uranium by spending A$4 million (US$3 million) on exploration over the next four years.

Looking further out
Casting a line out further into the uranium project pool, there are a number of other Australia juniors near the surface awaiting an uptick in market demand.

Newly spun out Samphire Uranium’s 41Mlb of inferred resources at its namesake project in South Australia could gain momentum in a higher uranium price environment, while the more than 67Mlb resources at Paladin Energy’s joint-owned Valhall project has a price and regu-lation hurdle to overcome (Queensland has a mining ban in place) before it can come to fruition.

A rising uranium price and the prospect of increased royalties will put pressure on state politicians to overturn such policy for the second time in recent history. It was reversed back in 2012 only to be reinstated in 2015.

Also in Queensland is Laramide Resources’ Westmoreland project, which back in April jumped onto the scene with a revised PEA marking it as a serious contender for development.

The company acquired the asset from Rio Tinto in late-2005 and cobbled together all of the information that came with the purchase for the first PEA iteration in 2007. The updated version is much improved.

The resource has grown by 3.4Mlb to 51.9Mlb, with the mill throughput increasing to 2Mtpa from 1.5Mtpa previously. Uranium recoveries, nameplate capacity and mine life have all been enhanced over the space of nine years, while the processing technology has gone from solvent extraction to continuous ion exchange.

The economics stack up at US$65/lb of U₃O₈, with the initial capital expenditure of US$268 million returning a post-tax net present value (10% discount) of US$400 million.

The project just needs those forecast prices to come to fruition to help the 4Mlbpa, 13-year operation make economic sense.

Of a long list of explorers without economic studies in Australia, Caudron Energy and Mega Uranium are the two most readily cited companies making headway.

“While Cameco has been clear about not investing in the project during such a weak period, it opened up the public environmental review for Yeelirrie last year”
New Zealand’s best and brightest

New Zealand has its obstacles but industry is still alive and kicking

The New Zealand economy is projected to grow at an annual rate of 2-3% for the next few years, supported by low interest rates, high net migration and a high level of construction activity.

The Reserve Bank has continued to reduce its official cash rate from 3.25% in mid-2015 to 2.25% in March 2016 because of the deteriorating outlook for global growth and continuing challenges for the dairy industry, New Zealand’s largest merchandise export sector.

House price inflation driven by low interest rates, land use planning restrictions, a high level of immigration and investor activity is emerging as a major issue, particularly in Auckland, New Zealand’s largest city.

The government’s plan when elected in 2008 to make more of New Zealand’s mineral resource potential has faced a series of setbacks.

Initial moves that focused on the resources beneath public land were abandoned following strong opposition. The effects of the Pike River coal mine disaster in 2010 and the financial collapse of government-owned Solid Energy, the country’s largest coal mining company in 2013, were magnified by the prominence of the leaders of those companies in promoting the development of New Zealand’s mineral resources to the government and the public.

Ongoing declines in commodity prices for export coal and iron ore particularly, have contributed to weakening sector activity, though government-funded programmes by NZ Petroleum and Minerals (NZP&M) to acquire new airborne geophysical data to encourage mineral exploration are continuing.

**Gold production**

Since the 1980s, hard rock mines have accounted for most of the gold being produced in New Zealand, supplemented by South Island alluvial gold production mainly in the west coast, Southland and Otago regions. Estimated gold output was about 395,000 ounces in 2015, compared to 385,000oz in 2014.

Major developments during 2015 were the closure of OceanaGold’s Reefton mine as expected, and the sale of Newmont’s gold mining operations at Waihi to OceanaGold, which now accounts for over 90% of NZ’s total gold output.

OceanaGold’s Macraes mine in Otago is the country’s largest. It began operating in 1990 and has consisted of several openpits and the Frasers underground mine that started production in 2008.

The company’s smaller gold mine at Reefton on the west coast of the South Island ceased production at the end of 2015 and is now on care and maintenance pending a rise in the gold price. Concentrate produced from the processing plant at Reefton was being transported to Macraes for further treatment.

Combined output of both mines increased from 215,000 ounces in 2014 to 220,000oz in 2015.

At Macraes, proven and probable reserves at the end of 2015 were 1.22Moz of gold including 150,000oz of gold at the Frasers underground mine extending the mine life to 2019 for the open pit and 2018 for the underground mine. The company will continue to drill targets located along the 30km strike length of the gold mineralised Hyde-Macraes shear zone that hosts the orogenic gold mineralisation.

The gold mines at Waihi, 110km southeast of Auckland on the North Island, have been working an epithermal gold-silver deposit in an open pit on the former Martha underground mine since 1988.

Over the past 10 years, mining operations have also extended into the nearby Favona, Trio and Correnso underground mines as the open pit has been largely worked out. In 2015, OceanaGold acquired Newmont’s Waihi gold mine and other prospects in the region for US$101 million in cash.

The Waihi mines have produced more than 7Moz gold and 40Moz silver since production first began from an underground mine in 1883. Current operations have produced about 2.7Moz gold since 1990. Gold production in 2015 was 143,000oz, up on the 2014 result. Production is now from underground workings on the Correnso deposit that was discovered in 2011 to the east of the Martha open pit.

At the end of 2015, Waihi had limited reserves comprising underground reserves of 300,000oz of gold and 520,000oz of silver, while the openpit reserves were 760,000oz of gold and 770,000oz of silver. Drilling of Correnso and other targets at Waihi to expand resources is continuing both from the surface and underground.

Alluvial gold is being produced from about 40 sites on the South Island, mainly on the west coast.

Waiaka Gold’s operation at Waiaka in Southland is the largest producer with annual output of about 15,000oz. South Island lime producer Kokiri Lime Co is seeking consent for a new alluvial gold mining operation near the Clutha River at Roxburgh in Otago, where past exploration has established a resource of about 2.5 million m³ of gold-bearing alluvial gravel.

**Coal production**

Coal production is dominated by bituminous coking coal producers.
duced for export from the west coast of the South Island and sub-bituminous coal for domestic use from coalfields in the Waikato region of the North Island.

Total coal production was 3.4Mt in 2015, down about 15% on 2014. Open-cast mines accounted for about 93% of output. The country’s largest coal mine, Solid Energy’s Stockton opencast mine on the South Island, has reduced production from 1.9 million tonnes per annum to 1Mtpa over the past two years. The Huntly East underground mine in the Waikato region closed in 2015 due to declining profitability.

Following its financial restructuring and staff reductions last year, Solid Energy has been placed in administration, ahead of an asset sale. It continues to be New Zealand’s largest coal producer.

Bathurst Resources is a New Zealand mining company with four mines – Cascade and Escarpment in the Buller coalfield near Denniston, Canterbury Coal, west of Christchurch and Takitimu, near Invercargill. Bathurst plans to develop the Escarpment mine into a full-scale export operation once global coal prices recover.

Ironsand

Since the 1970s, titanomagnetite placer black sand deposits have been mined by Bluescope Steel subsidiary NZ Steel at two locations on the west coast of the North Island: at the mouth of the Waikato River for making steel at the nearby Glenbrook steel mill south of Auckland with some exported; and at Taharoa 130km to the south for export by ship.

Weak iron ore prices have led to a slowdown in NZ iron sand exploration both onshore and offshore. In February 2016, Bluescope announced that it would sell the Taharoa operation with ongoing losses forecast.

Mineral exploration

Onshore mineral exploration has been dominated by the search for gold near the operating mines along the Hyde-Macraes shear zone, in the Reefton Goldfield and in the Waihi district. Greenfields mineral exploration spending outside mining permit areas has declined from NZ$40 million (US$29 million) in 2012 and 2013, to NZ$58 million in 2014, due mainly to the collapse in seabed exploration investment (see chart).

OceanaGold has acquired Newmont’s interest in the WKP project located 10km north of Waihi. It has inferred resources of 1.3Mt at a grade of 6.2g/t Au for 260,000oz. OceanaGold is planning further drilling here over the rest of the year.

New Talisman Gold has raised NZ$4.7 million via a share issue and is planning to start underground sampling and trial mining on the former Talisman mine at Karangahake, 10km west of Waihi where it has defined a small ore reserve of 82,000t with a gold grade of 10.8g/t and a silver grade of 48.1g/t.

The company has a preliminary agreement with Chinese group Amer International for it to acquire a 70% stake in the company, subject to approvals. In mid-2015, Newcrest entered into a farm-in agreement with Laneway Resources over an area situated between the former Karangahake mines and the Golden Cross mine that produced 600,000oz gold and 1.7Moz silver between 1991 and 1998.

Newcrest has acquired an exploration permit over the adjoining Rahu prospect, where it has an agreement with New Talisman. Drilling of several prospects is under way.

Evolution Mining is drilling at the Puhupuhu epithermal gold-silver exploration project in Northland to test new targets developed within this former mercury mining area, which has given encouraging results in the past.

At the Sams Creek intrusion-related gold prospect, some 100km north of Reefton in Northwest Nelson, MOD Resources has a joint venture with OceanaGold. Recent drilling has produced an indicated and inferred gold resource of 20.5Mt with a gold grade of 1.54g/t for 1.01Moz. In late 2015, MOD placed its equity in the Sams Creek project on the market.

South Island exploration activity includes hard rock gold at the former Aorangi Mine (Strategic Elements), gold and tungsten in the Reefton Goldfield (Siburan Resources) and garnet sand on the west coast (NZ Garnet and Whitesails Minerals).

Offshore minerals

New Zealand’s Exclusive Economic Zone (EEZ) is among the largest in the world with exclusive rights to seabed resources over an offshore area of about 5,700,000km². Trans-Tasman Resources was granted a mining permit in 2013 to extract iron sand over an area in the South Taranaki Bight area within the EEZ but in mid-2014 the newly created Environmental Protection Agency (EPA) refused consent for the operation because of uncertainty about its effects and the project’s economic benefits.

The company is considering making a new application. Consent for Chatham Rock Phosphate’s Chatham Rise offshore seabed phosphate mining proposal in the EEZ 400km off the east coast of the South Island was also refused by the EPA for similar reasons.

Investment in these projects totals about NZ$100 million and the refusals have cast doubt on the future of offshore mineral resource investigations anywhere within NZ’s EEZ, compounded by a government proposal to create a 600,000km² marine sanctuary covering most of the Kermadec Arc within the EEZ, where mining would theoretically be prohibited.

Mineral exploration and research investigations have identified a number of areas with seabed massive sulphide potential along the arc. Mineral exploration activity in the EEZ has now ceased.

Trans-Tasman is seeking a permit over an area of 4,400km² of seabed off the west coast of the South Island to investigate the potential for ilmenite, zircon, garnet and gold inshore of the EEZ boundary.

Government initiatives

The government is undertaking a NZ$36 million multi-year four-stage programme of airborne geophysical surveys to promote mineral exploration in the Nelson-Marlborough and Otago-Southland regions of the South Island.

The surveys are scoped to cover up to 29,000km², comparable in size to the combined area of the previous two surveys carried out by NZPM&M over the Northland and west coast, South Island regions. The resulting survey data will then be made available to explorers for analysis and should boost exploration activity here.
The top 100 ASX risers

ASX miners have enjoyed a strong 12 months leading into Diggers & Dealers

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<th>Ticker</th>
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Aussie investors bask in better year

Gold and lithium juniors light up ASX as resources return to form

Chris Cann

What a year it’s been for resource equities across the world and, in particular, those that call the ‘Lucky Country’ home.

Leading into the annual Diggers & Dealers chin-wag last year, the table opposite looked vastly different. Commodity prices had been heading lower for more-or-less three years and were showing few signs of putting the brakes on.

The descent started to slow after Diggers & Dealers and, while the mood was depressed at Christmas, the consensus was we’d hit the bottom.

Then, of course, the Chinese stock market imploded and we all braced ourselves for yet another rotten year.

But with the Chinese New Year came mining’s new dawn. Shorting of resources had finally, too many felt, gone far enough and we entered an extended period of short-covering that – just as it was cooling – was greeted by another round of Chinese stimulus.

Gold shone, silver glistened, and iron ore showed a strength many thought lost. And of course, lithium motored (very quietly and emission-free) ahead of all others.

Share prices rose with commodity prices, which may sound like a given but – as many seasoned resource company investors will tell you – is not always the case.

There were 110 mining companies over the past year that have shown share price gains of greater than 150%. Almost 90 have recorded gains of more than 200%.

More than half of the top 100 list appreciated more than 300%, while about a quarter were up more than 500%.

The top 10 were almost exclusively plus-1,000% movers, with only Hannans and Millennium Minerals disappointing with lazy 931% and 869% rises respectively. And at the top of the tree was little-known Prospect Resources, moving almost 1,600% higher.

What’s even more impressive about this best-performed list is those on it started with a handicap. At the start of the period, mid-July 2015, the trend on mining stocks was well and truly downwards. Most of the stocks that have made the list opposite and have registered big gains have done so since September last year. Most of them have put on the Lion’s share of their weight in 2016.

Leading the charge has been gold and strategic energy minerals (mainly lithium) equities, which make up all of the top 10 gainers for the year just gone:

- Prospect Resources – lithium and gold
- General Mining – gold
- Middle Island Resources – gold
- Lake Resources – copper and gold

But a couple of concerns – the risks in that part of the world are only mounting. Elsewhere, the most significant event on the horizon is either the unpopular Hilary Clinton or dangerous Donald Trump being elected as US president.

All this points to elevated gold prices into the foreseeable future. Indeed, just this week GFMS reported gold hedges being placed at more than A$1,760 (US$1,343) per ounce – not too far short of the record Australian dollar gold price of A$1,825/oz.

For lithium, the demand story has caught the imagination of investors, who show no signs of letting go.

There have been concerns over the supply side of the equation, which seems to be well catered for, but there is no doubt as demand and therefore the price rises, new entrants that can show they have lithium expertise and good management will prosper. There are plenty of ASX-listed companies that fit that bill.

The other area of immediate opportunity is zinc equities, while on a two-to-three year horizon, copper is looking likely to make a long-awaited return to form. And all at a time when the weak Aussie dollar is keeping costs at bay.

If such an environment continues, this year’s top 100 gains may look modest by the time next year’s review rolls around.
CSA Global still punching above its weight

Australia-headquartered global consulting firm builds winning reputation as market forces knock down some rivals

IN A TOPSY-TURVY DECADE FOR many mining consulting groups around the world, one firm has moved inexorably up to the top tier of the vital service sector. And CSA Global has every intention of cementing its place in the highest echelon of international firms.

A group with a 30-year pedigree as a leading independent geological consultancy, CSA Global has built high-level capability and become a force in the mining study and operational improvement segments of the market. On the back of a growing pipeline of work in the region, it is expanding its capabilities in the American market by establishing a business base in Toronto to complement its existing office in Vancouver and operations in Nicaragua. The latter came about after being awarded a key advisory role in 2015 in the US$50 billion Nicaragua Canal project.

Elsewhere CSA Global is in the thick of surging gold exploration activity and resource reporting in Australia and other parts of the world such as Africa, central Asia and North America. And it has a busy, renowned specialty minerals team working with a number of the high-profile lithium, graphite and cobalt project proponents.

Despite a significant improvement in equity market sentiment around precious and some other metals, though, CSA Global managing director Jeff Elliott says there is certainly no rush to reintroduce the ‘b-word’ into any CSA Global strategy talks.

“There has been a significant improvement in the availability of risk capital,” he says.

“This has been most prominent on the ASX and started with companies with gold operations or advanced development properties in the second half of 2015.

“In 2016 it heated up, got coupled with a battery boom – particularly for lithium and graphite projects, but cobalt is also on the shopping list [of companies] – and has now spread to the TSX and benefited the gold and lithium explorers there, too. “Lead-zinc projects are also in demand but despite improved prices for the base metals the equity performance has not been anywhere near as remarkable as the gold and lithium companies.”

“Activity levels are definitely up but this has been more around resource evaluation drilling, resource and mining studies, as well as increased corporate and M&A action. Exploration drilling activity is improving, but it [generally] remains at low levels.

“It seems it is very much a case of being very careful with exploration dollars and trying to define the best targets for selective testing rather than large-scale grid-drilling programmes. This isn’t a bad thing as hopefully it is a case of quality over quantity and trying to be smarter with investors’ funds.”

“It also aligns with our service focus in this sector, which is an integrated geoscience approach rather than simple contract services.”

So, while talk of boom conditions in precious and energy minerals markets via some media channels has added to an upbeat investment mood amid some fairly dire global economic warnings, Elliott says the firm is prepared to “take the good sentiment while we can [while bracing for] a bumpy ride for the next 6-12 months”.

“The outlook is far more positive than it was this time last year but with strong volatility remaining,” he says.

“The macro factors driving the gold price are also variably responsible for lower business confidence.

“Political uncertainty and civil unrest is great for the gold price but I think most would prefer to see a return to long-term economic growth and investor confidence. Once we get the US elections out of the way … maybe we will be moving towards more stable conditions.”

CSA Global grew like a lot of other firms during the 2003-12 global mining boom but enhanced its reputation and market position through the subsequent downturn. Its leading position over the past 18 months among independent consulting firms signing off public-company exploration activity and resource reports – some 5-10 times CSA Global’s size – underscores its ascendancy.

“We genuinely care about what we do and getting results for our clients is an absolute priority for our clients by working with them with a longer-term view,” he says.

“We are a geologically-strong mining consultancy that focuses on getting good geology integrated in to evaluation and development studies, and as part of operational improvement. We operate globally as one company, with a collaborative approach to our clients’ needs.”

In-depth project reviews and client feedback drive service improvement strategies.

“We target subject matter experts to join our team and we leverage these skills across the business via internal training, mentoring and integrated working groups, across disciplines,” Elliott says.

“By promoting a culture of teamwork and integration across our offices and investing in technology, people can more easily collaborate both on client projects and on internal strategic initiatives.

“We started as a geological consultancy and we’ve gradually expanded across the mining value chain, but we’ve always kept the focus on getting the geology right. We do build relationships early, because, quite often, we get involved at a project review stage, before there is a discovery made, where we’re applying our geological skills and so on, and we are always leveraging our early relationship into the resource and mining work.

“But we don’t want to stop the integration of good geology at the resource model and then just hand it over to mining engineers. It still has to be integrated. And again, the way we operate with our mining team...
in Perth and the UK, for example, is we bring them in as early as possible to the discussion, even if we’re not getting paid for that component. We introduce them to the exploration managers and see if we can get people thinking early about geometallurgy, or production scale, so that exploration can be targeted accordingly. Or you can do reverse economic analysis to say, what grades are needed if it’s this deep; or there is this type of recovery issue; or we use this type of equipment.

“So we try to get the mets and the engineers into the story as early as possible, and we try to leave the geos in the process as late as possible.

“But despite the growing influence of geostatistics and modern computing over the past 30 years … defining the geological domains is still the single most important part of mineral resource estimation. And we’ve seen some consulting groups forget about that, saying the geostats, or the computer, are smarter than the geologists. And it’s not the case. If you let the computer decide, it might decide you’ve got a Rolls-Royce when maybe you haven’t, or vice versa.

“So it’s got to be good geology that goes into a model. We’re not just button pressers and we don’t just give you the numbers you want. We try to give the most reliable estimate based on the data available, and classify it based on our confidence in all the components that go into it, not on drill-hole spacing or a box-ticking method.

“People see us as being pragmatic, and having a science base, but we’re also very commercial and entrepreneurial. We’ve had key CSA Global people play important roles in the development of the industry’s significant resource reporting and valuation codes and guidelines over many years, and we understand well the principles underpinning those codes.

“So we know that if results – drilling, resources, etc – are going to be seen in the best light, there has got to be that associated materiality, integrity, and transparency.”

Elliott says CSA Global’s business model and private ownership structure, which have seen it fund organic and corporate expansion internally, with no debt taken on to date, have also left the firm on a strong growth footing.

“Over the last several years we have invested in building our capability and our capacity while market conditions were better for identifying and attracting talent,” he says.

“We implemented strategies to build on our existing precious and base metals capabilities targeting recruitment at the principal consultant level.

“We have maintained a long-term strategy to broaden our global commodity capabilities and for several years now we have been developing our agri, industrial and specialty minerals capabilities, which has given us considerable project experience in commodities requiring specialist knowledge such as potash, phosphate, graphite, lithium, etc.”

Maintaining an extensive network of associates globally is also key to CSA Global’s versatility and adaptability. It is “absolutely” a good time to be recruiting new key people, says Elliott.

“We think it is always a good time to recruit talented people but it is definitely more of a buyers’ market at present and therefore it is easier to agree on terms that work for our business model. And while good people are always in demand, good people sometimes get let go by companies who are reacting to market and this can lead to disenchantment with the lack of loyalty shown by such companies.

“In my experience, private companies have more ability to make longer-term decisions about staffing and generally have better staff retention and lower turnover of personnel despite less ability to pay the big bucks.”

Some of CSA Global’s most notable new-starts of recent times include Karl van Olden (mining), Andrew Scogings (industrial and specialty minerals), Marcus Willson (gold, structural geology), Warren Potma (mineral systems, geometer), Ivy Chen (corporate), Belinda van Lente (resources), Matt Cobb (resources), Dale Harris (data systems), Mark Pudovskis (potash), Qingtao Zeng (China), Magda Fimmano (marketing), and Chris Morrissey (technology).

The company has also added a Spanish-speaking country manager in Nicaragua to manage its activities in the region, and is building its associates network and trialling alliances in South America.

“We have boosted our capabilities in our Vancouver office and are progressing with some M&A activity in Toronto to expand our capacity and capability further,” Elliott says.
COMMODITIES

IRON ORE

It’s all about supply

Cost, not demand, will underpin the price

Daniel Gleeson

“It will never last,” read several headlines earlier this year. They weren’t referring to Rupert Murdoch and Jerry Hall’s nuptials, but the iron ore price rally that had caught everyone by surprise in the first four months of the year.

At the end of 2015, you would struggle to find an analyst predicting a run up to the US$70 per tonne level, but increased Chinese demand, catalysed by state-backed investment, caught market forecasters off-guard.

The price of iron ore started rising in mid-January and kept on going before reaching a peak of US$68.7/t on April 21. It dropped back in May and the first few days of June, but it has stabilised above US$50/t, averaging US$51.8/t year-to-date, and defying the bearish analyst predictions quoted at the end of 2015.

This is not just down to demand. Supply has also surprised on the downside.

In the lead up to the recent price peak, the big three – Rio Tinto, BHP Billiton and Vale – all scaled back their guidance for this or next year on infrastructure issues.

While shipments in the three months to the end of June have been higher quarter-on-quarter from all three, they are still way off what was initially forecast last year before the Samarco tailings dam spill occurred and the iron ore price reached an index low of US$37/t.

In concert with these supply issues, the government-backed investment programmes that started soon after the Chinese New Year have proven to be longer lasting.

Still, it is inevitable the majors will reach their respective expansion run rates at some point in the future. At a $50/t iron ore price they still more than break-even and most of the infrastructure is already in place to allow for the increased throughput.

Chinese iron ore demand will also moderate back to more justifiable levels after the stimulus plans have faded. Peak steel production in the Asian nation has already been hit and there is no fundamental demand on the horizon to warrant another period of growth.

Exit stage left

This means more iron ore supply will need to come out of the market in future years in order to balance the future supply-demand equation.

Deutsche Bank agrees with this, taking the view any more price strength this year will kick the can down the road.

“Our conclusion is that the longer prices stay above US$55/t in 2016, the more likely a period of weaker prices in 2017, possibly 2018 is likely to ensue,” the bank said.

There is no doubt more supply needs to come out of the market, but there are differing opinions on the price needed to force this tonnage out.

Deutsche Bank said prices below US$40/t were needed for large swathes of higher cost tonnes to exit, while Macquarie said current prices have proven enough to cut supplies from Ukraine, Iran, Mauritania and Canada to China.

“Imports excluding Australia, Brazil and South Africa eased back to an annualised rate of 139 million tonnes in May, down from 156Mt per annum in April,” the bank said.

There were exceptions, though. India, which has only recently been freed from the shackles that inhibited producers from exporting material, has started to increase its presence on the seaborne market, shipping 1.64Mt to China in May, its highest month since July 2012, while exporters from Myanmar, Vietnam and the US have also increased their supply to China.

Even with record iron ore shipments from Australia’s Port Hedland to China in June, production from Vale’s S11D project set to come on stream later this year and waning demand from Chinese steel mills, Macquarie sees the market stabilising around the US$55/t mark for the rest of the year.

“We believe the risks of a near-term collapse below US$50/t have abated,” it said. Steel mill inventories in China are gradually deteriorating thanks to state-backed policy and higher cost supply is set to continue to exit the market.

The characteristics of iron ore mean supply will always come in and out of the market on price spikes and troughs, but the swing seaborne supply will come from more established names.

High-cost output from Australia, Canada and Malaysia are likely to represent the marginal tonnages at a US$50/t price, according to Macquarie’s Colin Hamilton, while Bernstein’s Paul Gait said South Africa-based miners to the marginal mix, too.

Rising costs

This is now. It could be different in the future.

While the cost per tonne of iron ore produced has been coming down in recent years thanks to weak local currencies, falling oil prices, cost cutting programmes and increased throughput, it is getting harder to shave costs off the bottom line.

Australia-based producers are unlikely to see further currency depreciation, while oil prices are up 25% on the December 2015 low of US$36 per barrel.

At the mine level, all of the low-hanging fruit – in terms of cost cutting – has been picked and many miners are facing increased strip ratios and higher costs in the medium to long term.

Cash costs may indicate these companies are making healthy margins today, but like a duck paddling frantically under the water’s surface, their all-in cost base, plus the cost to service their debt, means their margins will be squeezed at a price below US$50/t.

The cost to ship a tonne of ore is likely to go up, not down, with only a few producers based in financially troubled economies like Brazil and South Africa likely to buck the trend and receive any more positive tailwinds for their cost bases.

This, not Chinese steel demand, will prove the decisive factor for the market going forward.

“The cost to mine and ship a tonne of ore is going up across the board”

Key figure

139Mt

The annualised amount of iron ore China imported in May from outside Australia, Brazil and South Africa

“OUR CONCLUSION IS THAT THE LONGER PRICES STAY ABOVE $55/T IN 2016, THE MORE LIKELY A PERIOD OF WEAKER PRICES IN 2017, POSSIBLY 2018 IS LIKELY TO ENSUE”
Euromoney indices

Euromoney Indices (EI) is the index compilation and calculation business of the London listed global financial and business media company Euromoney Institutional Investor PLC. EI was originally established by James Capel & Co (Stockbrokers) in 1987 as an index advisory business serving passive equity investment managers. In 1999, James Capel became part of HSBC Bank plc and the team became known as HSBC Quantitative Techniques, expanding its services into calculating indices across the FX, rates and credit asset classes. In September 2013, as part of a larger restructuring of HSBC, the Quantitative Techniques business was acquired by Euromoney Institutional Investor PLC and renamed Euromoney Indices.

Euromoney Global Mining Indices measure the returns of companies in the metal and mineral extraction industries. The Euromoney Global Mining indices are market capitalisation weighted, free float adjusted and cover both Emerging and Developed Markets. Indices are calculated both at regional and sector level.

The market capitalisations below are for end-June 2016. The Euromoney Global Mining Index comprises 159 constituents with a total market capitalisation of US$577 billion. The largest sectors of the index are 41% diversified, 32.4% gold, 7.8% copper and 6.7% coal.

- **Diversified mining**: This index comprises 27 companies, with a combined market capitalisation of some US$236 billion, with the largest four companies accounting for 57.8% of the sector total. The Diversified sector contains the largest company within the Global Mining, BHP Billiton Ltd, with a weight of 30% in the sector and 12.3% in the overall index.
- **Gold**: An index of 53 companies (some US$187 billion), with the largest three companies accounting for 33% of the sector.
- **Copper**: This index of 11 companies has a market capitalisation of just over US$45.3 billion. The copper sector contains the largest 2 companies within the sector, Freeport - McMoran Inc and Grupo Mexico B, with a weight of 62.9% in the sector and 4.9% in the overall index.
- **Silver**: The 12 companies have a market capitalisation of some US$38.7 billion, with the largest company account for 26.5% of the sector market capitalisation.

Best-performing regions (June 29 - July 13)

<table>
<thead>
<tr>
<th>Region</th>
<th>Performance (%)</th>
<th>Stock count</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>17.63</td>
<td>23</td>
<td>18.8</td>
</tr>
<tr>
<td>South Africa</td>
<td>16.76</td>
<td>11</td>
<td>3.9</td>
</tr>
<tr>
<td>USA</td>
<td>14.51</td>
<td>12</td>
<td>9</td>
</tr>
</tbody>
</table>

Worst-performing regions (June 29 - July 13)

<table>
<thead>
<tr>
<th>Region</th>
<th>Performance (%)</th>
<th>Stock count</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Latin America</td>
<td>8.32</td>
<td>5</td>
<td>6.4</td>
</tr>
<tr>
<td>Canada</td>
<td>8.41</td>
<td>45</td>
<td>26.0</td>
</tr>
<tr>
<td>Pan Europe</td>
<td>12.09</td>
<td>30</td>
<td>28.1</td>
</tr>
</tbody>
</table>

Best-performing sectors (June 29 - July 13)

- **Nickel**: Performance (%) 39.35, Stock count: 3, Weight: 0.2
- **Silver**: Performance (%) 18.60, Stock count: 12, Weight: 7
- **MISC Base Metals**: Performance (%) 18.01, Stock count: 9, Weight: 0.8
- **Platinum**: Performance (%) 15.93, Stock count: 5, Weight: 1.1
- **Diversified**: Performance (%) 13.52, Stock count: 27, Weight: 41.3
- **Copper**: Performance (%) 13.15, Stock count: 11, Weight: 7.8
- **Industrial Minerals**: Performance (%) 12.86, Stock count: 3, Weight: 0.7

Worst-performing sectors (June 29 - July 13)

- **Uranium**: Performance (%) -0.37, Stock count: 3, Weight: 0.7
- **Diamonds**: Performance (%) 2.80, Stock count: 5, Weight: 0.9
- **Coal**: Performance (%) 8.67, Stock count: 20, Weight: 4.5
- **Gold**: Performance (%) 9.40, Stock count: 53, Weight: 3.2
- **Zinc/Lead**: Performance (%) 12.66, Stock count: 1, Weight: 0.9
- **Aluminium**: Performance (%) 12.79, Stock count: 7, Weight: 2.1

Euromoney indices (June 29 - July 13)

- **2-week performance (%)**

- **1-year performance (%)**

- **Index**
  - Global mining index: 296.20, Base metals: 296.20, Coal: 360.00, Copper: 258.48, Diversified: 429.44, Gold: 150.71

Global Mining performance between June 29 and July 13: 12.11%

Global Mining has 159 companies

**MARKETS**

**Global Mining Index (Euromoney)**

**Index performance by sector (Euromoney)**

(rebased July 15, 2015)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Performance (%)</th>
<th>Stock count</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>Base metals</td>
<td>12.46</td>
<td>11</td>
<td>9</td>
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<tr>
<td>Coal</td>
<td>13.67</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>Gold</td>
<td>8.67</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Diversified</td>
<td>12.86</td>
<td>10</td>
<td>3</td>
</tr>
</tbody>
</table>

**Ernst & Young Mining Eye Index**

**Shipping rates (Representative dry cargo single voyage rates, July 6)**

<table>
<thead>
<tr>
<th>Route/Size ('000 dwt)</th>
<th>US$/t</th>
<th>% change on week</th>
<th>% change on year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richards Bay-ARA (100-150)</td>
<td>4.00</td>
<td>^5.26</td>
<td>^33.33</td>
</tr>
<tr>
<td>E Aus-South Korea (120-160)</td>
<td>6.70</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>E Aus-Mor-ARA (100-150)</td>
<td>21.98</td>
<td>-2.09</td>
<td>3.68</td>
</tr>
<tr>
<td>Hay Point-China (100-150)</td>
<td>5.42</td>
<td>^9.00</td>
<td>26.33</td>
</tr>
<tr>
<td></td>
<td>7.10</td>
<td>^1.43</td>
<td>24.47</td>
</tr>
</tbody>
</table>

Source: Drewry Shipping Consultants Ltd
The show must go on

Board-level bureaucracy looks good but means little

"It is enough that people know there is an election. The people who cast the votes decide nothing. The people who count the votes decide everything."

– Joseph Stalin

After the Brexit drama of a few weeks back, readers might be forgiven for noticing, but not giving a shit about, the general election that was held down in Australia just afterward. As an Australian, I took a keen interest, or at least as much of an interest as one can take when not in any way affected by the outcome.

I am proud of the Australian system of government. Yes it’s imperfect, and in recent years it has been a bit peculiar with a new PM being sworn in every second Tuesday, but by and large it works.

At its heart is the Westminster system, which has shown itself to be the most robust of all. Having the leader picked by his or her peers rather than the moronic public is very sensible and provides an excellent circuit breaker in the event the leader wanders too far off piste. Providing a simple mechanism to sack the PM without recourse to the courts or the people, eliminates the need for all of that constitutional checks and balances nonsense the Americans seem so proud of despite the fact it is complete gibberish, and renders their nation utterly ungovernable.

Although I guess the price we pay is that by needling out dangerously unhinged weirdos at the pre-selection stage, our election contests are never as entertaining.

But we haven’t taken all of the Westminster system – we left out some of the of the more histrionic anarchisms that were put in place centuries ago.

We have a preferential voting system so votes actually count, we have an elected upper house rather than the preposterous Lords, we vote on a Saturday so working people can actually get there and then we make it compulsory and so even the indolent and the ignorant get to have a say, although the jury is still out on that one.

But even given all that, there is room for improvement, one of which being the actual voting process, as bugger me wasn’t the last one a palaver. The people spoke on a Saturday, but it wasn’t until the following Friday that we had the faintest idea what they said in the lower house, and we still don’t know what the hell is going on in the Senate other than being pretty sure it will be a shambles.

How hard can it be to count a few million scribbles on bits of paper? Well, quite hard it seems. The job was made harder than it needed to be as some of the bits of paper were 6 feet long as every idiot with an opinion exerted their right to stand for parliament.

Beyond that, the question is now being asked: why on Earth are we not using an electronic voting system that would have provided the answer about four seconds after the polls closed?

Refreshing, this will now almost certainly be given serious consideration, and just as certainly there will be many reasons thrown up why scribbling remains the best way to do it.

First, there will be the argument that older folk like scribbling on paper, or may be unable to operate some electronic gadget. My mother proves this point, but love her as I do, I might suggest being unable to press a button on an iPad might be reasonable grounds for excluding those who shouldn’t be allowed to decide who runs the country. And then there are security concerns: but scribbling on a bit of paper presents little challenge to anyone with an AK47 and a team of enthusiastic box stuffers.

All this is fair, but I feel the most cogent argument that will be put forward against electronic voting, is that of visibility – democracy must not only be done, it must be seen to be done. Pressing a button on a screen and then waiting for the result to flash up at one minute past six that evening would be very efficient, but oh so unsatisfying.

Setting aside the not insignificant economic impact of the tens of thousands who have a vested interest in the event – manufacturing pencils and pieces of paper, manning polling stations, and of course the thankless task of counting – we need to see the show.

Every TV station puts on an agonisingly drawn out event where panels of experts try to make it seem more interesting than it really is by concocting the myth that by sitting down and watching, we continue to impact the process. The truth is we would be all better served heading to the pub and waking the next day with a sore head and a new government.

But by watching the show, apparently, we are the essential witnesses to the process, anointing its legitimacy.

But we are suckers – somehow in our minds, we have formed the view that scribbling on pieces of paper and watching some poor sod count them all treats us as equals with their reverence they deserve. Having a few bytes zip down a wire seems so tawdry.

I don’t know what an election costs, but I’m guessing a lot, yet it is a cost we happily bear despite a simple smartphone app being able to carry out the task for about $11.50 (US$8.77), plus VAT.

Observers from Mars might wonder why we intentionally choose the slowest, least accurate and most expensive of all the options available, in order to elect a few hundred people who don’t actually do anything, but show up to vote when and how they are told and then head to the parliamentary bar to get hammered on our coin.

Given we do this a lot, they must think it’s a sport.

I had a little dig at the makeup of the boards of BHP and Rio Tinto a few weeks back, so I won’t labour the point further, other than to say that at least they don’t insult us by actually having a free election.

But the charade of a dozen over paid and under qualified mates of the chairman actually providing anything remotely resembling governance or useful advice must have the Martians scratching their heads.

But company boards are but one example where millions are spent creating a smear of transparency and accountability that actually achieves nothing.

Tens of millions are spent drafting annual reports that contain nothing of interest or value, but as they are never read, that’s OK.

AGMs are held to provide pensioners with tea and biscuits, but no decisions are ever taken.

Board subcommittees meet to discuss risks, remuneration, compliance and governance, but that’s just code for a jolly lunch and then signing off on what they are handed by the CEO.

People who have never been on a mine site draft intricate, unintelligible policies about playing nicely that no one ever reads.

Legions of lawyers, accountants and bankers create structures to ensure that no-one ever actually knows what is going on and blame is never pinned.

Like politics, The Corporate Show is demanded by a public under the delusion it makes a difference. Yes it does, but not the difference they think.
“It’s an obligatory participation for us.”
MARK BRISTOW, CEO, RANDGOLD RESOURCES

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