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Deloitte WA Index 2021
Diggers & Dealers Special Edition

A review of Western Australian companies
listed on the Australian Securities Exchange



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Executive summary

Welcome to the 2021 Diggers & Dealers edition of the Deloitte WA Index. This year the market capitalisation of Western Australian listed entities closed at AU\$293.9 billion, increasing a staggering 46% from 12-months prior.

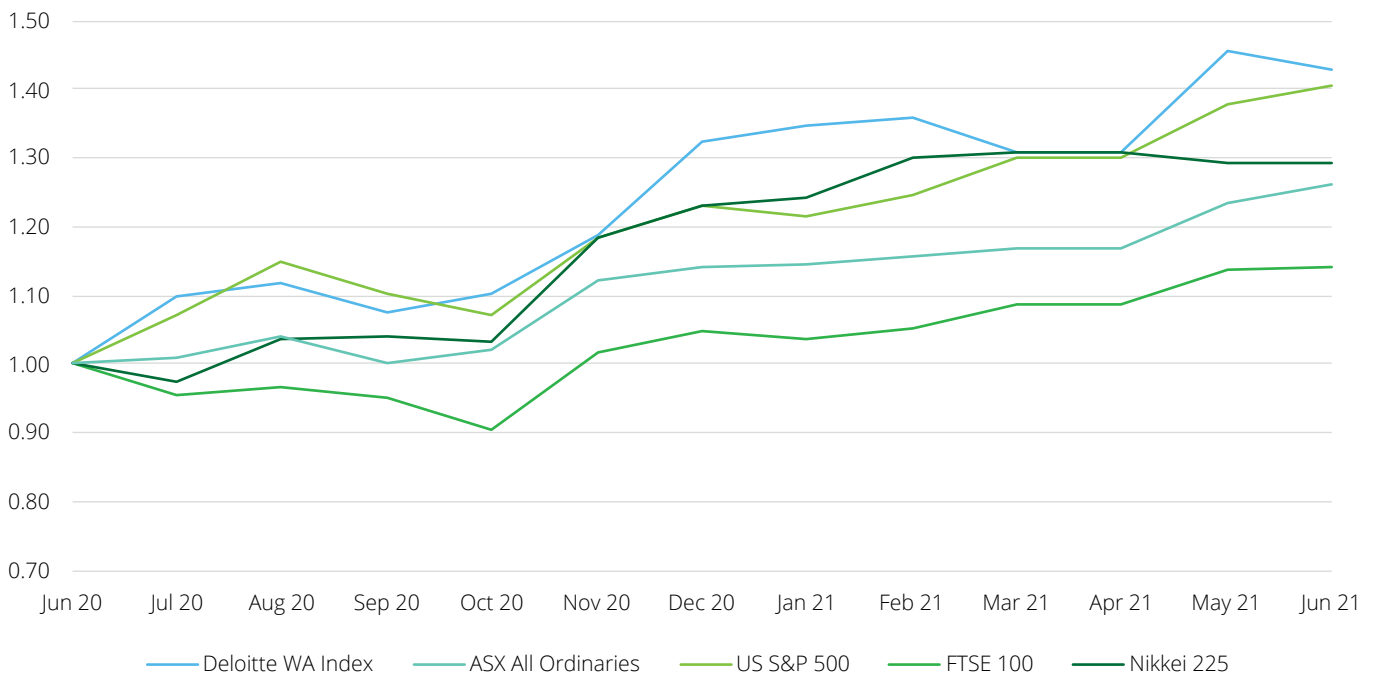
This year's WA Index performance has been a standout on so many fronts. The market capitalisation growth highlights a buoyant economic recovery from the initial shocks of the COVID-19 pandemic, with the comeback clearly aided by the strength of commodity prices, particularly

iron ore, as well as battery-associated metals with more environmentally conscious applications.

Our weighting to the commodity price upswing has seen Western Australian companies fair well, and while all observed

markets achieved growth this year, again the WA Index outperformed the broader ASX All Ordinaries, US S&P 500 and the Nikkei 225 through the year to 30 June 2021.

Performance of Global Financial Markets over the past 12 months



Western Australia has received its fair share of scrutiny regarding its approach to managing COVID-19, in particular the hard border responses during the year. While local restrictions have placed significant challenge on our local companies in managing rostering, hygiene and distancing protocols and retaining skilled labour, the economic rebound from the COVID-19 pandemic has been powerful. Most notably, the market capitalisation of WA Index participants has not just

bounced back, rather, catapulted to record highs in May 2021, and settling at its penultimate best of \$293.9 billion at the end of June 2021.

Powerhouse corporates such as Fortescue Metals Group and Wesfarmers added significant value to the WA Index in dollar value terms, which between the two of them make up almost \$140 billion (or close to 50%) of the Deloitte WA Index's total value at 30 June 2021.

On percentage terms it was the sustainable minerals stocks that boomed. Battery and clean energy associated organisations made their mark in the WA Index this year as clean tech and renewables recharge for a post-pandemic world.

'The sheer growth in renewable energy and electric vehicles, which have historically relied on lithium ion batteries, has driven the global demand for lithium such that governments and industries have become increasingly concerned about a supply shortfall within the coming decade.'

Mark Upton
Partner, Global Investment and Innovation Incentives (GI3)
Deloitte

As they say, 'a rising tide lifts all boats', and this has certainly played true across the commodity complex this year. As we emerge from one of the most crippling global pandemics of this lifetime, the thirst for commodities has in many cases exceeded supply response and consequently we have witnessed upward movements across the board. This comes with the exception of gold, which as the traditional safe-haven investment option, has been left languishing as the global economy recovers and confidence levels grow on successful vaccine rollouts and reducing infection numbers.

Interestingly, traditional energy commodities such as LNG, oil and thermal coal have done very well, as the need for energy intensified quickly amid supply constraints following the blocking of the Suez Canal, and import controls on coal into China.

Iron ore had an exceptional year, up 112% to US\$216/t. This certainly helped our largest WA Index participant, Fortescue Metals Group in achieving its 68.5% growth in market capitalisation over the same period.

Outside the bulk commodities, base metals such as Nickel, Cobalt, Zinc, Lead, Aluminium, and Copper all achieved strong price growth as their use in the clean tech industries grows. Lithium has also returned to growth this year, with Lithium Carbonate up 40% as the excitement around battery metals is renewed.

This year's winners of the Deloitte WA Index High Growth Awards which will be presented at the Diggers & Dealers conference in Kalgoorlie on 2-4 August 2021, all hold ties to these important ingredients for our future.

The top three movers in the WA Index Top 20 in terms of market capitalisation for the year ended 30 June 2021 are:

- **Piedmont Lithium Limited** – increasing its market capitalisation by 1,732%
- **Liontown Resources Limited** – increasing its market capitalisation by 761%
- **Chalice Mining Limited** – increasing its market capitalisation by 752%

We also recognise the three largest movers of the WA Index Top 100 in terms of market capitalisation growth for the year ended 30 June 2021. These are:

- **Venturex Resources Limited** – increasing its market capitalisation by a staggering 2,722%
- **Vulcan Energy Limited** – increasing its market capitalisation by an impressive 2,653%
- **Eagle Mountain Mining Limited** – increasing its market capitalisation by 993%.

Congratulations to our winners!

This year marks the 30th anniversary of the Diggers & Dealers Conference. Deloitte has a proud association with Diggers & Dealers over much of this time and on this 30th anniversary we have looked back over the current WA Index participant list at the longevity of WA based companies whom continue to stand the test of time.

Based on the official listing date on the Australian Securities Exchange, we acknowledge the Top Five as follows:

- **Iluka Resources Limited** – listed 30 June 1962
- **Alkane Resources Limited** – listed 1 May 1969
- **Woodside Petroleum Limited** – listed 18 November 1971
- **Mount Gibson Iron Limited** – listed 12 February 1976
- **Resolute Mining Limited** – listed 11 January 1979

With the clean energy thematic intensifying, this year's special edition of the WA Index includes a thought leadership piece titled '*Lithium, shaping markets for a green future and Australia's opportunity*' which looks further into the future for our clean and green shift.

We also managed to get some valuable Q&A time with Peter Bradford, Managing Director and CEO of IGO and ask his views on clean energy strategy, climate resilience and the importance of decarbonisation to the industry and our future generations.

In addition, given the strength of renewable energy and sustainable minerals stocks and commodities alike, we have analysed the growth of the Deloitte WA Index against the Deloitte CleanTech Index (DACT).

The DACT Index consists of 90 Australian companies who are identified as those whose output positively enhances the communities and ecologies in which they reside. The CleanTech Index covers several sub-sectors, including solar, wind, water, energy storage and fuels cells, sustainable minerals, and many more.



Dave Andrews

Partner – Audit & Assurance

Deloitte WA Index Top Movers 2021

At Diggers & Dealers we traditionally acknowledge WA resource companies that have delivered exceptional growth in market capitalisation during the year.

Sustainable Minerals were in focus this year – with lithium, nickel, copper, zinc, among others, being pivotal to this year's top mover's success.



Top movers of the Top 20

Piedmont Lithium Limited

Piedmont Lithium Limited ('Piedmont') increased its market capitalisation by a staggering 1,732% during the year ended 30 June 2021, moving up to rank 16 in the WA Index, leaping from 103 in the previous year.

This Year	Last Year	ASX	30 June 2021	30 June 2020	\$Change	%Change
16	103	PLL	1,614	88	1,526	1,732%

Background

Piedmont is a lithium producer that prides itself on its ability to produce high-quality, low-cost lithium hydroxide. Piedmont's premier lithium project is located in the renowned North Carolina Tin-Spodumene Belt, which once supplied most of the Western world's lithium.

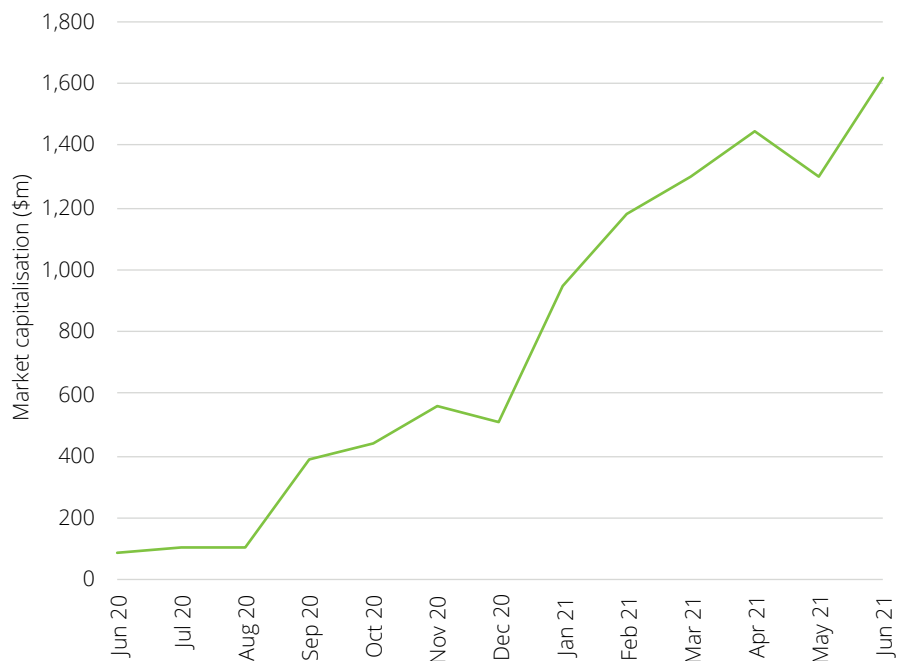
Operational review

In late September 2020, Piedmont's share price rose sharply off the back of the signing of a sales agreement with Tesla, the world's largest electric vehicle manufacturer. This sales agreement boasted a five-year (with the option to extend) fixed-price commitment for roughly 160,000 tonnes per annum of spodumene concentrate. This agreement guaranteed the sale of approximately one-third of Piedmont's planned spodumene concentrate output.

January 2021 saw Piedmont announce its decision to become a strategic investor and major offtake partner in Sayona Mining (ASX: SYA). The offtake aspect of the partnership secures Piedmont with an additional 60,000 tonnes of spodumene concentrate per annum.

Going forward

During the year Piedmont raised A\$159 million, with funds intended for completion of a definitive feasibility study, further drilling and test work, and other highly prospective activities. Piedmont recently implemented a scheme to give effect to the re-domiciliation from Australia to the United States of America, although the company remains on the ASX at 30 June 2021 and holds its registered office in Perth. Piedmont has also recently communicated to the market its long-term goal to achieve net zero emissions by 2030.



Top movers of the Top 20

Liontown Resources Limited

Liontown Resources Limited ('Liontown') upgraded its market capitalisation by an impressive 761% during the year ended 30 June 2021, jumping to 18th spot in the WA Index at 30 June 2021.

This Year	Last Year	ASX	30 June 2021	30 June 2020	\$Change	%Change
18	65	LTR	1,546	180	1,367	761%

Background

Liontown is a Lithium-Tantalum exploration and development company, with its flagship discovery located in the Kathleen Valley, Western Australia. The Kathleen Valley Project is considered to be a globally significant lithium deposit. Further strengthening Liontown's portfolio is their Gold-Copper-PGE-Nickel Joint Venture Projects – Moora and Koojan.

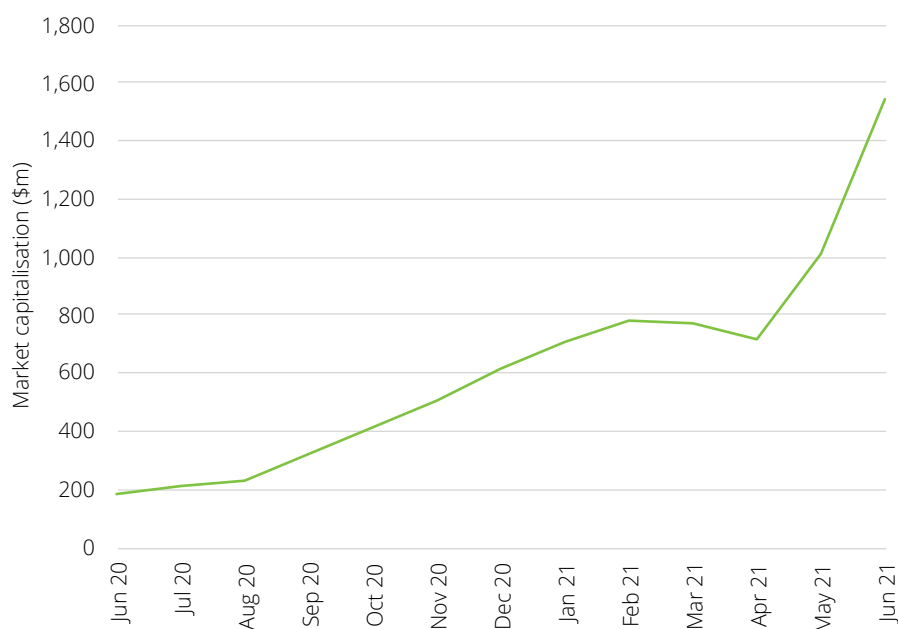
Operational review

Liontown's market capitalisation rose steadily over the period to April 2021 on the back of encouraging results from their Kathleen Valley Project. In October 2020, Liontown released an updated pre-feasibility study for their Kathleen Valley project, which outlined the increase of the mine life to roughly 40 years with a two million tonne per annum processing rate.

The company's market capitalisation then spiked in early June 2021, due to a highly exciting investor presentation regarding the Moora and Koojan Joint Ventures. This also detailed Liontown's proposed demerger and IPO of the Moora and Koojan Joint Venture Projects. Along with this proposal, the presentation outlined the highly prospective nature of the Moora and Koojan projects as the company stated its intentions to complete follow up drilling and drill test for new targets.

Going forward

Liontown leaps into the new financial year with a viable lithium project and exciting exploratory Gold-Copper-PGE and Nickel projects that shows significant upside potential. The company aims to complete a Definitive Feasibility Study for the Kathleen Valley Project during the fourth quarter of 2021. Furthermore, Liontown announced its commitment to achieve net zero emissions by 2050.



Top movers of the Top 20

Chalice Mining Limited

Chalice Mining Limited ('Chalice') delivered a 752% increase in market capitalisation during the year ended 30 June 2021, placing the company in 12th position within the WA Index rankings.

This Year	Last Year	ASX	30 June 2021	30 June 2020	\$Change	%Change
12	48	CHN	2,574	302	2,272	752%

Background

Chalice is an Australian operated exploration specialist with an impressive portfolio that includes both precious and base metals. Chalice's flagship project is the Julimar Project in Western Australia that contains high quality Platinum Group Element (PGE)-Nickel-Copper-Cobalt-Gold.

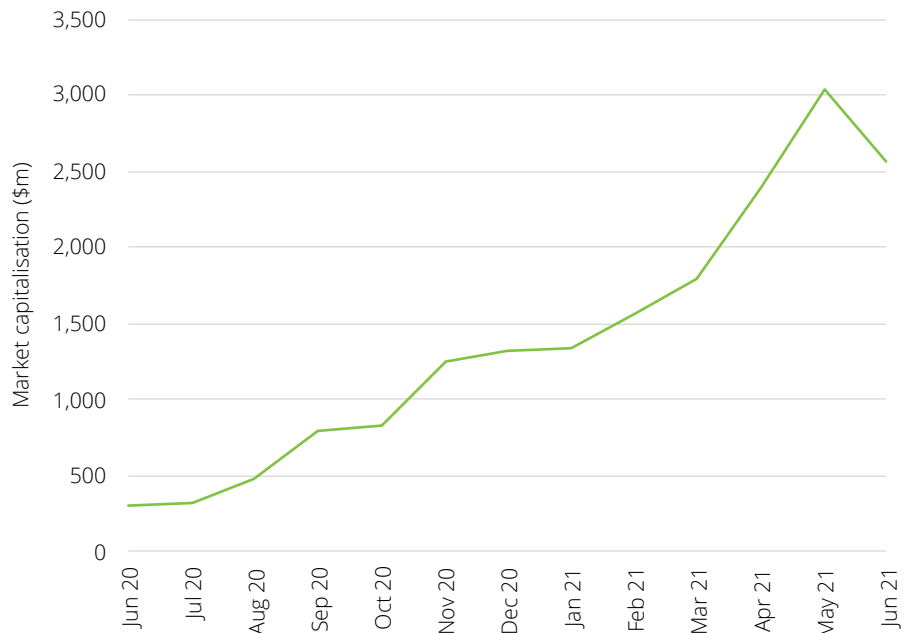
Operational review

In September of 2020 the company made significant findings at their Julimar Project including the announcement of positive preliminary metallurgical results as well as the finding of large electro-magnetic anomalies, highlighting the potential of the Julimar Project. Since then, the company has taken aggressive steps to increase resources and prove up reserves within the aforementioned project. These actions have resulted in consistently positive announcements regarding high-grade zone extensions, drilling results and metallurgical test work.

The share price surge from March 2021 is explained by a series of exciting occurrences such as: Nickel-Copper soil anomalies reported at Julimar, the acquisition of four private properties in Julimar, positive drilling results at Julimar and the commencement of electromagnetic exploration on a 'Julimar lookalike target'. The acquisitions of property (which increased their land share by 723 hectares), was complimented by additional strong drilling results from the area, thus firming up the scale and future of the project.

Going forward

Recently, Chalice announced its intentions to demerge its gold assets to deliver a standalone, ASX listed gold company, stating that this would maximise value for shareholders. It also allows Chalice to be acutely positioned for battery minerals markets and has the potential for further growth considering the commencement of electromagnetic exploration at 'Venture's South West Nickel-Copper-PGE project' as well as their continued exploration out of Julimar.



Top movers of the Top 100

Venturex Resources Limited

Venturex Resources Limited ('Venturex') accomplished a staggering 2,722% increase in its market capitalisation during the year ended 30 June 2021. This launched Venturex Resources up the WA Index ranking from 334 to 49.

This Year	Last Year	ASX	30 June 2021	30 June 2020	\$Change	%Change
49	334	VXR	466	17	449	2,722%

Background

Venturex is a base metals mining company based in Western Australia. Its cornerstone project is the Sulphur Springs Copper and Zinc Project in the Port Hedland region of WA. Initial drilling at the Sulphur Springs Project identified six advanced targets that all returned intersections of commercial grade copper and zinc.

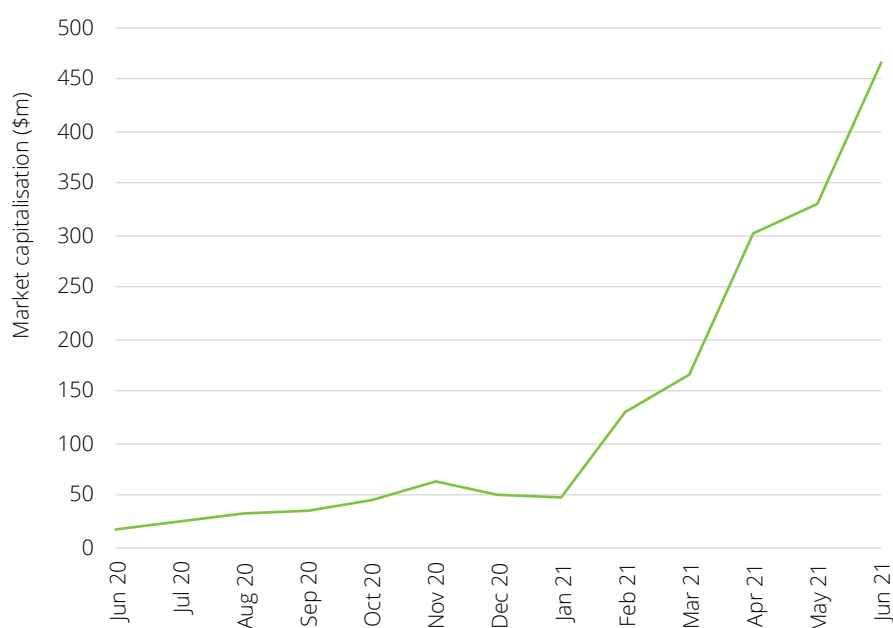
Operational review

In February of 2021, Venturex announced that highly regarded mining executive Bill Beament will lead a recapitalisation of the Company. The announced recapitalisation is designed to enable the company to grow and become a dominant supplier of new-generation energy and technology materials. Mr Beament has since been appointed Executive Director effective 1 July 2021.

The share price experienced another sharp rise in April 2021 when Venturex delivered a progress report on Pre-Development activities at its flagship project. This announcement delivered news of the Department of Mines, Industry Regulation and Safety (DMIRS) approval of the company's Project Management Plan.

Going forward

Funds raised through the recapitalisation project will be used for development activities for the Sulphur Springs project. These activities include infill drilling, regional exploration, front end engineering design study and verification of their designed tailings storage facility. Venturex plans to progress swiftly to a final investment decision and commence construction of the Project. To enable this the company is on a critical work path which needs to occur before the wet season in November 2021.



Top movers of the Top 100

Vulcan Energy Resources Limited

Vulcan Energy Resources Limited ('Vulcan') has achieved an impressive 2,653% increase in its market capitalisation during the year ended 30 June 2021. This pushed Vulcan up the WA Index rankings to 28th.

This Year	Last Year	ASX	30 June 2021	30 June 2020	\$Change	%Change
28	240	VUL	835	30	805	2,653%

Background

Vulcan is shaking up the lithium producing industry through its commitment to become the world's first zero carbon lithium producer. Vulcan's lithium project is located in the Upper Rhine Valley of Germany and is estimated to be Europe's largest lithium resource. The company aims to produce lithium through drawing upon naturally occurring, renewable geothermal energy to power the projects lithium extraction process, resulting in no fossil fuel impacts.

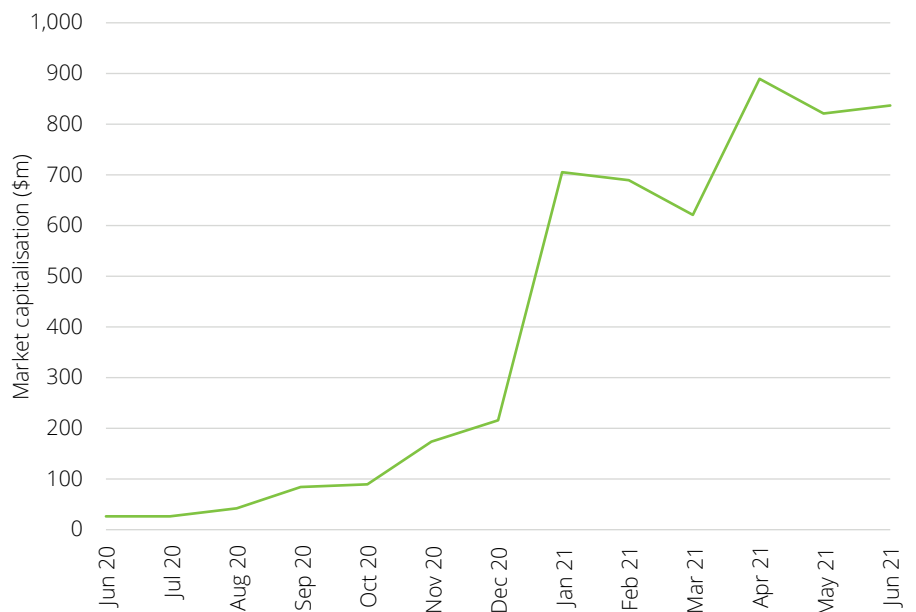
Operational review

The impressive rise in Vulcan's market capitalisation is due to the release of their Pre-Feasibility Study in mid-January. This study boasted increased indicated resource estimates, excellent recoveries from lithium extraction work and securing a European Union support package for the zero-carbon lithium project.

Vulcan has continued to make great strides in improving its Project capabilities to provide lithium with no fossil fuel impacts. One major effort to increase the company's lithium projects capability was the acquisition of 'Global Engineering and Consulting', a firm that is widely considered as a world leading mining engineering firm with vast experience in geothermal projects.

Going forward

Having recently being admitted into the Global Battery Alliance, Vulcan can continue to positively shape the lithium production industry towards more environmentally friendly practices. Vulcan will be looking to progress to Definitive Feasibility Study going forward.



Top movers of the Top 100

Eagle Mountain Mining Limited

Eagle Mountain Mining Limited ('Eagle Mountain Mining') delivered an impressive 993% increase in its market capitalisation from \$19m to \$203m during the year ended 30 June 2021. This placing Eagle Mining at 97th in the WA Index.

This Year	Last Year	ASX	30 June 2021	30 June 2020	\$Change	%Change
97	316	EM2	\$203m	\$19m	\$184	993%

Background

Eagle Mountain Mining is a copper-gold explorer with both advanced and greenfield projects in Arizona. The company currently operates two projects, those being the Silver Mountain copper Project and the Oracle Ridge copper mine. Currently, the majority of the company's value lays within the Oracle ridge mine, which has undergone numerous resource expansion exploration efforts and comprises of an existing underground mine.

Operational review

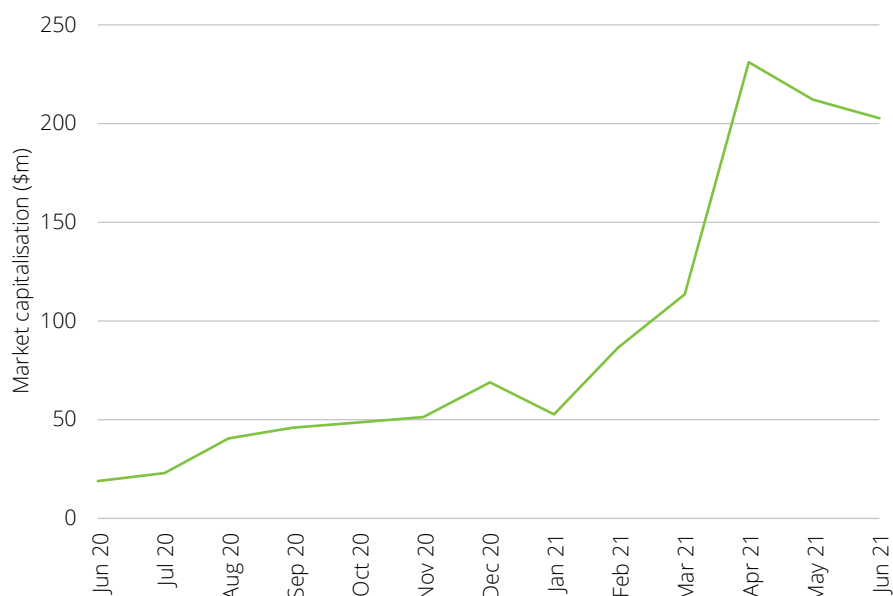
During the year, the company's market capitalisation steadily rose off the back of successful capital raises and positive drilling results. Moreover, Eagle Mountain Mining's completed a \$11m placement in late February, which funded the company's aggressive drilling at Oracle Ridge and laid the foundation for phenomenal drilling results that were announced at the end of March 2021.

The company's drilling results reported exceptional high-grade results containing gold, silver and copper from outside the existing Mineral Resource Estimate at Oracle Ride. This news excited shareholders as it enlarged and enhanced the Oracle Ridge Mineral Resource.

Going forward

Eagle Mountain Mining is primed to further expand the Mineral Resource at their ever-so impressive Oracle Ridge Project with two rigs drilling full-time providing a threefold increase in drilling rates.

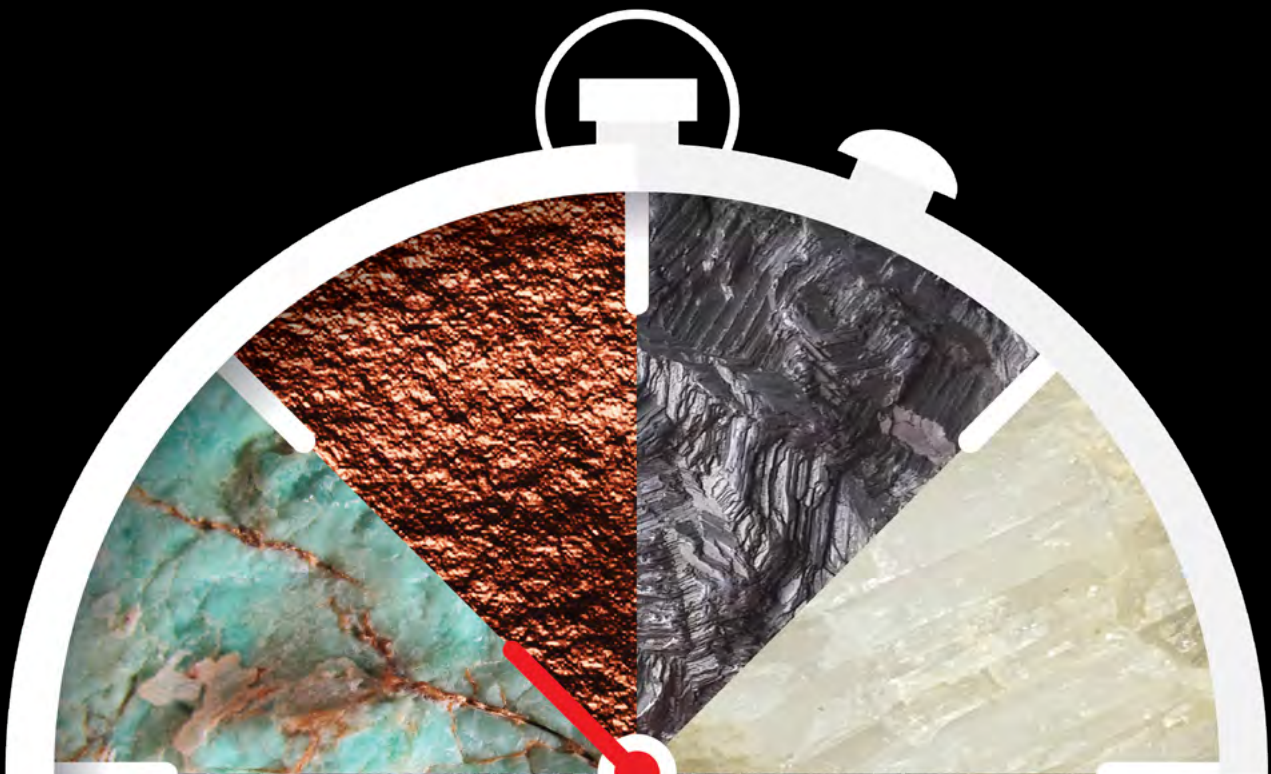
Environmentally, Eagle Mountain Mining has committed to complete a 'future mining study' aimed at minimising emissions and improving efficiencies.



Commodity review

A detailed review of commodity price movements for the year.

Commodity prices rallied this year; a stark contrast compared to the lows experienced last year due to the onset of the COVID-19 pandemic.



Commodity prices rallied this year; a stark contrast compared to the lows experienced last year due to the onset of the COVID-19 pandemic. As industrial activity across the globe accelerates back to pre COVID-19 levels, demand for base metal commodities, and bulks, has skyrocketed, while in many cases, supply continues to lag as a result of production shutdowns inflicted by the pandemic.

The most notable winner this year is iron ore, reaching its highest recorded price in May 2021 and closing the year at US\$216/t – a 112% increase on last year.

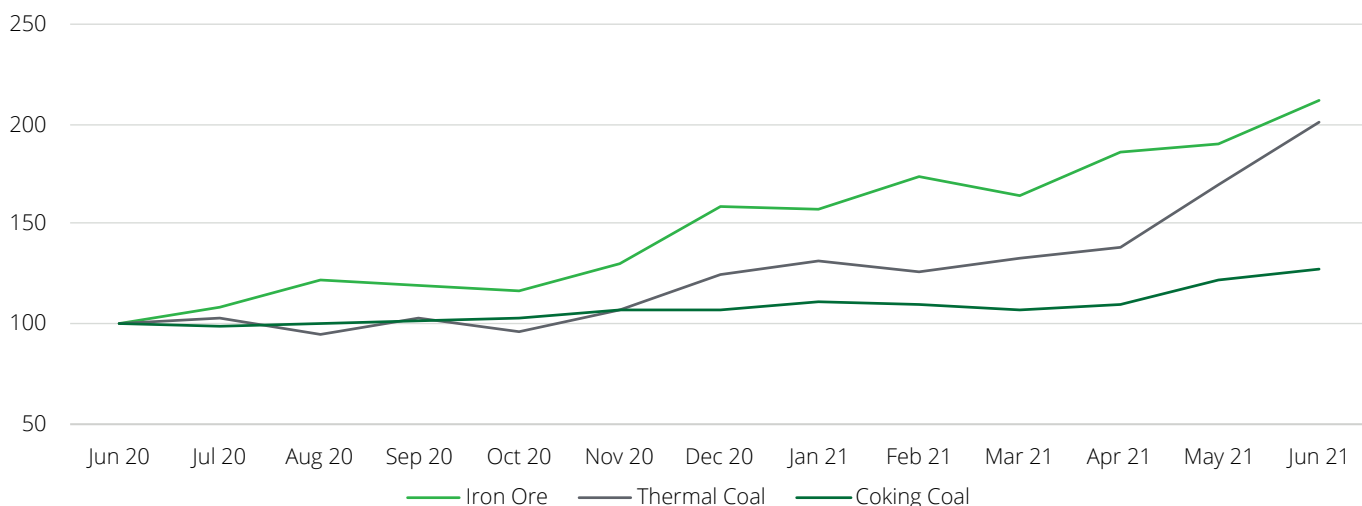
Gold, unsurprisingly, was left out from the upward trends in price experienced across the board. Often referred to as the go to ‘safe haven investment’ choice in times of economic uncertainty, gold finished the

year flat, as economies resume industrial activity in a bid to return to normality.

Recall, gold only recently achieved all time price highs and the fact it has held its ground this year remains an outstanding result in its own right.

An overview of movements across our commodity portfolio is provided below.

Bulk Commodities



Iron Ore

Iron ore prices saw strong growth over the course of the 2021 financial year as Australia and indeed the world, dealt with the effects of the COVID-19 pandemic. Annually, iron ore prices grew by 112%, rising to USD \$216/tonne at 30 June 2021. Two months brought high volatility to the price, but the overall trend was not shaken by these periods. December 2020 saw a USD \$44/tonne jump in price, spurred by high demand from China, who notably left iron ore agreements untouched by tariffs and trade barriers during this period of heightened tensions between the nations. Environmental issues with competing producers like Brazil's Vale also contributed to this strong finish to the calendar year. The steep drop later in the month was caused by pressure from China as it scrambled to slow down the steep rise of many of its largest imports. Overall, the iron ore price across the past financial year has been characterised by strong growth in spite of rising geopolitical tensions, shifting market players and the ongoing impacts of the COVID-19 pandemic.

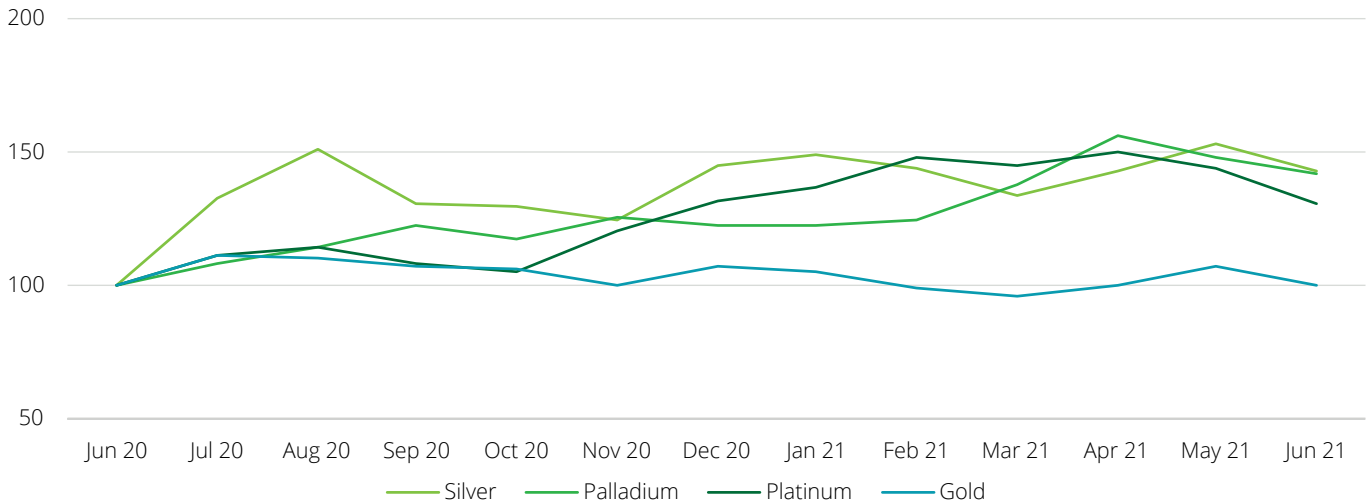
Thermal Coal

After a 2-year downward trend, closing at USD \$64/tonne last 30 June 2020, thermal coal prices have rallied closing at USD \$129/tonne as of 30 June 2021, a 10-year high to the previous USD \$180/tonne in July 2008. Despite the effort to transition to more renewable energy sources, coal remains a growing industry in Asia. The increase in price was primarily driven by the increase in energy consumption in Asia. This demand is attributed to a combination of factors including a strong economic recovery from the pandemic, global shortage of supply and import controls. Chinas demand for coal has also continued to grow, despite bans on Australian coal imports. This has cornered the country to rely on locally produced coal, although supply levels have not been able to fulfill demand. This is particularly true for the last quarter of the year, where seasonal changes in China have significantly increased demand. Additionally, a suite of mine disruptions across the globe contributed to a global shortage of supply, driven by mines in Indonesia which experienced flooding, unrest in Colombia, maintenance of rail systems in South Africa and safety inspections in China.

Coking Coal

The price of China Prime Coking Coal remained steady for most of the year, gradually working its way back to pre-COVID-19 levels. This was driven by demand for the essential steel making commodity, which improved as economic growth in China began to pick itself up following the initial wave of COVID-19. In April 2021, strict safety and environmental checks saw the suspension of production at four mines within the Shanxi province placing stress on local supply. With Australian coal imports unofficially banned, and a reduction in Mongolian imports because of border crossing restrictions to try and limit the spread of COVID-19, the price of local coking coal rallied to close out the year at USD \$209/tonne.

Precious Metals



Silver

Silver’s historic volatility was once again the hallmark of its movement over the financial year. Silver saw a 42% increase, from USD \$18/troy oz to USD \$26/troy oz at 30 June 2021. July and August of 2020 saw a historic surge in the silver prices, to an almost-4-year-high and then pushing further, tipping the price over USD \$28/troy oz. This growth was attributed to strong gold performance, increased demand for silver in industrial applications, particularly in solar energy. Silver’s retraction in September 2020, was on account of the strengthening of the US dollar.

Palladium

The price of palladium climbed to its all-time recorded high during the period and closed 42% higher at USD \$2,707/oz. The price continues to be influenced by an increase in demand from the automotive sector, due to the tightening of emissions legislation in Europe and China. As automotive manufacturing rates continue to improve post the onset of COVID-19 imposed lockdowns, demand for palladium is expected to remain high, as manufacturers continue to restock.

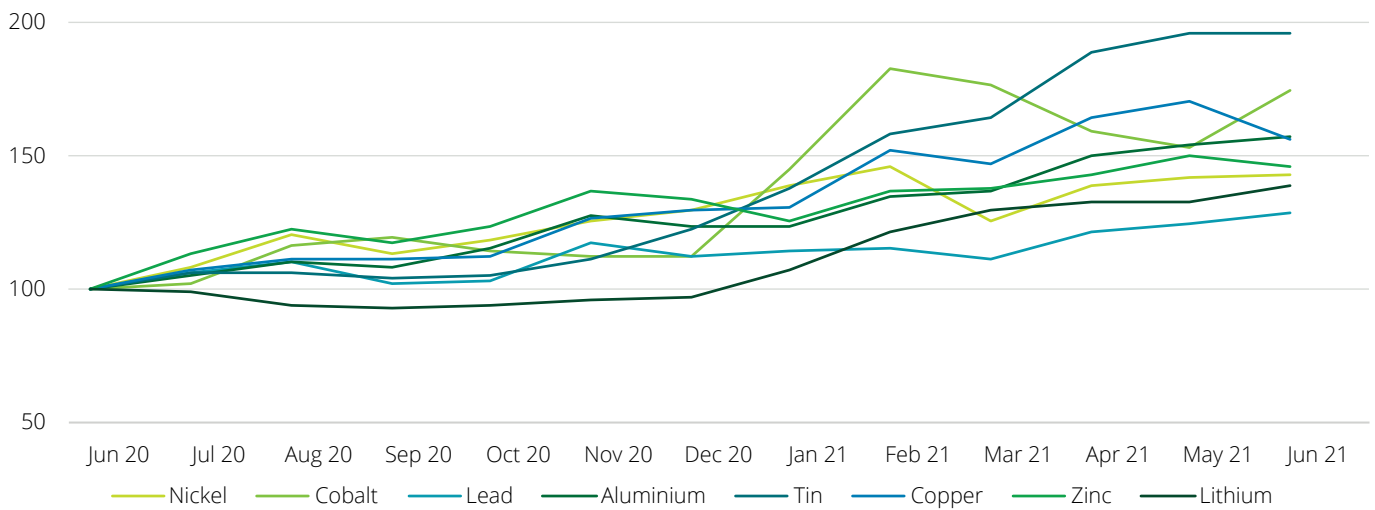
Platinum

The price of the industrial metal achieved strong growth during the year, closing 30% higher at USD \$1,059/oz. Like many other commodities in its class, the price has continued to climb as global economies rebound and governments pour more resources into infrastructure development post the COVID-19 downturn. These factors have kept the market in a supply deficit, with production only now starting to ramp back up to pre COVID-19 levels in South Africa and Russia, who are the dominate producers of the metal. Given Platinum’s use in the automotive industry as a catalyst to reduce carbon emissions, the future price of the commodity is expected to bode well, as government’s continue to crack down on emissions in order to try and limit the effects of climate change.

Gold

The price of gold rallied in the first quarter of the year, reaching a high of USD \$2,067/oz in August 2020 as demand for safe-haven investments increased, stemming from continued global economic disruption because of the COVID-19 pandemic. As COVID-19 vaccines began to be administered towards the back end of 2020, investor concerns over the pandemic began to ease, which diminished the desire for investors to hold onto gold as a safety proposition, resulting in a steady decline in the price of gold into early 2021. As some countries, most notably India, experienced the second wave of COVID-19, the price was again bolstered in April to May of 2021. The price then declining back down to USD \$1,763/oz to close out the year relatively flat, on the back of the US Federal Reserve indicating that it may increase interest rates earlier than first expected, signalling that economic activity is on the rise, both in the US and on a global scale.

Base Metals



Nickel

Nickel saw 43% increase over the financial year from an opening price of USD \$12,757/tonne to USD \$18,212/tonne at 30 June 2021. The metal saw a steady upwards trend for the first half of the financial year, before a week of record movements in late February and early March 2021. January 2021 was a strong month for the commodity with environmental issues including earthquakes in Indonesia driving the price higher in a knee jerk reaction to envisioned supply shortages. A month later, nickel reached a seven-year-high of USD \$20,110/tonne by the end of February, only to drop by 7.6% a week later, the biggest one-day loss since 2016. This was a sharp market response to several production and demand factors, including the announcement by major Chinese producer Tsingshan Holdings Group that it would provide 100,000 tonnes of nickel matte to the market for the booming technology industry. Further drivers of volatility were production issues plaguing major suppliers across the globe, from Brazil's Vale undergoing maintenance and dealing with environmental issues, and Russia's Norilsk, closing production at two mines due to flooding. Despite these disruptions, the nickel price is carving an upwards path as production stabilises and clean technology applications of the metal heighten demand.

Cobalt

Cobalt experienced a tumultuous year. August 2020 saw a steep rise due to supply restrictions in the face of China's growing demand. COVID-19 lockdowns across African nations saw transport delays and bottlenecks impacting Zambia and the Democratic Republic of Congo (DRC), which accounts for 70% of global cobalt supply. In January 2021, increased interest in electric vehicles (EV) saw the cobalt price soar to highs of USD \$53,000/tonne as the market anticipated supply shortages due to lingering effects of transport delays and China's stockpiling of the metal. Cobalt prices retreated in April and May of 2021 as interest in alternative batteries grew, easing demand on NCM (nickel, cobalt, manganese) batteries and their components. Soaring EV sales have ensured an overall upward trend in cobalt prices, with commodity trading house Trafigura's head of nickel and cobalt announcing supply must double by 2030 to meet such rising demand, with Glencore announcing plans to reopen one of the world's largest cobalt mines, and the Mutanda Project in DRC to be ready for production in 2022. Cobalt finished the financial year at USD \$49,600/tonne.

Lead

Lead saw a true-to-form high movement year, starting at USD \$1,763/tonne to a finish at USD \$2,265/tonne – a 28% annual increase. Lead saw pricing challenges in the first half of the 2020 financial year but lead's essential role in industrial batteries saw its demand stay strong pushing the price up during the latter half of the year. The metal reached a price high of

USD \$1,994/tonne by mid-August 2020, signalling a stronger recovery than initially expected. Further factors driving this growth were supply woes as COVID-19 related mine disruptions, especially across African producers, were felt across the market. Slumps in the price were caused by lead's heavy reliance on secondary feeds and the impact of COVID-19 related lockdowns and production delays on such processes.

Aluminium

Aluminium rose 57% across the 2021 financial year from USD \$1,601/tonne to a finish of USD \$2,509/tonne at 30 June 2021. The metal benefited with announcements from the likes of Tesla demonstrating the role of aluminium in new technologies and industries. As a lighter, greener alternative to steel, aluminium is set to be a major component in the electric vehicle industry, but this is not the only application for the metal that has pushed the price steadily higher over the 2021 financial year. Ever-increasing demand from China, concerns about supply shortages as nations pivot to less energy-intensive metals, trade tariffs and international tensions associated with the sale of aluminium all played a part in keeping the market wary and as a result, buoyed the price across the year. This steady growth has been a welcome change for the market after a volatile performance over the previous year.

Tin

The demand for tin continued to climb for its use as solder in the electronics industry. This has had a profound impact on the price of the commodity, which has effectively doubled during the year, closing at USD \$32,920/tonne. The increased demand stems from a sustained demand for consumer electronic across the globe amidst the COVID-19 pandemic due to more home working and schooling arrangements. Supply disruptions have also driven the price up as several smelters in Asia and South America have struggled to produce at their maximum capacity due to the COVID-19 pandemic, causing the market to reside in a supply deficit position.

Copper

The price of copper increased strongly over the year, closing at USD \$9,352/tonne, a 53% increase on last year's closing price. As supply continued to be constrained from Chile and Peru, two of the leading copper producers who continue to struggle to overcome the COVID-19 pandemic, increased demand from China and the anticipated rebound of the global economy and industrial activity post COVID-19 is flagging a significant supply deficit.

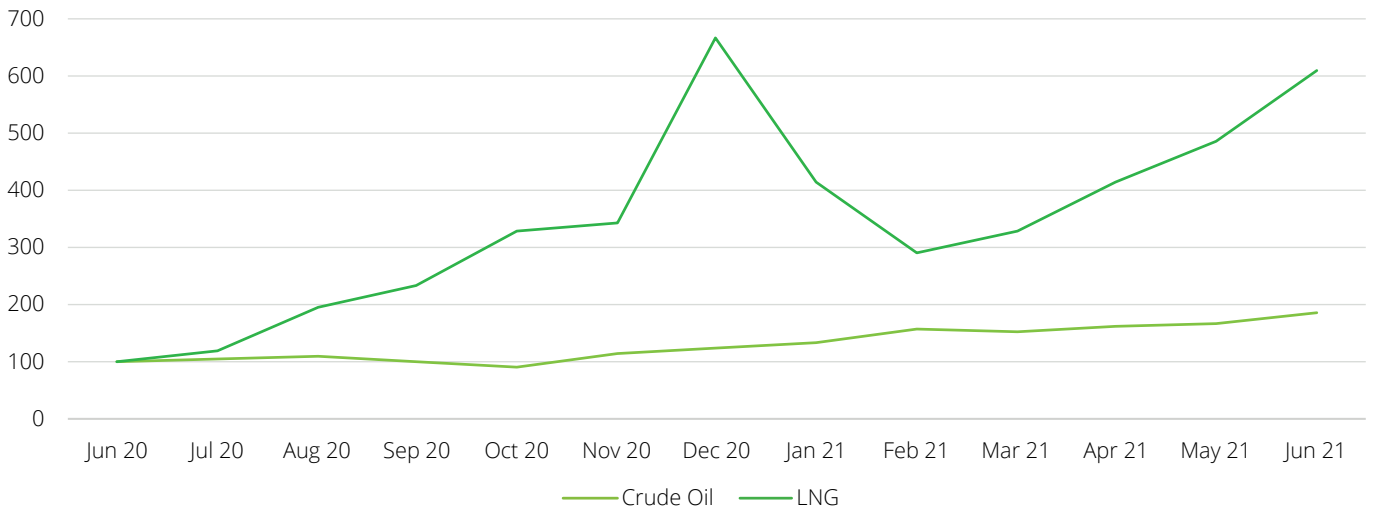
Zinc

Zinc achieved 46% growth over the year, closing at USD \$2,967/tonne. The metal, which is heavily used in the construction of bridges, roads, utilities, and railroads by a process of galvanisation, surged in price as a result of the strong demand for the metal in China, the largest consumer of industrial metals in the world. China's strong economic recovery, and strong fiscal stimulus aimed at building infrastructure across the country has resulted in the price of industrial metals, including zinc and iron, to soar in the past year.

Lithium

Lithium remained flat over the first half of the year, with a low point of USD \$6.20/kg. The second half of the year saw the price step up, with an overall increase of 39% over the year and a closing price of USD \$9.00/kg. The price increase was driven by the high demand of the commodity in the production of lithium batteries, used in the production of electric cars. Concurrently, supply has not been able to keep up with demand, with lithium producer Albemarle announcing that it had already sold its lithium supply for the rest of the year. In order to meet demand, the Company looked to bring its Wodgina mine in Western Australia back online, but had struggled in the face of labour shortages in the state. Production response challenges from several lithium producers has created a tighter market than initially expected which bodes well for sustained lithium price growth.

Oil and Gas



Crude Oil

The price of crude oil saw an increase of 84% from USD \$41/BBL up to a closing price of USD \$75/BBL as of June 2021. This upward trend was maintained by the gradual decline in U.S. shale production and inventories, and the controlled supply of oil by OPEC+. Crude Oil prices have been positively impacted by the swift response of governments to implement the COVID vaccines, as restrictions ease up, market confidence has risen and the demand for oil for transport and manufacturing has increased. While demand for oil remains

low relative to previous years, demand has still shown a slight increase with increased economic activity. Additionally, a steady rise in US inflation rates has also contributed to the increase in oil prices.

LNG

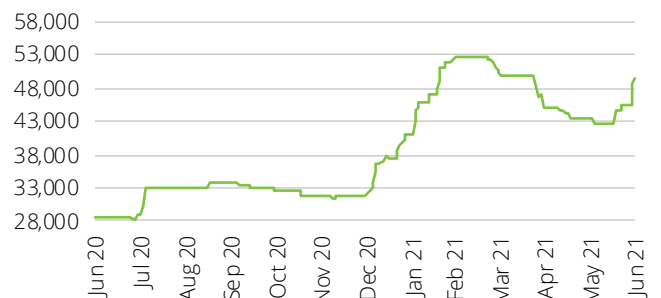
LNG prices have had a rollercoaster year, with an overall upward trend. The price of LNG saw an increase of 510% from USD \$2.00/mmbtu to a closing price of USD \$13.11/mmbtu. During the year, the commodity rallied as high as USD \$19.70/mmbtu in January 2021 with winter temperatures in the northern hemisphere

contributing to the price spike, as well as disruptions in LNG production in Western Australia and freight setbacks in the Suez Canal. The price of LNG maintained an upward trend into June 2021, driven by strong economic activity in Asia throughout the year. Further, the scarcity of utilities in Japan, the world's top LNG importer, and Korea has seen an increase in demand for the gas.

Largely, the price increase was driven by seasonality and the fuel increasingly used together with renewables.



LNG US\$/mmbtu



Cobalt US\$/tonne



Iron Ore US\$/tonne



Aluminium US\$/tonne



Coal US\$/tonne



Copper US\$/tonne



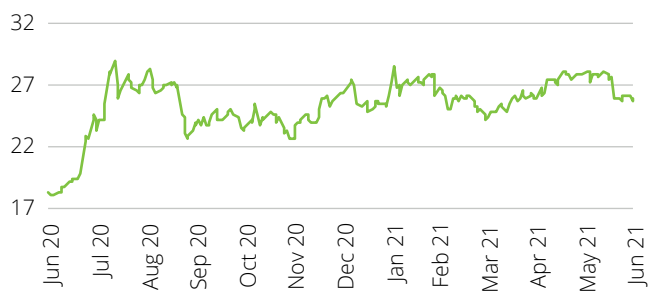
Tin US\$/tonne



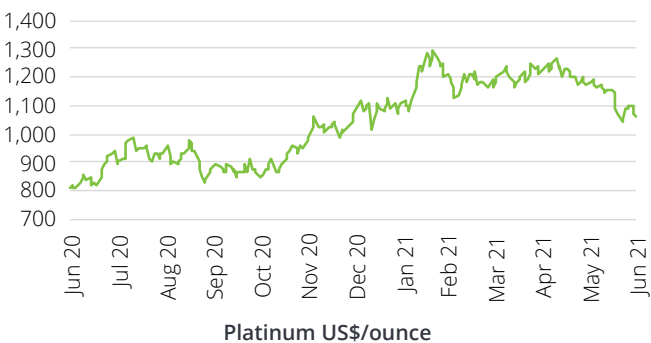
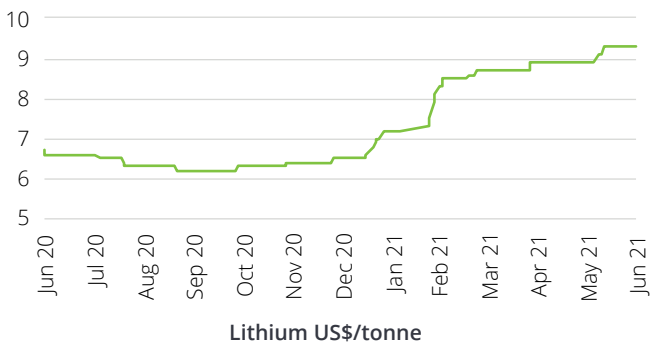
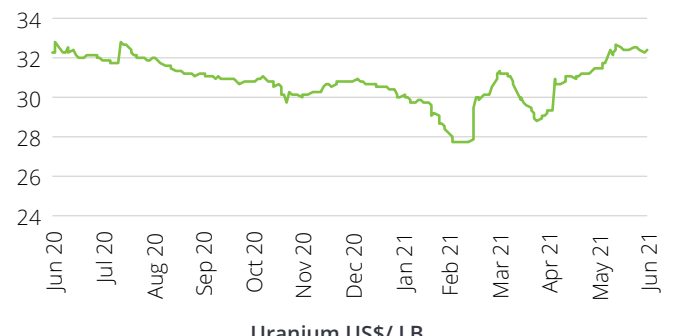
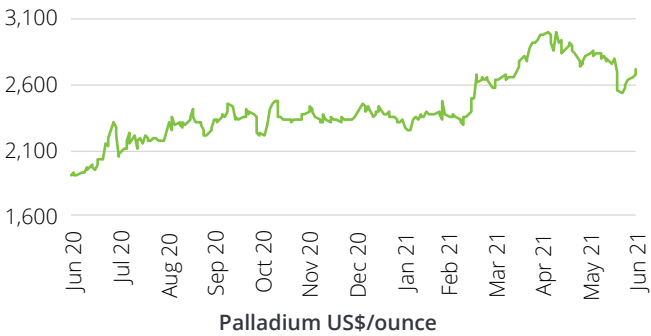
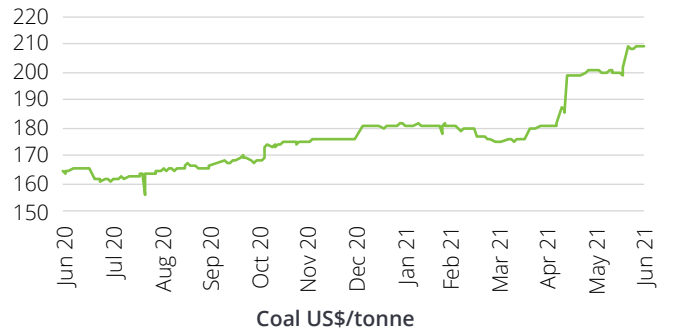
Zinc US\$/tonne



Crude Oil US\$/barrel



Silver US\$/troy oz





Celebrating 30 years – Congratulations to Diggers & Dealers

This year marks the 30th anniversary of the Diggers and Dealers Mining Conference in Kalgoorlie. This conference, like many of mining companies it represents, has seen a fair share of cyclical ups and downs over the past three decades. What a remarkable achievement and representation of the resilience and commitment of many industry stalwarts over the years to keep this institution thriving!

Longevity in the energy and resources industry can be a rarity as investors and management teams alike are often quick to capitalise on news from the drill bit in favour of paving the roads to production. Similarly, when you are onto a good thing, offence quickly turns to defence as the M&A eagles start to circle.

To mark the 30th anniversary of Diggers & Dealers we have analysed longevity of WA Index participants.

The companies have been selected from the Deloitte WA Index Top 100 as at 30 June 2021, being the top 5 longest surviving organisations based on official listing date on the Australian Securities Exchange and in the energy and resources industry. Congratulations to the companies that have been recognised for their outstanding success and contribution to the WA market over the past 30 years.

Top 5 longest survivors

Rank	ASX	Constituent name	Sector	Official listing date	Mkt Cap 30 June 2021 (AU\$m)
1	ILU	Iluka Resources Ltd.	Materials	30/06/1962	3,867
2	ALK	Alkane Resources Limited	Materials	1/05/1969	685
3	WPL	Woodside Petroleum Ltd.	Energy	18/11/1971	21,401
4	MGX	Mount Gibson Iron Limited	Materials	12/02/1976	1,020
5	RSG	Resolute Mining Limited	Materials	11/01/1979	557

Iluka Resources Limited

Iluka Resources Limited (Iluka) listed on the ASX 59 years ago in 1962, not as Iluka as we know it now, but as Westralian Oil Limited. During the 1990's the company operated under the name 'Westralian Sands Ltd.', and during this time the company operated mineral sands projects with the aim of extracting titanium bearing minerals to be used in high technology products. Fast forward to current day, Iluka is still primarily involved in mineral sands exploration and related development, operations, and marketing, with historic projects in the south west of Western Australia and today, operations across the world, from the world's largest zircon mine at Jacinth-Ambrosia in South Australia to leading rutile mines in Sierra Leone.

Iluka is ranked 10 in the Deloitte WA Index, with a market capitalisation of AU\$3.867 billion at 30 June 2021.

Alkane Resources Limited

Alkane Resources Limited (Alkane) is a gold production company that has now been an ASX listed company for 52 years, listing in 1969. Alkane's two current projects are located in the central western region of New South Wales, more specifically the Tomingley Gold Project southwest of Dubbo and the Northern Molong Porphyry Project directly east of Dubbo. Alkane's main focus has always been gold; that being said, their operational approach has changed over the years.

During Alkane's formative years, they operated on an international basis with gold assets in Indonesia, New Zealand and Australia, however in recent years they have taken an Australian based asset approach with operations primarily based out of New South Wales.

Woodside Petroleum Ltd.

Woodside Petroleum Ltd. (Woodside) listed on the ASX in 1971 and is involved in the exploration, development and production of a number of hydrocarbon plants across the globe. Woodside's hydrocarbon business has recently taken focus on LNG, which is a lower-emission alternative to traditional petroleum and natural gas. Currently, Woodside operate projects in Western Australia including Pluto LNG and the North West Shelf Projects and global operations in Timor-Leste, Woodside has long been a WA industry leader. Woodside is ranked 3 on the Deloitte WA Index, with market capitalisation of AU\$21.4 billion at 30 June 2021.

Mount Gibson Iron Limited

Mount Gibson Iron Limited ('Mount Gibson') listed on the ASX in 1976 making this its 45th year as a listed entity. Mount Gibson Iron is an Australian producer of high-quality iron ore products, with projects based out of the Kimberly and the Mid-West regions of Western Australia. In 2002, Mount Gibson undertook a reverse acquisition of Whittakers Ltd., a prominent West Australian timber miller. Mount Gibson kept Whittakers Pty under their corporate structure as a subsidiary until 2010, when they restructured the Mount Gibson consolidated entity.

Resolute Mining Limited

Resolute Mining Limited (Resolute) was listed on the ASX in 1979 and has been involved in the exploration, development and operation of gold mines across the African continent. Resolute is ranked 44 on the Deloitte WA Index with a market capitalisation of AU\$557.47 million at 30 June 2021. Although Resolute's company name has changed four times since being listed in 1979, the company's modus operandi has remained largely the same, with a focus on gold assets in Africa.



Lithium and the shift to renewables and electric vehicles

For more than a century, the world has largely relied on fossil fuels to feed the engines of industry and commerce. In doing so, these conventional energy resources have increased global prosperity and created the conditions for the development of increasingly innovative and revolutionary technologies. However, this energy legacy has also resulted in environmental and climatological externalities.¹ Recognising these challenges, many countries and industry leaders have committed to pursuing a cleaner energy future through increasing the integration of renewable energy (RE) into power grids and the utilisation of electric vehicles (EV). This global shift to clean energy has been stark – from 2010 to 2019, RE power generation capacity nearly doubled.² RE, as a portion of global power production, increased from approximately 20% in 2010 to 28% in 2018 and many believe this number will reach 50% by 2050.³ At the same time, there has been immense growth in the global adoption of EVs. From 2010 to 2019, EVs rose from 0% to over 2.5% of global vehicle sales; by 2030 they are forecasted to claim 32% of market share.⁴

The sheer growth in RE and EVs, which have historically relied on lithium ion batteries, has driven the global demand for lithium such that governments and industries have become increasingly concerned about a supply shortfall within the coming decade. The financial firm UBS forecasts that global demand will outstrip all new lithium project production

in five years and that supply will serve only 50% of projected demand by 2030, corresponding to a 20% increase in price for the metal.⁵

These lithium demand trends are unlikely to abate and could even accelerate. United States President Biden's election and the subsequent recommitment by the US to the Paris Climate Agreement, and pledge to achieve net-zero emissions by 2050, could galvanize allies and other signatories to take similarly bold climate actions.

Shaping markets for a green future

Given the existing demand, and the likely global re-commitment to clean energy, governments must be proactive in their lithium policymaking to avoid national budget stresses and ensure continuity of supply for domestic industries that rely on this critical resource. To do so, governments must create policies to address the three primary constraints to lithium access:

1. The geopolitics of lithium

Countries that are in a high net-import position in terms of their lithium demand – e.g., the United States and the European Union (EU) – must consider multilateral or complementary policy approaches that provide political, technical, or economic support to lithium-rich, market-friendly economies with the goal of improving competitive global market access to these resources. Although already a key lithium supplier, China has also begun to concentrate much of the lithium value

chain while other countries (i.e., Australia and Chile) that have large reserves of the metal own less of the downstream value chain.

Four countries enjoy an oligopoly position in the lithium market: Argentina, Australia, Chile, and China. Although China has the lowest reserves, it arguably has a more dominant market position given its strategic investments in lithium mines abroad and its control of many segments of the value chain.

China's influence over global lithium and other minerals supply is driven by its infrastructure investment effort to expand influence abroad and the strength of the Chinese battery market, which may require 800,000 tonnes of lithium per year by 2025 to keep pace with global EV manufacturing demand.^{6,7,8} The ability to absorb as much lithium as a mineral jurisdiction can produce creates an investment climate where Chinese companies are among the first, and best-positioned, market entrants in countries with large lithium reserves.

2. The environmental risks of extracting and processing lithium

Environmental, social, and governance (ESG) standards have become increasingly important for mining executives. This is partly due to the liability exposure of damage and part the disruption to mine operations that can financially doom a project. A mine's exposure to ESG risk is frequently a cause of such disruption and an even greater catastrophe.

¹ International Renewable Energy Agency, "The True Cost of Fossil Fuels: Saving on the Externalities of Air Pollution and Climate Change," International Renewable Energy Agency, May 2016

² International Renewable Energy Agency, "Renewable Energy Statistics 2020," International Renewable Energy Agency, July 2020

³ US Energy Information Administration, "How much of world energy consumption and production is from renewable energy?," US Energy Information Administration, accessed February 5, 2021

⁴ Michael Woodward, Dr. Bryn Walton, and Dr. Jamie Hamilton, et. al., "Electric vehicles: setting a course for 2030," Deloitte, July 28, 2020

⁵ Dan Runkevicius, "As Tesla Booms, Lithium Is Running Out," Forbes, December 7, 2020

⁶ Andrew Chatzky and James McBride, "China's Massive Belt and Road Initiative," Council on Foreign Relations, January 28, 2020

⁷ Liu Yukun, "BRI brings gains for mineral firms," China Daily, October 20, 2018

⁸ Daniel Ramos, "Bolivia picks Chinese partner for \$2.3 billion lithium projects," Reuters, February 6, 2019

The 2019 collapse of Vale’s tailings dam in Brumadinho, Brazil underscores this notion.⁹

Corporate ESG attention is also due to global consumers’ increasing demands around the provenance of their EVs, batteries, and battery components. Spurred by shareholders and environmentally conscious customers, companies like BMW¹⁰ have become increasingly aware of the environmental cost of the lithium required to manufacture new, desirable EVs. Just last year, BMW entered into a five-year €540 million agreement for lithium that is “extracted and processed under ethically responsible conditions.”¹¹

Lithium projects can be developed through brine or hard-rock extraction. Brine extraction is water intensive and is common in South America, especially from the expansive salt flats. In Australia, energy intensive hard-rock extraction is the primary production method. Both methods present unique environmental risks. Source: Deloitte Analysis.

3. Lack of alternatives and promoting innovative alternatives

Current technological trends point to very few viable lithium-substitutes for the batteries that power the new energy technologies. Governments must provide incentives to broaden the supply base through innovative approaches.

The drive for increasing RE and EV penetration is only likely to intensify, especially given the results of the latest US election, thereby further accelerating the global demand for lithium.

To combat the increasing geopolitical, environmental, and demand-driven constraints, lithium-dependent countries will increasingly flex their policy levers to promote competitive, ESG-based, lithium market development and avoid the fiscal and economic ramifications of a supply-constrained world.

Australia’s opportunity to respond to demand

Australia’s Critical Minerals Strategy (including lithium) outlines three target actions of the government’s policy framework for our critical minerals market:

- promoting investment in Australia’s critical minerals sector and downstream processing
- providing incentives for innovation to lower costs and increase competitiveness
- connecting critical minerals projects with infrastructure development

These steps aim to position Australia as a world leader in the exploration, extraction, production and processing of critical minerals. The goal of the strategy is to enable the development of Australia’s critical minerals sector, including downstream processing and manufacturing opportunities, by attracting investment, supporting innovation and connecting opportunities with infrastructure¹².

Australia has a world leading endowment of natural lithium resources measured by volume and quality. The industry is at crucial juncture right now as projects search for the opportunity to attract capital, build supply chain operating models and adopt leading technology to exploit these resources.

The lithium industry in Australia has a clear opportunity to leverage the globally-aligned policies:

Adopting a global leading position

Despite China’s increasingly dominant market share and control throughout the value chain, the majority of un-extracted lithium reserves fall outside China;¹³ net lithium exporting countries like Australia must do everything within their power to incentivise bringing these reserves to market. For example, 54% of global lithium reserves are concentrated in Australia and the “lithium triangle” of Argentina, Bolivia, and Chile.¹⁴ Bringing these resources to market with urgency will embed Australia’s position and influence and global supply chain.

Leverage ESG for a seat and the table

There is an important overarching market advantage linked to the credibility of domestic ESG project reporting and compliance. This is a key factor as our project developers look to engage with markets such as North America where governments and end users researching for supply. Two very important questions exist that will have direct impact on Australian projects searching for offtake supply contracts – “Will we see a premium paid for high ESG compliance, or will that be a requirement to get a seat at the negotiation table, and therefore a cost to be absorbed?” and “How long will it be before jurisdictions that have a lower cost of production to Australia are able to credibly report on ESG and therefore influence global product supply?” Producers should be assessing where they sit on this spectrum and ensure the best leverage/cost/value position is secured for offtake agreements.

⁹ Reuters, “Vale dam-break trauma raises level of ESG funds in Brazil” by Sabrina Valle, <https://www.reuters.com/article/us-vale-sa-esg-brazil-focus/vale-dam-break-trauma-raises-level-of-esg-funds-in-brazil-idUSKBN27C0R5> accessed February 5, 2021

¹⁰ Kai Zobelein, “BMW Group commissions study on sustainable lithium extraction,” BMW Group, December 16, 2020

¹¹ Saskia Essbauer, “Securing raw material supplies for battery cells: BMW Group signs supply contract with Ganfeng for sustainable lithium from mines in Australia,” BMW Group, December 11, 2019

¹² Critical Minerals Facilitation Office, <https://www.industry.gov.au/data-and-publications/australias-critical-minerals-strategy>, March 2019

¹³ United States Geological Survey, “Lithium,” United States Geological Survey, accessed February 5, 2021

¹⁴ Economist, “The white gold rush: A battle for supremacy in the lithium triangle,” Economist, June 17, 2017

Governments can adopt policies for hard-rock extraction, which is typically powered by heavy fuel oil, that encourage a transition to RE, such as the official sanctioning of corporate power purchase agreements and subsidies (e.g., feed-in tariffs). Strategic encouragement by way of RE financing and funding support for value-add processing investment will support the local market.

Invest in technology and supply chain

Policymakers confronting an impending lithium shortage must be able to “walk and chew gum.” They must develop approaches to expand their access to ethically-extracted lithium while simultaneously devising near-term solutions to maximise existing supply.

One option is for governments to provide R&D investment to explore recycling methods to extend lithium’s shelf-life. The US Department of Energy is attacking both the supply and demand sides of recycling. US agencies are exploring methods to reconfigure battery packs to make lithium more extractable while ensuring the recycled lithium meets EV industry standards.¹⁵

Technology investment applies to both aspects of extraction techniques, be it for a specific facility or downstream processing. Governments also have a clear opportunity to incentivise the development of shared user facilities, center of excellence hubs and supporting infrastructure to facilitate product movements through supply chain.

Mark Upton

Partner – Global Investment and Innovation Incentives (Gi3)

Sri Sekar

Senior Manager – Consulting



¹⁵US Department of Energy, “[Research Plan to Reduce, Recycle, and Recover Critical Materials in Lithium-Ion Batteries](#),” US Department of Energy, June 2019

WA Index

Q&A with Peter Bradford, Managing Director and CEO, IGO



Since taking over the reins in 2014, Peter Bradford has steered IGO from a ~\$1bn diversified producer to a +\$5bn organisation specifically focused on metals critical to enabling clean energy. The Company is known for its purposeful strategy, believing in a green energy future, and is making a difference in improving people's quality of life and changing the way we live. We found some time to sit down with Peter and reflect on the IGO story, the clean energy shift and the outlook for a green energy future.

Q: Peter you joined the company in 2014, and at that time the narrative was 'growing a great Australian mining company'. Fast forward 2021, IGO is focused on metals critical to enabling a clean energy future. Can you share with us a little about how the clean energy strategy came to be?

It really started with our Nova Project achieving commercial production in 2017. At the time, we could see the opportunity generated by the emerging battery/clean energy thematic and realised that Nova, as a nickel, copper and cobalt producer, gave us a great head start into the clean energy metal space. From there, we did a lot of sensing to better understand the opportunity and this gave us that first glimpse of the pending disruption in this area.

Late 2017, we realigned our strategy to focus on clean energy metals. In parallel, we started working with the people in our business to understand what was important to them – what made them get out of bed in the morning. We came to understand that there was a shared purpose between the people in the business, who wanted to be part of something more than a mining company digging dirt out of the ground.

Our team really wanted to see how their everyday role could help change people's lives and help to create a better planet for the future. From this we evolved IGO's purpose. There was a little bit of push – pull around which came first, the strategy or the purpose, but it all came together to give the people in the business, and the business collectively, line of sight as to how we transform the business to be able to "make a difference" each and every day and to contribute to a better planet for future generations.

Q: Imagine you faced a few hurdles and doubters along the way? What have been some of the biggest challenges in staying the course and true to this strategy?

The thing that amazed me was how keen everyone across the business was to embrace it. At the time we had a board who came from conservative roots embedded in the traditional mining industry, but they were the first to embrace the bold new vision of what the company could look like and how we could target those metals that were going to be central to the disruption around clean energy and electric vehicles.

So internally there was really strong support, and increasingly we have seen the growth in external support with investors becoming more and more aware of both the clean energy thematic and the underlying reason for why we all need to do things differently to clean up the air.

The travel and production curtailments in response to COVID really showed the air pollution problem can be overcome, with the air quality improvements across Asia evidence of that recently.

Climate debates have been going on for many, many years but from my perspective, we have really seen the volume of the debate increase over the past 12 or 18 months. I believe that a large part of this is the COVID effect. COVID hit the pause button on the planet, pausing power generation, industrial activity, and transportation. The result was that we got to see blue skies in some countries that hadn't seen blue sky in a generation. This made people understand what could be possible.

From this, we have seen a surge in renewable energy and electric vehicle penetration. People are taking decarbonisation seriously and it has been great to see how businesses have proactively progressed their decarbonisation agendas, particularly here in Australia where local companies are at the forefront of this movement.

Q: You've talked about a passion for making the planet better for generations to come but at the core we are still talking about mining. How are you seeing everyday mining practices changing, and what are some of the next big steps to revolutionise the sector in areas like decarbonisation and being environmentally conscious?

Like all industries, the mining industry is more aware of what our impacts are today, than what they were 30, 60 years ago or 100 years ago, and we all benefit from that increased awareness.

For example, as Nova was designed and built, the compressed site infrastructure footprint reduced land-take, which was a real credit to minimizing the number of trees which would otherwise have to be cleared to create the project. There are many examples like this all across the mining industry.

Another important area is indigenous and first nations people. We have really seen a transformation here, and we are so much more aware of what our obligations are, including our obligations as human beings, and what we need to do to make sure that we are bringing our indigenous communities along as true partners.

We are also much more aware of the scarcity and importance of water today and water management practices have been improving significantly in the industry. When I was growing up, water was turning the tap and away it went. In generations to come, we may see global conflict around water as it has the potential to become our scarcest resource.

In respect of the decarbonisation debate, industry has really picked up the charge on this. At Nova in 2019, we put our first solar farm in place, reducing diesel use by 10 to 15%. If we were redesigning Nova today, we would be doing the work to challenge what we could do differently to allow us to potentially achieve an all renewables solution for this project.

Q: What does climate resilience mean to IGO, and how do you feel the industry is placed to secure its longevity in a climate conscious world?

There's a couple of elements here. We all aspire to have that clean energy future, but we can't deliver the clean energy future without continuing to mine the metals that are critical to making it happen.

We know we need more copper, nickel, more lithium etc. as without it we can't have clean energy. But as these critical commodities are mined, there's an imperative for the mining companies to make sure they are effectively net neutral from a carbon perspective.

Q: Net zero, carbon neutral, many mining companies are now coming out with explicit target dates and goals. Are we doing enough as an industry to be able to hit and satisfy investor and stakeholder expectations reading these targets that are now being set across the sector?

I've been pleasantly surprised with the overall speed with which the industry has tackled the whole net zero concept and how aggressive some of the targets are. Any of the companies that are involved in the mining and producing the metals that are critical to clean energy have got to walk their talk. We certainly feel that obligation.

As a company focused on clean energy metals, we know that there is a discerning customer base who will buy those vehicles who will want to understand the supply chain for their vehicle and its unique carbon footprint.

We aspire to be able to demonstrate that we have not had a negative impact on the overall carbon footprint of that vehicle. That aspiration is driving our roadmap and decarbonisation.

Q: You have just completed two significant transactions, being the divestment of Tropicana Gold Mine and the investment in Tianqi Lithium, what's next for IGO?

Our core pillars at IGO are being globally relevant in the clean energy metals space, making quality products designed by customers, being vertically integrated, and being proactively green.

We would like to do more downstream. The Tianqi transition delivered a combination of both upstream and downstream assets to us, and that's going to give us an indirect opportunity and the credentials to be able to take our nickel product downstream.

Another aspiration would be to continue to invest in exploration to unlock the mines of the future and that's in recognition of the fact that our industry has not done enough over recent generations to understand where tomorrow's deposits will come from. If you think about the risk to clean energy and electric vehicles, the risk is the inability of the mining industry to deliver the supply response to meet demand.

The third key element for us, which will be hand in glove with pursuing the other two, will be continuing M&A to deliver that global relevance that we're looking for as a business.

Does it pay to play it clean?

The last 12 months has seen a significant change in the attitude of investors when it comes to Corporate Social Responsibility. This movement, in lockstep with Governments worldwide, has seen the election of renewables focused Joe Biden into power in the US, and China's commitment to net-zero emissions by 2060.

Investors are increasingly demanding that the environmental impacts of running a business be disclosed, with organisations required to provide timely and transparent reporting and that the company's license to operate be closely tied to responsible Environmental, Social, and Governance practices.

Companies have responded, with more and more now boasting net-zero targets of their own. In addition, a number of mining organisations with a focus on

sustainable end-product outputs affords an environmentally positive narrative for the industry.

The Deloitte Australia CleanTech (DACT) Index is a quarterly review of cleantech stocks listed in Australia. The DACT Index currently comprises 90 ASX-listed companies identified as those whose output positively enhances the communities and ecologies in which they reside. Put simply, all about doing 'more good' rather than 'less bad'.

Of the 90 companies currently comprising the DACT, 27 of these companies reside in the Deloitte WA Index.

So, how do the two Deloitte Index's compare?

As noted previously in this report, the WA Index has grown 46% over the 12 months to 30 June 2021, bolstered largely by iron ore stocks which grew off the tremendous rise in the price of the commodity over the year. However, the WA Index is also home to a significant conglomerate of sustainable minerals companies – focussed on lithium, copper, zinc and other minerals mined for purposes considered more sustainable than traditional mining activities.

The DACT Index grew at an even faster rate – climbing 71% over the year to 30 June 2021. Growth of the DACT was driven by different industries – including Water (namely Reece Limited), as well as Renewable Energy focused companies. Similarly, Sustainable Minerals played an important part in the growth of the DACT Index.

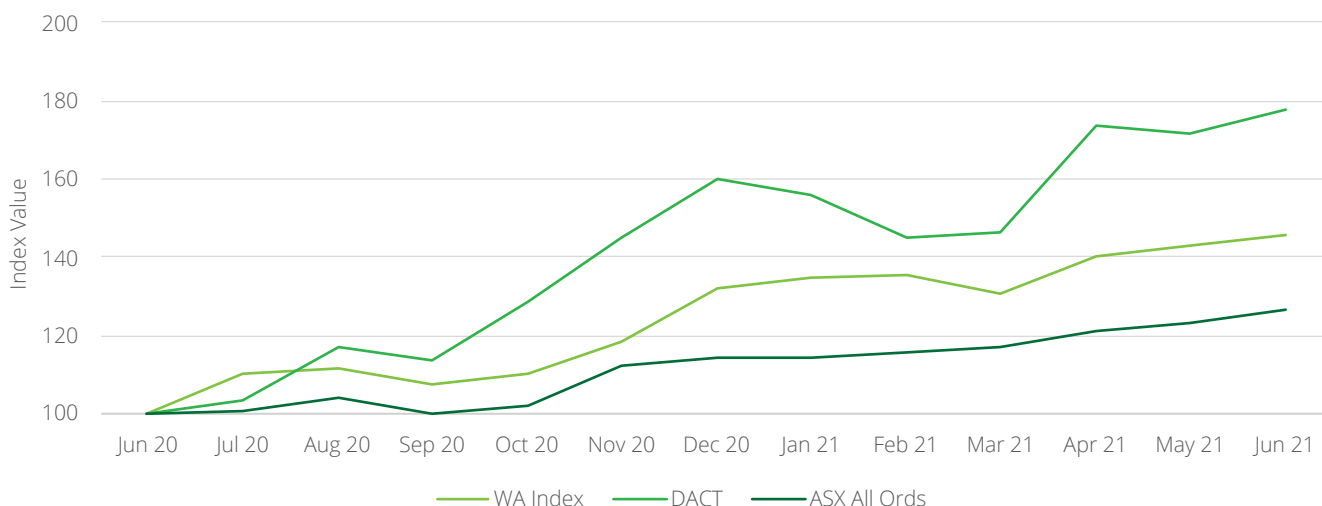
WA Index

Jun 20	Jun 21	\$ Movement	% Movement
201,592	293,856	92,263	46%

DACT Index

Jun 20	Jun 21	\$ Movement	% Movement
49,491	84,430	34,967	71%

DACT, WA Index, and All Ordinaries Growth YTD 30 June 2021



As can be observed from the chart above, both the WA Index and the DACT outperformed the broader local market this financial year, with the DACT performing very strong during the last quarter. Significant market capitalisation growth in Reece Group over the year propelled the DACT Index.

We have also looked at the top three companies by market capitalisation which reside in both the DACT and the WA Index. These top companies are:

- Pilbara Minerals Limited
- Galaxy Resources
- Piedmont Lithium Ltd.

All three of the above companies are lithium focused, which are considered a 'clean stock' on the basis that lithium is used in the manufacturing of batteries which may be used in electric vehicles and alike, which are environmentally beneficial, and it would be fair to say the clean energy thematic has translated into a successful year for the companies focussed on creating a better planet for future generations to come.

Pilbara Minerals Limited

Pilbara Minerals Limited ('Pilbara Minerals') is a lithium-based company, with its Pilgangoora Operation located in the Pilbara region of Western Australia. Pilbara Minerals communicate their purpose to be *"making the world a better place by enabling the global energy transformation"*, which results from the company's commitment to the renewable-based energy economy through their mining of lithium.

Pilbara Minerals have also set themselves a pathway to net zero emissions in the decade commencing 2040. Pilbara Minerals commitment to decarbonisation is planned via the utilisation of solar and wind power in operations.

Pilbara Minerals has grown significantly over the year, with its market capitalisation increasing by 656% to \$4,204 million, having finalised the acquisition of the Altura Lithium Operation in the early months of the 2021 calendar year.

Galaxy Resources

Galaxy Resources ('Galaxy') is a lithium developer and producer with a number of projects around the globe – included Western Australia, Argentina and Canada.

Galaxy's December 2020 Sustainability Report recognised the global focus on net zero emission targets. Galaxy are focused on a reduction of emissions through the proposal to complete project design work aimed at implementing significant contributions from renewables and designing new projects to target use of greater than 50% renewables.

Galaxy's market capitalisation has increased by 485% over the 12 months to 30 June 2021, climbing to \$1,856 million. In April 2021, the company announced a merger of equals with Orocobre Limited, with a proposed merge value of A\$4 billion and creating a top 5 lithium chemicals company.

Piedmont Lithium Ltd.

Piedmont Lithium Ltd. (Piedmont) operates in the lithium industry, as the owner of the Piedmont Lithium Project located in the Carolina Tin-Spodumene Belt.

Piedmont has been awarded as a Top Mover in the WA Index this year – recognising the significant market capitalisation growth during the year.

Deloitte Australia CleanTech (DACT) Index

27 companies from the DACT that reside in the WA Index – as at 30 June 2021

Company Name	DACT Sector	Ticker	30 June 2021 Market Cap	30 June 2020 Market Cap	Rank in DACT	Rank in WA Index
Pilbara Minerals Limited	Sustainable Minerals	PLS	4,200	556	6	9
Galaxy Resources	Sustainable Minerals	GXY	1,854	317	12	13
Piedmont Lithium Ltd.	Sustainable Minerals	PLL	1,614	88	14	16
American Pacific Borates Ltd.	Sustainable Minerals	ABR	430	152	20	53
Seafarms Group	Other	SFG	155	119	32	126
EcoGrat Limited	Sustainable Minerals	EGR	259	24	25	80
Neometals	Sustainable Minerals	NMT	262	87	24	79
Hazer Group	Efficiency & Energy Storage	HZR	125	50	38	148
Vmoto	Others	VMT	95	74	44	178
Orbital Corporation	Others	OEC	64	58	53	240
Black Rock Mining	Sustainable Minerals	BKT	100	31	43	156
Orbital Corporation	Others	OEC	64	58	53	240
Wide Open Agriculture	Others	WOA	85	33	48	192
Australian Vanadium	Sustainable Minerals	AVL	56	23	57	252
Eden Innovations	Efficiency & Energy Storage	EDE	50	45	60	266
Clearvue Technologies	Renewable Energy	CPV	67	14	52	182
Carnegie Clean Energy	Renewable Energy	CCE	28	11	69	348
Technology Metals Australia	Sustainable Minerals	TMT	45	22	62	283
Triton Minerals	Sustainable Minerals	TON	36	56	65	318
De.Mem	Water	DEM	63	24	54	237
Battery Minerals	Sustainable Minerals	BAT	33	9	67	331
Parkway Minerals NL	Water	PWN	30	13	68	358
Blackearth Minerals	Sustainable Minerals	BEM	17	5	80	398
Volt Power Group	Efficiency & Energy Storage	VPR	28	18	70	356
Pearl Global	Waste	PG1	18	20	79	408
Nanollose	Waste	NC6	11	4	82	466

WA's top 100 listed companies

WA's top 100 listed companies - at 30 June 2021

This Year	Last Year	ASX	Long Company Name	Mkt Cap 30 Jun 21	Mkt Cap 30 Jun 20	Last Price (mth)	High Price (yr)	Low Price (yr)	EPS (PoAb)
1	2	FMG	Fortescue Metals Group Limited	71,824.85	42,626.62	23.34	26.40	13.60	2.07
2	1	WES	Wesfarmers Limited	67,009.96	50,830.05	59.10	59.60	43.50	1.66
3	3	WPL	Woodside Petroleum Ltd.	21,401.11	20,661.87	22.21	27.60	16.80	-4.24
4	5	S32	South32 Limited	13,630.49	9,803.80	2.93	3.10	2.01	-0.02
5	4	NST	Northern Star Resources Limited	11,380.85	9,888.42	9.78	17.03	8.99	0.43
6	7	MIN	Mineral Resources Ltd.	10,134.78	3,975.80	53.73	54.58	20.92	3.39
7	9	IGO	IGO Limited	5,777.95	2,877.24	7.63	7.96	4.07	0.18
8	16	LYC	Lynas Corporation Limited	5,145.16	1,352.97	5.71	6.82	1.88	0.02
9	31	PLS	Pilbara Minerals Limited	4,203.52	556.18	1.45	1.61	0.25	-0.03
10	8	ILU	Iluka Resources Ltd.	3,867.26	3,606.44	9.15	10.42	4.88	5.71
11	11	BWP	BWP Trust	2,736.56	2,460.33	4.26	4.59	3.75	0.34
12	48	CHN	Chalice Mining Limited	2,573.68	302.02	7.42	9.34	0.90	-0.08
13	44	GXY	Galaxy Resources Limited	1,855.81	317.35	3.67	4.17	0.77	-0.08
14	14	PRU	Perseus Mining Limited	1,790.63	1,530.15	1.46	1.66	1.06	0.09
15	10	RRL	Regis Resources Limited	1,779.49	2,652.70	2.36	6.18	2.36	0.38
16	103	PLL	Piedmont Lithium Ltd.	1,613.96	88.00	1.03	1.14	0.08	0.00
17	19	DEG	De Grey Mining Ltd.	1,596.14	1,061.13	1.24	1.67	0.58	0.00
18	65	LTR	Liontown Resources Ltd.	1,546.24	179.68	0.85	0.87	0.10	-0.01
19	12	SLR	Silver Lake Resources Limited	1,463.42	1,874.07	1.66	2.75	1.28	0.33
20	13	RMS	Ramelius Resources Limited	1,379.76	1,603.85	1.70	2.53	1.18	0.23
21	58	PDN	Paladin Energy Ltd.	1,379.15	202.79	0.52	0.60	0.10	-0.04
22	21	SFR	Sandfire Resources Limited	1,217.46	903.73	6.83	7.83	3.97	0.56
23	28	MGX	Mount Gibson Iron Limited	1,120.69	706.19	0.95	1.01	0.60	0.10
24	15	GOR	Gold Road Resources Limited	1,109.91	1,470.18	1.26	2.02	1.04	0.09
25	-	ASM	Australian Strategic Materials Limited	1,088.15	0.00	7.80	7.91	0.84	0.00
26	20	MND	Monadelphous Group Limited	990.25	1,022.28	10.45	15.55	7.77	0.42
27	24	WAF	West African Resources, Ltd.	878.75	796.10	1.00	1.23	0.72	0.10
28	240	VUL	Vulcan Energy Resources Limited	834.85	30.32	7.70	14.20	0.45	-0.12
29	26	BGL	Bellevue Gold Limited	815.85	725.62	0.95	1.49	0.65	-0.01
30	-	BRN	Brainchip Holdings Limited	813.27	0.00	0.49	0.97	0.08	-0.02
31	36	IMD	Imdex Limited	808.76	430.74	2.04	2.15	1.03	0.04
32	22	WGX	WESTGOLD RESOURCES LIMITED.	796.85	836.48	1.88	2.98	1.86	0.18

This Year	Last Year	ASX	Long Company Name	Mkt Cap 30 Jun 21	Mkt Cap 30 Jun 20	Last Price (mth)	High Price (yr)	Low Price (yr)	EPS (PoAb)
33	27	WSA	Western Areas Limited	768.73	723.38	2.39	3.10	1.86	-0.02
34	35	AFG	Australian Finance Group Ltd.	764.89	457.84	2.85	3.16	1.56	0.18
35	18	ASB	Austral Ltd.	736.95	1,149.66	2.05	3.81	1.98	0.28
36	79	SWM	Seven West Media Limited	715.19	139.96	0.47	0.59	0.09	0.00
37	-	ACL	Australian Clinical Labs Limited	686.24	0.00	3.40	3.88	3.18	0.20
38	29	ALK	Alkane Resources Limited	684.70	698.94	1.15	1.54	0.66	0.07
39	25	NWH	NRW Holdings Limited	668.58	795.77	1.47	3.19	1.36	0.16
40	30	CMM	Capricorn Metals Ltd.	665.04	586.61	1.90	2.37	1.30	-0.02
41	34	PPC	Peet Limited	579.96	468.80	1.20	1.30	0.78	-0.05
42	33	JMS	Jupiter Mines Ltd.	568.11	521.98	0.29	0.38	0.26	0.03
43	41	EHL	Emeco Holdings Limited	566.66	368.85	1.06	1.25	0.73	0.10
44	17	RSG	Resolute Mining Limited	557.47	1,251.71	0.51	1.50	0.42	0.02
45	37	CWP	Cedar Woods Properties Ltd.	545.82	421.55	6.71	7.70	4.75	0.41
46	43	PYC	PYC Therapeutics Limited	493.04	337.13	0.16	0.21	0.11	0.00
47	23	ASL	Perenti Global Limited	471.88	810.27	0.67	1.56	0.63	-0.11
48	49	MCR	Mincor Resources NL	466.96	288.61	1.08	1.22	0.70	-0.03
49	334	VXR	Venturex Resources Limited	465.99	16.51	0.77	0.93	0.05	-0.01
50	75	AVZ	AVZ Minerals Limited	464.99	147.60	0.16	0.23	0.05	0.00
51	50	EMR	Emerald Resources	463.86	275.26	0.90	1.11	0.54	-0.03
52	38	RED	RED 5 LIMITED	445.80	391.77	0.19	0.38	0.16	0.00
53	73	ABR	American Pacific Borates Limited	433.05	152.28	1.14	2.54	0.51	-0.05
54	110	BOE	Boss Energy Limited	410.09	84.13	0.18	0.21	0.05	0.00
55	78	TLG	Talga Group Limited	403.30	141.36	1.33	2.15	0.48	-0.06
56	-	DDH	DDH1 Limited	401.08	0.00	1.17	1.18	0.81	0.00
57	32	MAH	MacMahon Holdings Ltd.	399.03	534.22	0.19	0.29	0.17	0.04
58	47	CVN	Carnarvon Petroleum Limited	391.34	305.05	0.25	0.34	0.18	0.00
59	57	BSE	Base Resources Limited	351.35	210.89	0.30	0.34	0.18	0.02
60	59	BCK	Brockman Mining Limited	350.62	192.48	0.04	0.12	0.01	0.00
61	191	88E	88 Energy Limited	341.81	41.00	0.03	0.10	0.00	0.00
62	265	3DP	Pointerra Limited	332.13	25.76	0.49	0.93	0.04	0.00
63	51	MAU	Magnetic Resources NL	331.62	269.80	1.52	1.71	0.96	-0.03
64	68	EZL	Euroz Ltd.	327.43	166.58	1.73	1.75	1.01	0.09
65	132	BCI	BCI Minerals Limited	326.57	67.82	0.55	0.60	0.16	0.01
66	119	RTR	Rumble Resources Limited	325.84	73.15	0.53	0.80	0.09	0.00

This Year	Last Year	ASX	Long Company Name	Mkt Cap 30 Jun 21	Mkt Cap 30 Jun 20	Last Price (mth)	High Price (yr)	Low Price (yr)	EPS (PoAb)
67	62	CVL	Civmec Limited	323.01	186.17	0.65	0.67	0.35	0.05
68	183	E25	Element 25 Limited	322.88	44.26	2.17	2.90	0.40	-0.06
69	-	FFX	Firefinch Limited	310.31	33.32	0.40	0.57	0.10	0.00
70	82	ORR	OreCorp Limited	308.73	126.77	0.80	1.05	0.39	-0.02
71	69	PAN	Panoramic Resources Limited	307.64	166.12	0.15	0.18	0.06	-0.03
72	64	SFC	Schaffer Corp. Ltd.	290.23	179.72	21.25	22.26	12.00	2.40
73	45	PNR	Pantoro Limited	281.68	311.63	0.20	0.29	0.18	0.00
74	63	SO4	Salt Lake Potash Limited	280.72	183.71	0.35	0.63	0.33	-0.01
75	42	LEG	Legend Mining Ltd.	275.51	353.50	0.10	0.19	0.09	0.00
76	178	EMH	European Metals Holdings Limited	268.81	44.86	1.54	1.92	0.23	0.01
77	91	CTM	Centaurus Metals Limited	268.72	115.08	0.75	0.96	0.43	-0.04
78	109	SVM	Sovereign Metals Limited	268.67	84.44	0.64	0.78	0.20	-0.01
79	105	NMT	Neometals Limited	261.77	87.12	0.48	0.59	0.14	-0.02
80	276	EGR	EcoGraf Limited	256.41	24.02	0.57	1.10	0.06	-0.01
81	116	POS	Poseidon Nickel Limited	250.04	74.00	0.09	0.10	0.03	0.00
82	54	MLD	MACA Limited	246.54	231.83	0.76	1.52	0.71	-0.07
83	39	TBR	Tribune Resources Ltd.	241.35	382.49	4.60	8.87	4.60	0.80
84	94	GNG	GR Engineering Services Limited	240.87	110.63	1.50	1.65	0.71	0.08
85	93	STA	Strandline Resources Limited	239.98	110.96	0.22	0.31	0.18	-0.02
86	168	DYL	Deep Yellow Limited	237.20	50.20	0.72	0.98	0.21	0.01
87	52	DCN	Dacian Gold Limited	236.76	247.54	0.26	0.57	0.26	-0.05
88	151	FZO	Family Zone Cyber Safety Limited	234.76	57.63	0.60	0.67	0.20	-0.05
89	60	FRI	Finbar Group Limited	231.30	190.49	0.85	0.96	0.61	0.02
90	100	SRG	SRG Global Limited	225.13	93.62	0.51	0.53	0.19	-0.07
91	254	GLN	Galan Lithium Limited	225.08	28.34	0.92	0.93	0.11	-0.02
92	74	FWD	Fleetwood Limited	222.31	150.90	2.36	2.89	1.42	0.00
93	61	LYL	Lycopodium Limited	214.60	189.13	5.40	5.99	3.75	0.23
94	88	KLL	Kalium Lakes Limited	205.59	116.33	0.25	0.29	0.14	-0.01
95	174	LGP	Little Green Pharma Limited	204.69	46.73	0.88	1.02	0.25	-0.02
96	89	NWF	Newfield Resources Limited	203.45	116.26	0.35	0.35	0.17	-0.01
97	316	EM2	Eagle Mountain Mining Limited	202.67	18.54	1.00	1.39	0.14	-0.06
98	292	VML	Vital Metals Limited	199.40	21.43	0.05	0.09	0.01	0.00
99	290	VMS	Venture Minerals Ltd.	199.38	21.82	0.15	0.16	0.02	0.00
100	-	5GG	Pentanet Limited	198.99	0.00	0.68	1.14	0.55	-0.10

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