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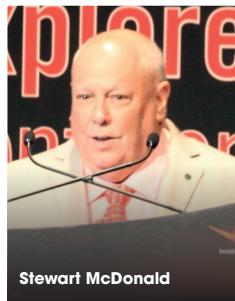
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Conference overview

Why shoring up future metal supplies is a global imperative

STEWART MCDONALD

On behalf of our team at Vertical Events, we are excited to welcome you to the 2022 New World Metals Investment Series, our 16th annual conference since it first started back in 2006.

In its infancy, the conference was called the 'Australian Uranium Conference', a name we kept for several years until the uranium market fell dramatically around the time of Fukushima.

We had to change tact a bit to reflect a broader thematic playing out in the mining sector and opened the conference up to include other elements such as base metals and battery metals like lithium, copper, and nickel, with the conference bearing its current name for eight years to date.

In the last three to four years, we have seen a push away from fossil fuels and a pull towards the electrification of the world, which

means a lot more of these 'new world metals' will be required to facilitate the decarbonisation transition.

One of the biggest trends in the market at the moment is the move by end users to seek greater control over their supply chain as demand for lithium, copper, and nickel continues to surge beyond future supplies.

We've seen this play out in various ways, the most notable example being with global automakers beginning to invest upstream in mining companies.

This year, we are delighted to feature 26 companies across the junior and mid-tier resources sector who are making an effort to sustain our environment for future generations.

In another milestone, what was previously a one-day event held in Perth is now being run as a series of

"One of the biggest trends ... is the move by end users to seek greater control over their supply chain as demand continues to surge beyond future supplies"

three one-day shows – one day in Perth, one day in Sydney and one day in Melbourne – because of the extra attention that has been given to new world metals.

We would like to take the opportunity to thank our keynote speakers, Eddie Rigg from Aragonaut, Trevor Beardsmore from the Geological Survey of Western Australia, and Alex Tonks from CRU, for taking the time to share their views and insights on the resources sector.

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MARKET INSIGHTS

Critical metals fire up ASX miners and explorers

Governments are increasingly focused on supply chain resilience

BARRY FITZGERALD

The global call for secure and growing supplies of critical metals is proving to be a major fillip for both ASX producers and explorers.

Metals used to be just metals. But now a growing list are seen to be critical to global decarbonisation and electrification efforts in pursuit of net zero emission targets.

Copper, nickel, lithium, rare earths, graphite, vanadium, high purity alumina, cobalt, manganese, zinc, uranium ... the list goes on.

All are required in increasing amounts, underpinned by super-charged growth forecasts for the adoption of electric vehicles (EVs) and renewable/low carbon energy.

Investors are switched on to a critical metals thematic while governments around the world are increasingly focused on supply chain resilience in response to ongoing geopolitical tensions and COVID-19 impacts.

This has remade the ASX mining sector as the industry responds to the favourable supply/demand fundamentals, and the resultant rise of incentive pricing across a suite of critical metals to encourage new production/exploration.

Lithium has been the standout in 2022 in response to prices for the battery material taking off to record levels as the EV revolution reshapes the global auto industry, and the storage of renewable energy takes off.

Two years ago, lithium stocks were unloved on oversupply fears. But predictions by forecasters of serious supply deficits until the end of the decade has prompted a buying frenzy in the lithium space.

Lithium producer Pilbara Minerals



Volkswagon ID Buzz electric van



Barry Fitzgerald



Wind turbines

“Metals used to be just metals. But now a growing list are seen to be critical to global decarbonisation and electrification efforts in pursuit of net zero emission targets”

(PLS) was a \$1 billion stock two years ago. Now it has burst through \$10 billion. It is a story repeated at other leading lithium stocks, with explorers/developers like Ioneer (INR), Galan (GLN), Infinity Lithium (INF) and others catching the wave.

The ASX rare earths sector has also fired up. China's dominance of the industry has long been a concern, one which is now heightened because of the surge in demand for the magnet rare earths used in wind turbines and EVs.

Long-established producer Lynas (LYC) has grown to a market value of \$8 billion as it sets about expanding its supply of magnet rare earths through the development of a processing facility near Kalgoorlie.

Junior companies are also responding to the supply challenge by either setting out to confirm new rare earths developments like RareX's (REE) Cummins Range project in WA, or exploring in frontier areas like the central Australia hunt of PVW Resources (PVW).

The recent \$16 billion combined value of bids by industry leaders BHP and Rio Tinto for copper producer OZ Minerals (OZL) and Canada's Turquoise Hill respectively is a clear demonstration of where they think copper demand/pricing is headed due to the global decarbonisation push.

Copper is what BHP calls a “future metal,” along with nickel which is a particular beneficiary due to its use in batteries.



Copper is a 'future metal'



Mining lithium from salt flats



Peter Farquhar

Making the case for lithium

Australia is home to some of the world's largest lithium resources. And it just got its first (hard) rock star.

PETER FARQUHAR

It takes a lot to shake a lithium believer loose of their prized battery metal penny stocks that they bought and have been holding since Elon was a paltry millionaire. But at the start of June, investment bank juggernaut Goldman Sachs scored a palpable hit, calling the top of the lithium boom, making several cases for a future oversupply scenario.

The analysts, investors and industry publications rounded on Goldman as one. But the damage was done and among the fallers on the day of the report, Pilbara Minerals (PLS) plummeted 22%.

Nearly a month later geothermal moonshot Vulcan (VUL) had fallen almost 40%. Penny darling Sayona (SYA) – down 45%. This was a disaster – and all off the back of what many felt were rubbery and optimistic assumptions about the ability of lithium producers in time to meet spreading global bans on ICE cars by 2035.

It's taken less than two months for most of them to recover and reach new all-time highs. Oversupply? Pah. Much more attractive are claims by the likes of Benchmark Mineral

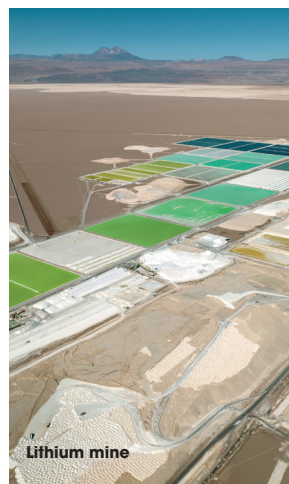
Intelligence that the world will actually come up short of lithium demand in 2040 somewhere in the order of 18 Pilgangooras.

Pilgangoora, for the uninitiated, is Pilbara Minerals' giant WA project, anchored on one of the biggest lithium ore deposits in the world. There probably isn't 18 more, let alone 18 that will be under construction in time to be producing by 2040.

As it turns out, all PLS needed to prove its chops was an earnings call in late August. It turned out PLS was far from an over-evangelised meme stock and soaring prices for its spodumene concentrate had driven it from a loss of \$51.4 million in FY2021 to a \$561.8m profit in FY2022.

Analysts say PLS could book FY2023 profits in the order of \$2 billion. In the same week, California added its name to the list of those banning ICEs by 2035.

The lithium rush is only just beginning. And right now, Australia is the world's biggest exporter, grinding out nearly half the world's supply, and more than twice that of its nearest competitor.



Lithium mine

THE NUMBERS

10%
Forecast ICE vehicle market share in 2035

US\$53 trillion
Size of EV market opportunity between now and 2050

500,000
Tonnes of lithium produced annually

4,000,000
Tonnes of lithium needed annually by 2030

700 GWh
Global lithium-ion battery demand 2022

4500 GWh
Global lithium-ion battery demand 2030

Source: Bloomberg; McKinsey

FEATURED COMPANIES

As the pursuit of net zero gains pace globally, investors who educate themselves about new world metals stand to make record returns. Meet the companies working overtime to fuel the clean energy transition.

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*Figures for Market Cap and Share Price were sourced from asx.com.au

KEY POINTS

- **Company Name:** Altech Chemicals
- **Company ASX code:** ATC
- **Key Commodities:** Electric vehicle battery technology and battery material
- **Key Personnel:** Iggy Tan, Managing Director | Martin Stein, Chief Financial Officer | Dr Jingyuan Liu, Chief Scientist
- **Locations:** Perth, WA; Saxony, Germany
- **Market Cap as of 31/08/22:** \$101.30M
- **Share price range - Low/High:** \$0.043 – \$0.150
- **W:** altechchemicals.com

INVESTMENT HIGHLIGHTS

JULY 5, 2022: Altech signs a collaboration agreement with world-renowned German institute Fraunhofer IKTS for independent product qualification of its Silumina Anodes™ product.

JUNE 22, 2022: Final construction contract executed for the Silumina Anodes™ pilot plant after excellent PFS results.

APRIL 20, 2022: Altech announces outstanding PFS for the Silumina Anodes™ project with NPV of US\$507M, capital cost of US\$95M, IRR of 40% and payback period of 3.1 years.



IGGY TAN
MANAGING DIRECTOR

ALTECH CHEMICALS (ASX:ATC)

COMPANY PROFILE

Car buyers worldwide are demanding that electric vehicle (EV) batteries have additional capacity, longer range, are lighter and are more affordable. Tesla have stated that the key to increased battery capacity is the addition of silicon to the traditional graphite only battery anode.

Australian based with a global reach, Altech Chemicals is at the leading edge of meeting this demand by developing materials for lithium-ion batteries using higher energy silicon in the graphite anode of the battery.

The patented technology developed at Altech's Perth R&D facility offers a breakthrough in increased battery life, energy capacity and reduction of the first-cycle capacity loss.

The step change was announced in

November 2021 when Altech reported it had "cracked the silicon barrier" and achieved 30% higher energy density in lithium-ion batteries. Altech's technology has also improved battery life and cyclability.

Altech's breakthrough was achieved by combining silicon particles that have been treated with the Company's patented high-purity alumina (HPA) coating technology, along with graphite that has had the same coating treatment.

The result is its Altech's patented Silumina Anodes™ battery materials product.

In Germany, Altech has entered into a collaboration agreement with world renowned Germany battery materials and battery performance research and development institute, Fraunhofer IKTS, for independent product qualification of the Silumina Anodes™ product.

An encouraging Preliminary Feasibility Study has already been completed, and a Bankable Feasibility Study is underway for the construction of full-scale plant to produce 10,000 tpa of Silumina Anodes™. The full-scale plant will be constructed on land that Altech owns in Saxony.

In addition, a pilot-plant is currently being constructed in leased warehouse space adjacent to the land that Altech owns in an established industrial park. This pilot plant will produce 120kg per day of the Silumina Anodes™ product, that will then be distributed to selected end users to assist with offtake agreements.

Silumina Anodes™ is expected to supply Europe's rapidly accelerating electric vehicle

market, representing an exciting downstream opportunity for Altech to utilise its HPA coating technology.

In Johor, Malaysia, Stage 1 and 2 construction has been completed at Altech's HPA plant, where the goal is to produce 4,500tpa of HPA. Altech is currently progressing with securing additional finance to complete construction via Green Corporate Bonds and an equity stake in the project.

HPA is a high-value, high margin and highly demanded product used increasingly as a coating on the separator sheets in lithium-ion batteries.

It is estimated that demand for HPA will grow at a compound annual growth rate of 30% (2018-2028) to approximately 272,000tpa.

Also in Western Australia, Altech has its 100% owned high-grade and near surface kaolin deposit in Meckering, to provide feedstock for its Malaysian HPA plant.

Altech is led by Managing Director Iggy Tan, a highly experienced mining and chemical industry executive.

With its operations across the battery supply chain and industry-leading R&D, Altech is well positioned to benefit from the rapidly accelerating demand for EVs.



Altech Chemicals
Limited

KEY POINTS

- **Company Name:** Azure Minerals
- **Company ASX code:** AZS
- **Key Commodities:** Nickel, copper, cobalt, gold
- **Key Personnel:** Tony Rovira, Managing Director | James Dornan, Project Development Manager
- **Locations:** West Pilbara region
- **Market Cap as of 31/08/22:** \$62.14M
- **Share price range -**
- Low/High:** \$0.175 – \$0.470
- **W:** azureminerals.com.au

INVESTMENT HIGHLIGHTS

JULY 18, 2022: Three high-grade shoots of massive nickel sulphides defined at the Ridgeline nickel, copper and cobalt deposit, part of the Andover Project in WA's West Pilbara region.

30 MARCH, 2022: Azure delivers maiden resource of 4.6 million tonnes at 1.41% nickel equivalent for the Andover nickel-copper-cobalt deposit.

9 DECEMBER, 2021: New mineralised zone discovered in the first three drill holes at the Skyline prospect at the Andover project.



TONY ROVIRA
MANAGING DIRECTOR

AZURE MINERALS

(ASX:AZS)

COMPANY PROFILE

Azure Minerals is defining a new nickel province in WA's Pilbara region, having made several significant nickel, copper, and cobalt discoveries at its Andover Project in the two short years since it acquired the project.

The Andover Project is 60% owned by Azure and 40% owned by renowned billionaire prospector and mine finder Mark Creasy, of Bronzewing and Nova fame.

Immediately after closing the deal with Creasy in 2020, Azure started drilling at Andover and discovered substantial nickel and copper mineralisation in the very first drill hole.

Since then, the company has made four significant discoveries and identified a pipeline of multiple yet to be drilled targets along a 10km long nickel-rich mineralised

belt in what is now recognised as the newest and one of the most exciting nickel districts in Australia.

The project is geologically similar to major discoveries like the Nova-Bollinger nickel-copper-cobalt mine and Legend Mining's Mawson nickel-copper-cobalt project in WA's Fraser Range, as well as the Julimar Intrusive Complex that hosts Chalice Mining's Gonneville palladium-platinum-nickel-copper-cobalt project.

To date, Azure has drilled more than 80,000 metres across 180 holes, which has culminated in a maiden Mineral Resource of 4.6 million tonnes at 1.41% nickel equivalent – 80% of which is in the higher confidence Indicated category.

A second resource for the Ridgeline deposit is on the cards for the end of 2022 and drilling is continuing at another two prospects.

Azure is successfully utilising traditional "boots on the ground" surface geological exploration coupled with the latest geophysical techniques for surveying deep beneath the surface, which is proving to be a highly effective strategy.

Managing director Tony Rovira, who has headed the company for 19 years, has 40 years' experience in the mining industry and has been responsible for the discovery of several gold and nickel deposits in Australia that became operational mines.

All indications point to the Andover Project becoming a major nickel mining district with numerous mines feeding into a centrally located processing facility to produce high-

value, clean metal concentrates for sale into the world market.

Nickel, copper, and cobalt are high-value battery metals critical for future electrification and decarbonisation.

Azure is rapidly progressing the Andover Project towards production via a dual pathway strategy of drilling for discovery and growing resources, while simultaneously undertaking the necessary studies to determine the feasibility of the project and advancing regulatory approvals.

The company is also very committed to developing the Andover Project in a sustainable way using best-practice ESG principles to deliver long-term value for all stakeholders, including shareholders, local communities, and the environment.

Azure will ensure that the project meets the highest standards expected of modern mining projects by producing high purity metals concentrates with low-carbon intensity and traceability from mine to end-product.

The company is leveraged for success through its strong balance sheet and ownership of a high-value and in-demand critical metals project.

Azure also wholly owns the Barton Project in WA's Eastern Goldfields, which is prospective for gold, copper and zinc and is already demonstrating significant potential.

**KEY POINTS**

- **Company Name:** Dreadnought Resources
- **Company ASX code:** DRE
- **Key Commodities:** Critical metals (rare earths, nickel, copper)
- **Key Personnel:** Paul Chapman, Chairman | Dean Tuck, Managing Director
- **Locations:** Kimberley, Gascoyne and Yilgarn regions of Western Australia
- **Market Cap as of 31/08/22:** \$ 425.74M
- **Share price range -**
- Low/High:** \$0.032 – \$0.140
- **W:** dreadnoughtresources.com.au

INVESTMENT HIGHLIGHTS

AUGUST 15, 2022: Auger program identifies nine high-quality targets at the Tarraji-Yampi project similar to the high-grade Orion copper-silver-gold-cobalt discovery.

JULY 28, 2022: Assays confirm Yin as a high-grade rare earth discovery, drilling confirms mineralisation over 3km of strike.

NOVEMBER 15, 2021: Dreadnought makes high-grade copper-silver-gold-cobalt discovery at Orion with multiple thick, high-grade intercepts starting from just 1m below surface.



DEAN TUCK
MANAGING DIRECTOR

DREADNOUGHT RESOURCES

(ASX:DRE)

COMPANY PROFILE

Dreadnought Resources is a Western Australian explorer advancing its three company-scale critical minerals projects with proven mineralisation in highly prospective Tier 1 jurisdictions.

The company has a demonstrated track record of making multiple significant discoveries, including the Metzke's gold, the Orion copper-silver-gold-cobalt and the Yin rare earth elements (REE) deposits.

Dreadnought continues to build on its exploration success across a range of critical minerals the world requires for a low carbon future.

The Mangaroon project spans 4,900km² in the Gascoyne mobile belt providing

Dreadnought with a large-scale first mover advantage.

In July 2022, drilling results of 35m at 2.75% total rare earth oxides (TREO) from 94m, including 15m at 4.08% TREO from 105m, confirmed the Yin prospect as a high-grade rare earth discovery.

Yin has already been defined over 3km of strike and remains open in all directions and at depth, with over 85 anomalies identified so far, providing significant exploration upside.

The broader Mangaroon project features a high neodymium-praseodymium (NdPr) content, similar to Hastings Technology Metals' Yangibana REE project located just 25km southeast.

NdPr is the key component of the high-performance neodymium, iron, and boron magnets, which are in rapidly increasing demand thanks to their use in electric vehicles, speakers, and medical devices like MRIs.

There is a second valuable bow to the Mangaroon string thanks to a joint venture with Canadian mining heavyweight First Quantum Minerals, which can earn up to a 70% stake in the Money Intrusion copper, nickel, and platinum group metals project by spending \$15m and taking the project through to a decision to mine.

The recent Orion discovery, meanwhile, forms part of the Tarraji-Yampi project in the Kimberley region. An auger program completed in August 2022 identified nine additional high-quality targets with similar geochemical signatures to the high-grade Orion discovery.

Significant outcropping mineralisation associated with auger anomalism was

uncovered at the new Thunderer and Vanguard prospects with results including up to 39.4% copper, 165 grams per tonne (g/t) silver, 1.6g/t gold and 0.02% cobalt.

Managing director Dean Tuck is an experienced geologist and exploration manager having worked across a wide range of commodities in Australia, Brazil, and Southeast Asia from project generation through to resource evaluation. Tuck has held senior level positions ranging from private companies to major miner BHP and ASX-listed junior explorers.

Chairman Paul Chapman has over 30 years' experience in the resources sector in Australia and the US. He also serves on the boards of other ASX-listed companies including Meeka Metals, Black Cat Syndicate, Encounter Resources, and Sunshine Gold.

Demonstrating confidence in the company, the Dreadnought board and management have significant skin in the game with over \$1.8m invested to date.

Over 85% of that money has gone straight into the ground and is producing results, providing continuous newsflow.

There are several catalysts on the horizon that could deliver an uptick in the Dreadnought valuation, with resources for the Mangaroon REE and Tarraji-Yampi copper-silver-gold-cobalt massive sulphide projects top of the agenda for delivery in 2022 and 2023.



KEY POINTS

- **Company Name:** Eagle Mountain Mining Limited
- **Company ASX code:** EM2
- **Key Commodities:** Copper
- **Key Personnel:** Charles Bass, Managing Director | Tim Mason, CEO | Manuel Ramos, CEO US Operations
- **Locations:** Arizona, USA
- **Market Cap as of 31/08/22:** \$59.01M
- **Share price range - Low/High:** \$0.190 – \$0.985
- **W:** eaglemountain.com.au

INVESTMENT HIGHLIGHTS

AUGUST 24, 2022: Ongoing drilling results include 8m at 2.98% Cu, 27g/t Ag and 0.33g/t Au. Refurbishment of the existing underground mine progresses well with a mining contractor on site.

JULY 11, 2022: Mineralisation-extending drilling results at Far Eastern Talon Target further support the potential growth of the existing MRE at a 1% copper cut-off grade 17Mt at 1.48% cu

JULY 1, 2022: Extension drilling reveals a spectacular intercept of 55 metres at 2.16% copper, which is outside the recently updated MRE. The broad intercept also includes strong gold grades plus an elevated molybdenum zone is discovered.



TIM MASON
CEO

EAGLE MOUNTAIN MINING LIMITED

(ASX:EM2)

COMPANY PROFILE

Eagle Mountain Mining Limited, is a copper focused exploration and development company with a key objective of becoming a low emission producer at its high-grade Oracle Ridge project in the mining friendly US state of Arizona.

Copper is essential for electrification needed for the clean energy transition, with demand widely forecast to rise to 60 million tonnes by 2050, which equates to double today's consumption volume of about 30 million tonnes per year.

Eagle Mountain's main focus is on progressing towards a restart of the Oracle Ridge copper mine in Arizona since acquiring

the project in November 2019, with EM2's reinterpretation of existing data building on the geological knowledge of the mine and region. The last significant production from the mine was in the mid-1990's and the project benefits from the significant existing infrastructure and previous production history including 18km of underground tunnels.

The copper JORC Resource now stands at 17.0Mt at 1.48% Cu for 251kt contained copper, with significant gold and silver as well.

EM2's ongoing drilling program has the company confident it can increase the Mineral Resource Estimate given its pipeline of quality targets outside the MRE, with a JORC MRE update planned for Q3 2022.

Ongoing recommissioning of the existing mine, whose history extends back to 1873, is also progressing well.

Arizona is at the heart of the US mining industry and home to some of the world's largest copper discoveries belonging to BHP, Rio Tinto, Freeport McMoRan and Hudbay.

The Oracle Ridge Copper Mine is less than a two-hour drive from the city of Tucson and only half an hour from the nearby San Manuel copper mine – the world's largest underground copper mine by the 1980s, producing more than 700Mt of ore.

A rail line from the town of San Manuel leads about 50km to a copper smelter, part of Arizona's excellent mining infrastructure.

Consistent with its goal to supply copper for clean energy, Eagle Mountain Mining is also leveraging the Oracle Ridge's good

credentials to potentially be a low emission mining operation with the key objective of becoming a low emission producer. These credentials stem from having the natural benefits of gravity in its future operations, including downhill haulage of ore via a conveyor or road. Eagle Mountain Mining also plans to use solar panels to use the energy from the sun and low emission or hybrid equipment.

Additionally, unlike large open pits, the underground operations have a far less surface disturbance leading to less impact on the environment.

The leadership team includes Charles Bass who has 50 years' experience in the mining industry, including co-founding Aquila Resources before it was taken over for \$1.4 billion in 2014.

CEO Tim Mason has 20 years' experience in mining across corporate, operations, business development and engineering roles.

CEO of US operations, Manuel Ramos, is a veteran of the Arizona copper industry, having been VP of metallurgical operations, then president and Chief Operating Officer at prolific copper producer ASARCO over 19 years.



KEY POINTS

- **Company Name:** Future Metals
- **Company ASX code:** FME
- **Key Commodities:** PGM, nickel and copper
- **Key Personnel:** Jardee Kininmonth, Managing Director | Brian Talbot, Operational & Technical Lead Advisor | Andrew Shepherd, GM – Project Development
- **Locations:** Kimberley region
- **Market Cap as of 31/08/22:** \$47.34M
- **Share price range - Low/High:** \$0.115 – \$0.280
- **W:** future-metals.com.au

INVESTMENT HIGHLIGHTS

AUGUST 17, 2022: Future Metals raises \$5 million through a heavily-oversubscribed placement and is seeking to raise up to another \$500,000 via a share purchase plan.

JULY 27, 2022: Detailed prospectivity review shows multiple exploration targets for sulphide-rich nickel, copper, gold, cobalt and PGM zones outside the existing Panton resource.

JUNE 21, 2022: The Panton project is independently assessed to host a world-class resource of 6.9 million ounces of palladium equivalent.



JARDEE KININMONTH
MANAGING DIRECTOR

FUTURE METALS

(ASX:FME)

COMPANY PROFILE

Future Metals is focused entirely on advancing its wholly-owned Panton project in Western Australia's Kimberley region and there are a multitude of good reasons for its single-minded focus.

Not only is the project located within a top tier mining jurisdiction – the state is in fact the world's most attractive, according to the Fraser Institute's annual ranking – it is also situated just 1km off the Great Northern Highway that provides ready access to the Port of Wyndham.

Additionally, Panton benefits from extensive historical work which has solidly established broad, shallow mineralisation surrounding high-grade reefs.

The project's real claim to fame though is the mix of metals to be found there, which

reads like a wishlist of some of the most wanted elements required for the world's transition to net zero emissions.

PGMs – palladium, platinum, iridium, osmium, rhodium and ruthenium – are a rare group of elements with a wide range of applications such as in catalytic converters to reduce vehicular emissions, jewellery and electronics.

More recently, they have been used in hydrogen production and in hydrogen fuel cells, which are increasingly considered to be essential components in the road to net zero.

Panton also contains significant quantities of nickel, which is a key component in some of the most commonly used lithium battery chemistries, and cobalt – another battery metal. It also has the potential to host copper.

All these factors come together to make Panton – the second largest PGM deposit in Australia with a current resource of 129Mt grading 1.2g/t PGM 3E, 0.19% nickel and 154ppm cobalt, or contained resources of 5Moz PGM 3E, 239,000t of nickel and 20,000t of cobalt.

The contained PGE resource is more than double previous estimates due to inclusion of the mineralised dunite material which envelops the reefs, allowing for the estimation of a bulk-tonnage resource estimate that supports assessment of potential open pit mining scenarios.

If that isn't good enough reason to be excited, there are plenty of opportunities for Future Metals to grow the Panton resource.

The Panton deposit itself remains open

along strike and depth, while the large Northern Anomaly where drilling has returned broad widths of PGM, nickel and copper mineralisation from surface across a 2.5km strike has not been included in the resource to date.

There are also numerous near-surface zones within the resource area which, while limited by drilling, are understood to support continuity along strike and at depth.

More recently, a review has uncovered several new sulphide-rich targets prospective for nickel, copper, gold, cobalt and PGMs outside the known mineralised zone.

All these opportunities ensure that the company's exploration dance card is full for the foreseeable future with funding provided by a recent \$5m capital raising.

Concurrently, Future Metals will also carry out a Scoping Study based on its existing – and already rather meaty – resource as well as ongoing metallurgical test work.

This will assess different development scenarios for the East Kimberley project and an update on its progress expected by the end of 2022.



KEY POINTS

- **Company Name:** Galan Lithium
- **Company ASX code:** GLN
- **Key Commodities:** Lithium
- **Key Personnel:** Richard Homsany, Non-Executive Chairman | Juan Pablo Vargas de la Vega, Company Founder and Managing Director
- **Locations:** Argentina and Australia
- **Market Cap as of 31/08/22:** \$394.41M
- **Share price range - High/Low:** \$0.895 – \$2.330
- **W:** galanlithium.com.au

INVESTMENT HIGHLIGHTS

AUGUST 1, 2022: Discovery of new outcropping pegmatite with 500m+ strike length at the Greenbushes South lithium project.

JULY 14, 2022: High lithium grades, porosity and brine flow rates recorded in initial well tests at the flagship Hombre Muerto West lithium project.

DECEMBER 9, 2021: Updated economic study for Hombre Muerto West Project raises net present value to \$US2.2 billion on revised lithium price.



JUAN PABLO VARGAS DE LA VEGA
MANAGING DIRECTOR

GALAN LITHIUM

(ASX:GLN)

COMPANY PROFILE

Galan Lithium is in pole position to establish itself as a premier lithium developer through the rapid advancement of its leading Hombre Muerto project, which hosts the highest grade and lowest impurity lithium brine deposits in Argentina.

Located in one of the richest lithium spots in the world, South America's Lithium Triangle, the main deposit, Hombre Muerto West (HMW), contains a resource of 2.3Mt of lithium carbonate equivalent (LCE) with plenty of exploration upside.

About 40% of total annual lithium production comes from the Atacama and Hombre Muerto salars. This is lithium 'elephant' country.

Galan is on the fast track to a 34,000tpa

base lithium carbonate operation via a dual project development strategy which has been supported by detailed studies that show high return, low process risk projects.

An updated preliminary economic assessment (PEA) completed for the HMW project in December 2021 delivered stronger, more compelling economics for a 20,000tpa LCE operation over a long 40+ year life.

The pre-tax net present value (NPV) was bolstered to \$US2.2 billion, more than double the previous estimate, on a stronger lithium price. Only 60% of the indicated resource was utilised in the PEA, leaving plenty of runway for increased output and mine life upside.

Pilot operations are already underway at the HMW project, with construction of an initial 3,000m² evaporation pond completed in April 2022.

Brine filling of the pond is complete and evaporation testing has started, which is set to further de-risk an already highly established, proven process flow sheet.

The second project being advanced towards production concurrently is the Candelas project, which will add a further 14,000tpa to Galan's production profile over a +25-year mine life.

A PEA completed in November 2021 also demonstrated strong economics for the growth project, with the pre-tax NPV coming in at \$US1.2 billion.

The Candelas project offers Galan significant potential cost synergies and value enhancements from an integrated development that were not captured in the PEA.

Brine-based lithium production has superior environmental credentials, utilising less energy and producing less carbon emissions compared to spodumene-based lithium production.

Lithium brines account for about 45% of global LCE supply because of their large resources, long mine lives and position at the bottom of the cost curve.

Galan is targeting first-phase lithium concentrate production from HMW in 2024 and lithium carbonate production from 2025.

In August 2022, Canaccord retained its views and valuation upside of \$2.60/share in a research report update that the HMW project's point of difference was its superior brine chemistry (high lithium concentration, low impurities) which allow for comparably low operating costs and potential for high quality final product.

Galan is also a JV partner in the Greenbushes South lithium project, which is located just 3km south of world-class Greenbushes lithium mine – one of the world's largest, highest grade hard rock spodumene deposits.

The project covers the southern strike projection of the Donnybrook-Bridgetown Shear Zone, which hosts the lithium bearing pegmatites found at Greenbushes.

**KEY POINTS**

- **Company Name:** Green Technology Metals
- **Company ASX code:** GT1
- **Key Commodities:** Lithium
- **Key Personnel:** John Young, Chairman | Luke Cox, CEO
- **Locations:** Ontario, Canada
- **Market Cap as of 31/08/22:** \$182.81M
- **Share price range - Low/High:** \$0.330 – \$1.245
- **W:** greentm.com.au

INVESTMENT HIGHLIGHTS

AUGUST 22, 2022: Further drilling at the North Aubry deposit, part of the flagship Seymour Lithium Project, significantly increases the targeted mineralised volumes.

JUNE 23, 2022: Interim resource update for Seymour Project doubles to 9.9Mt, approximately 53% is in the higher confidence Indicated category.

APRIL 28, 2022: Equity placement raises A\$55M, including US\$10M (A\$14M) strategic investment by North American lithium major, Lithium Americas Corp.



LUKE COX
CEO

GREEN TECHNOLOGY METALS

(ASX:GT1)

COMPANY PROFILE

Green Technology Metals is building a pre-eminent vertically integrated lithium business in Ontario, Canada with the backing of some of the biggest names in the industry.

With major cornerstone players including North American lithium industry heavyweight Lithium Americas Corp., specialist natural resources group ACMI and hard rock lithium mineral processing expert Primero, Green Technology Metals has all the bases covered to hit several home runs.

The company isn't settling for anything less than being the first to market and is fast tracking its flagship Seymour project to production, with mine and spodumene process construction expected as early as the

second quarter of 2024.

With a nearly 10Mt resource already and a rapid ramp-up to critical mass of 15Mt for a 10-year mine life, Green Technology Metals is very close indeed.

All the key components are underway including indigenous consultation, baseline studies, mine permitting and a scoping study.

While the company is rapidly advancing the Seymour Project, it plans to build a long-term supply chain from its 40,000 hectares of prime lithium real estate in Ontario.

Drill rigs recently arrived at Green Technology Metals' second major project, Root, which hosts a known lithium deposit.

The company plans to complete resource definition drilling at the project to convert its exploration target of 20-24Mt at 0.8-1.5% Li₂O to a resource and significantly grow its already large lithium inventory.

Green Technology Metals' strategy clearly has the support of some key investors, with the company in April 2022 attracting a strategic US\$10M cash injection from Lithium Americas Corp. as part of a broader A\$55M placement that brought in a wide range of leading Australian and international institutional and sophisticated investors.

It could well be because the team behind Green Technology Metals knows how to build a successful lithium operation because they've done it before.

Chairman John Young was co-founder and executive director of successful ASX200 lithium producer Pilbara Minerals.

He played a critical role in growing the

company from a junior ASX-listed company to a globally significant A\$2 billion lithium producer in the Pilbara region of Western Australia.

CEO Luke Cox is an experienced geologist and mine manager having spent over 25 years in industry working across a range of commodities, including the battery metals nickel, cobalt and lithium.

He has been involved in developing a considerable number of mineral deposits, including one of the largest known hard rock lithium deposits in the world, Mineral Resources' and Albemarle's Wodgina mine in the Pilbara.

The North American lithium supply chain is still in its infancy, which has major ramifications for downstream supply.

Lithium ore supply will take five to eight years to catch up at current levels of demand, and the major expansion in battery and car manufacturing facilities is creating an even bigger supply crunch.

North America requires domestic supply of lithium on an unprecedented scale, meaning anyone with supply will make a lot of money. Governments are accelerating the push and heavily incentivising to shore up domestic supply.



KEY POINTS

- **Company Name:** Heavy Rare Earths
- **Company ASX code:** HRE
- **Key Commodities:** Rare earths
- **Key Personnel:** John Byrne, Non-Executive Chairman | Richard Brescianini, Executive Director | Ryan Skeen, Non-Executive Director | Justin Mouchacca, Company Secretary & Financial Controller
- **Locations:** Western Australia and Northern Territory
- **Market Cap as of 31/08/22:** \$15.02M
- **Share price range - Low/High:** \$0.200 – \$0.280
- **W:** hreltd.com.au

INVESTMENT HIGHLIGHTS

AUGUST 24, 2022: Heavy Rare Earths (HRE) debuted on the ASX after raising \$6 million in its initial public offering (IPO).

DECEMBER, 2021: Drilling at Cowalinya project in WA establishes maiden inferred rare earth resource of 28 Mt @ 625 ppm TREO.

DECEMBER, 2021: Applications for Duke project in the NT to explore for heavy rare earths similar to Browns Range in WA (9.24 Mt @ 0.67% TREO).



RICHARD BRESCIANINI
EXECUTIVE DIRECTOR

HEAVY RARE EARTHS

(ASX:HRE)

COMPANY PROFILE

With its goal to support a sustainable future through critical minerals, Heavy Rare Earths made its debut on the ASX on 24 August after raising \$6 million in its initial public offering (IPO).

The company now has a strong balance sheet to develop its rare earths projects amid soaring demand for the magnet rare earths in particular.

Not all of the 17 rare earth elements are created equal and it's praseodymium, neodymium, terbium and dysprosium (Pr, Nd, Tb and Dy) – the magnet rare earths – that have the highest market value.

That's because of their irreplaceable use

in rare earth permanent magnets that help power clean energy applications such as electric vehicles and wind turbines, and their essential place in consumer electronics we use every day.

It's these magnet rare earths that comprise an impressive 25% of the mix at HRE's Cowalinya project in Western Australia, which is only 70km from the mining town of Norseman and 110km from the port of Esperance.

Alongside the robust demand pull, there's also growing government push in Australia and its key ally the US to onshore the supply of these critical minerals, an area dominated by China.

With its fresh capital from the IPO and amid highly favourable market conditions, HRE is set to start an aggressive 330-hole, 10,000 metre drilling program at Cowalinya in September.

These drill results will help to boost confidence in the project, which currently has an Inferred Resource of 28 Mt @ 625ppm Total Rare Earth Oxides (TREO), established in December 2021, occupying less than 1.5% of the company's tenement.

The resource remains open in all lateral directions, indicating there's significantly more rare earths to be unearthed now that cultural heritage surveys and drill line clearing have all been completed.

HRE is quietly confident of success, given that mineralisation at Cowalinya is shallow and flat lying, in geology that is similar to the world's main supply source of heavy rare

earths, southern China's ion adsorption clay deposits.

Importantly, very low levels of penalty radioactive elements have been found in comparison to readings often seen at other rare earths projects, making the project cleaner and greener, boosting its ESG profile while also reducing capital and operating expenditure.

As it works towards meeting the demand surge for rare earths, Heavy Rare Earths will also start establishing an efficient metallurgical recovery process, a key element of rare earths projects.

While Cowalinya remains the focus, the company also plans to conduct first-pass rare earths exploration at the Duke project in the Northern Territory's Tennant region.

The company is led by Non-Executive Chairman John Byrne who has spent 40 years in the resource industry with experience in finance and mine development, including at the head of successful resource companies in the UK, Canada and Australia.

Executive Director Richard Brescianini has 15 years' experience in rare earths, including technical and supply chain expertise, while Company Secretary and Chief Financial Officer Justin Mouchacca brings more than 15 years' experience in public companies.



KEY POINTS

- **Company Name:** Infinity Lithium
- **Company ASX code:** INF
- **Key Commodities:** Lithium/battery grade lithium chemicals production
- **Key Personnel:** Ryan Parkin, Managing Director and CEO | Adrian Byass, Non Executive Chairman | Jon Starink, Executive Director and CTO
- **Locations:** Extremadura, Spain
- **Market Cap as of 31/08/22:** \$64.32M
- **Share price range - Low/High:** \$0.092 – \$0.250
- **W:** infinitylithium.com

INVESTMENT HIGHLIGHTS

AUGUST 2, 2022: Testwork program shows successful production of battery grade lithium hydroxide and carbonate.

JULY 1, 2022: Infinity / LGES MoU extended and mutual intention to progress the future definitive offtake agreement for the long-term supply of battery grade lithium hydroxide to LGES confirmed.

JUNE 17, 2022: INF's 100% owned subsidiary Extremadura New Energies (ENE) included in major private-public alliance SOI H2-ALEX advancing green hydrogen developments in Spain.



RYAN PARKIN
MANAGING DIRECTOR & CEO

INFINITY LITHIUM CORPORATION

(ASX:INF)

COMPANY PROFILE

Australian-headquartered Infinity's San José Lithium Project is the European Union's second largest hard rock lithium deposit and is strategically located to provide the materials critical to Spain and Europe's energy transition.

The project is technically very well advanced and earlier this year produced battery grade lithium carbonate and hydroxide using its novel and sustainable conversion process.

Infinity will now use this process to produce 20,000tpa of battery grade lithium chemicals on site in its industrial lithium conversion facility.

The testwork program completed under the Project Agreement with EIT InnoEnergy and Dorfner Anzaplan has now led to an expanded relationship with EIT InnoEnergy, including Infinity's wholly owned Spanish subsidiary Extremadura New Energies (ENE) providing European Battery Alliance Academy training courses with EIT InnoEnergy to foster localised value chains.

In line with its focus on facilitating the clean energy transition, Infinity is working on all facets of its flagship project to ensure it meets the highest environmental standards in line with Europe's requirements, while also consulting closely with the local community to deliver maximum benefits to the town of Cáceres in Extremadura, Spain.

Sustainability initiatives include 100% underground mining and electrification on-site through the vast renewable energy sources available in the region, with investigations underway to use hydrogen to power the facility's kiln.

As Europe strives to meet its net zero greenhouse gas emissions by 2050, it has also had a greater impetus on energy independence placed upon it. These combining factors means the demand for locally produced lithium chemicals in the Euro zone is enormous.

In working towards its sustainability goals, a massive amount of downstream investment has already been committed to the lithium-ion battery value chain, but with the region currently being 100% reliant on the importation of battery grade lithium chemicals for production, raw materials are really in the spotlight.

Additionally, with new regulations requiring battery passports for all batteries

used in the EU by 2026, imported materials and the carbon footprint associated with them will be even less desirable for manufacturers or consumers.

The battery passport is a technology platform that enables all stakeholders in the supply chain to share information about a battery and its history to address social and environmental risks related to extracting, processing and trading raw battery materials.

In addition to progressing its flagship project at San José, Infinity is also advancing new and innovative processing technologies through its Infinity GreenTech business. Ongoing testwork in conjunction with Murdoch University has produced excellent recoveries of lithium chemicals using a more economic and sustainable process which allows for the recycling of non-toxic reagents with faster recoveries and the potential for reduced Capex and Opex requirements.

The Company's Technical Advisory Committee, led by Infinity CTO Jon Starink and Dr David Maree, will oversee further advanced test work in collaboration with Murdoch's Mineralogy, Isotope Geochemistry and Extractive Metallurgy team through access to Murdoch's cutting-edge research facilities. The team will also be expanding its test work program using bespoke equipment which it has had custom built to allow for more extreme conditions for potentially greater recoveries to be tested.



KEY POINTS

- **Company Name:** ioneer
- **Company ASX code:** INR
- **Key Commodities:** Lithium carbonate, boric acid
- **Key Personnel:** James D. Calaway, Executive Chairman | Bernard Rowe, MD/CEO | Ian Bucknell, CFO
- **Locations:** Rhyolite Ridge lithium-boron project, Esmeralda County, Nevada
- **Market Cap as of 31/08/22:** \$1.39B
- **Share price range - Low/High:** \$0.315 – \$0.855
- **W:** ioneer.com

INVESTMENT HIGHLIGHTS

AUGUST 1, 2022: ioneer's US Rhyolite Ridge project to supply Toyota-Panasonic battery JV Prime Planet Energy & Solutions in a five year binding agreement for a total of 4,000tpa.

JULY 22, 2022: ioneer signs a binding five-year offtake agreement with Ford to supply a total of 7,000tpa lithium for lithium-ion batteries planned for EVs built in America.

JULY 1, 2022: ioneer starts trading on the NASDAQ under an American Depositary Receipt (ADR) listing to complement ioneer's existing primary listing on the ASX.



IAN BUCKNELL
CFO

IONEER

(ASX:INR)

COMPANY PROFILE

Australia's ioneer is advancing its Rhyolite Ridge project in Nevada to develop a US based source of lithium and boron extracted in an environmentally and socially responsible manner for electric vehicles.

The American EV industry currently imports all its lithium required for batteries. However ioneer is in pole position to play a leading role in the domestic EV supply chain due to the location of its 100% owned project multi-generational mine.

Its mine plan is to produce enough lithium for approximately 400,000 electric vehicles per year in the US, where ioneer has agreements with some big-name players.

The most recent of these is with Prime Planet Energy & Solutions, a battery company joint venture between car

manufacturer Toyota Motor Corporation and battery maker Panasonic.

The five-year deal is for a total of 4,000tpa of lithium carbonate, which is approximately 19% of annual output expected from Rhyolite Ridge in the first five years of production.

Lithium supplied by ioneer will be produced, refined and incorporated by Prime into lithium-ion batteries in support of the end-to-end US electric vehicle supply chain, following ioneer's offtake deals with motor giant Ford and EcoPro Group.

The Ford deal was signed in July for 7,000tpa lithium over an initial five-year term, representing about 34% of planned lithium carbonate production from Rhyolite Ridge for the first five years.

Another 34% of planned production will be taken by South Korean battery materials maker EcoPro, which confirmed it would purchase 7,000tpa from ioneer to feed partnerships with electronic giants Samsung, LG and Sony.

The three deals mark the completion of pre-production lithium carbonate supply commitments for Rhyolite Ridge.

The project has a current resource of 146.5 million tonnes lithium and boron and 60Mt in reserves. It is expected to produce an average of approximately 20,600tpa of lithium carbonate and approximately 174,400t of boric acid per year over a 26-year life.

That equates to enough lithium materials for approximately 400,000 electric vehicles each year, which will establish ioneer as a

major domestic supplier of refined lithium and boron products.

A definitive feasibility study estimated US\$785m would be required to develop the project and it is anticipated to bring US\$422m in annual revenue with earnings before interest, tax, depreciation and amortisation (EBITDA) of about US\$288m.

At the start of this financial year ioneer commenced trading on the NASDAQ, giving it greater visibility among the growing number of North American investors who want to take part in the clean energy supply chain.

Approximately one quarter of the company's shareholders are now US-based.

The company is led by executive chairman James D. Calaway who was previously non-executive chairman of Orocobre (now Allkem), which he led from early development to becoming a significant producer of lithium carbonate and a member of the ASX 300.

Most of the team, including half of the ioneer Board is in the US, better positioning the company to play a major role in the renewable energy supply chain infrastructure in North America.

KEY POINTS

- **Company Name:** IperionX Limited
- **Company ASX code:** IPX
- **Key Commodities:** Titanium metals, titanium minerals, rare earths
- **Key Personnel:** Anastasios Arima, CEO & Managing Director | Todd Hannigan, Executive Chairman
- **Locations:** United States
- **Market Cap as of 31/08/22:** \$134.97M
- **Share price range - Low/High:** \$0.600 – \$1.430
- **W:** iperionx.com

INVESTMENT HIGHLIGHTS

AUGUST 26, 2022: IperionX produces titanium metal from Tennessee minerals.

AUGUST 9, 2022: Successful development of an innovative low carbon titanium mineral enrichment technology.

JUNE 30, 2022: Scoping study confirms potential for the Titan project to be the largest US producer of titanium and rare earths.



ANASTASIOS ARIMA
MANAGING DIRECTOR & CEO

IPERIONX LIMITED

(ASX:IPX)

COMPANY PROFILE

IperionX is rapidly working to establish itself as the leading developer of low carbon, sustainable, critical material U.S. supply chains, focused on advanced industries including aerospace, electric vehicles, and 3D printing.

The company's breakthrough titanium metal technologies have the potential to produce titanium products that are sustainable, 100% recyclable, low carbon intensity and at product qualities which exceed current industry standards. IperionX also holds a 100% interest in the Titan project, located in Tennessee in the US, which hosts a very large titanium resource and is also rich in rare earth minerals.

IperionX has strong commercial engagement with a wide range of potential customers for its titanium metal products

across many advanced technology industries, including automotive, consumer electronics, consumer luxury goods, defense and additive manufacturing, with significant interest for the potential long-term supply of titanium products.

Harvard Business School Professor Willy Shih recently highlighted the opportunity for IperionX's US-government-funded production processes to be the catalyst for widespread applications of titanium, similar to what occurred in the steel industry in the late 1800s and enabled the industrialisation of the US.

Further, the US is currently completely dependent on imports of high-carbon primary titanium metal feedstocks produced via the high-cost Kroll process, and it currently lacks the surge capacity required to support defense and critical infrastructure needs in an extended national emergency. In contrast, Russia and China's market share of global titanium sponge production continues to increase and is expected to pass over 70% share this year.

The ability to produce high quality titanium metal with its breakthrough titanium metal technologies, including using titanium minerals from its Titan Project in Tennessee, demonstrates the potential for IperionX to re-shore an all-American low-carbon titanium supply chain.

In June 2022, a scoping study demonstrated the Titan project's potential to be one of the largest US producers of titanium and the rare earth minerals monazite and xenotime, which includes both light and heavy rare earths.

The study indicated the Titan project could have one of the highest net present value-

to-capital expenditure ratios of advanced US critical mineral development projects.

The Titan project also offers IperionX the opportunity for rapid and low Capex entry to the US rare earth supply chain, with an agreement in place to process rare earth materials using Energy Fuels' existing White Mesa mill in Utah.

Managing director and CEO Anastasios Arima is a US-based executive with a strong history of identifying company-making resource projects in North America and Europe.

Prior to IperionX, Arima also founded Piedmont Lithium, and was instrumental in securing the funding that enabled the company to grow into one of the most critical lithium chemical projects in the US.

Executive chairman Todd Hannigan has over 25 years of global experience in natural resources as company founder, CEO, private capital investor and non-executive director. In these lead roles he has helped build multiple billion-dollar companies in the private and public markets.

Hannigan has worked internationally in the extraction and resources sector for Aston Resources, Xstrata (now Glencore), Hanson and BHP Billiton.

IperionX's value proposition lies in its strong potential to disrupt existing stainless steel and aluminium markets with its innovative titanium technology and re-shore sustainable US critical material supply chains.

KEY POINTS

- **Company Name:** Latin Resources
- **Company ASX code:** LRS
- **Key Commodities:** Lithium, kaolin-halloysite, copper, gold
- **Key Personnel:** Chris Gale, Managing Director | David Vilensky, Chairman | Brent Jones, Non-Executive Director
- **Locations:** Brazil, Western Australia, Argentina, Peru
- **Market Cap as of 31/08/22:** \$224.30M
- **Share price range - Low/High:** \$0.027 – \$0.228
- **W:** latinresources.com.au

INVESTMENT HIGHLIGHTS

AUGUST 24, 2022: Positive metallurgical test work results on Colina lithium sample confirm high recovery and production of an extremely high-grade Li₂O concentrate from simple Heavy Liquid Separation (HLS).

AUGUST 16, 2022: Resource definition drilling confirms significant new discovery at high-grade Colina prospect, part of the Salinas lithium project in Brazil.

AUGUST 9, 2022: Latin Resources commences feasibility studies for the Salinas project.



CHRIS GALE
MANAGING DIRECTOR

LATIN RESOURCES
(ASX:LRS)

COMPANY PROFILE

Latin Resources has a large foothold in the highly prospective Salinas lithium corridor, right next door to \$US3 billion TSX-V listed Sigma Lithium Resources, which is in the construction phase of its large-scale lithium concentration commercial production plant in Brazil.

Latin Resources' focus in South America is on its lithium projects, with the commodity highly sought after as critical to the burgeoning electric vehicle market.

The company's Salinas Lithium Project sits in a geological setting similar to Sigma Lithium's Grota do Cirilio project, which hosts a world-class resource of 85.7 million tonnes at 1.43% Li₂O within four separate deposits.

The short-term key catalysts, and

important milestones in the future development of Latin Resources' Salinas Lithium Project, will be the delivery of a maiden resource by the end of 2022 and the completion of a preliminary economic assessment (PEA) by March 2023 for the Colina prospect.

The completion of the PEA will pave the way for Latin Resources to progress straight into a definitive feasibility study and investigate the potential to commission a DMS pilot plant at the Salinas Lithium Project.

Diamond drilling at the Colina prospect has confirmed the high-tenor grades of the spodumene pegmatites in the region, delivering a peak grade of 3.22% Li₂O.

Latin Resources has also identified multiple additional drill-ready targets within its extensive exploration acreage, including Lajinha, Colina South and Colina West.

Numerous outcropping pegmatites have been identified in preliminary prospecting, including at the Salinas South prospect, where outcropping pegmatites hosting spodumene so far extend over a 4km strike.

The Colina prospect resource drilling campaign of 25,000m is well underway, and has identified potential parallel pegmatite systems which have significant scale implications for the Project.

Further, the company has started metallurgical test work, which shows high recovery of 78.72% Li₂O and production of an extremely high-grade Li₂O concentrate (up to 6.57%) from simple Heavy Liquid Separation (HLS). This high recovery rate from simple HLS may reduce initial and

ongoing operational capital costs.

Brazil is one of the world's largest mining provinces, with existing infrastructure, including roads and port access, in place to support the transition of major discoveries in the region to operating mines.

Managing Director Chris Gale has held various board and executive roles at several mining and technology companies during his 30-year career. From 2012-2018, he was the Chairman of the Council on Australian Latin American Relations established by the Australian government.

Gale also currently serves as chairman of Solis Minerals and Oar Resources.

Non-executive chairman David Vilensky is a practising corporate lawyer and an experienced listed company director, with more than 35 years' experience in corporate and business law and in commercial and corporate management.

Latin Resources is already fielding enquiries from raw material buyers, engaging in preliminary talks with several international car and battery manufacturers as well as leading lithium trading houses with respect to future supply of its lithium product.

The company is now fast-tracking feasibility studies to better position itself to secure lucrative offtake deals and establish itself as a key supplier of the high demand battery metal.



KEY POINTS

- **Company Name:** PVW Resources
- **Company ASX code:** PVW
- **Key Commodities:** Rare Earths, gold, nickel, copper, platinum group elements
- **Key Personnel:** David Wheeler, Non-Executive Chairman | George Bauk, Executive Director
- **Locations:** Tanami, Leonora, Kalgoorlie and West Yilgarn regions of Western Australia
- **Market Cap as of 31/08/22:** \$24.08M
- **Share price range - Low/High:** \$0.160 – \$0.805
- **W:** pvwresources.com.au

INVESTMENT HIGHLIGHTS

JUNE 27, 2022: Large 35,000m drilling program begins at Tanami heavy rare earth project to unlock district-scale rare earths and gold potential.

APRIL 6, 2022: Heavily oversubscribed placement to raise \$9.5 million completed, fully funding PVW to complete the 2022 exploration program at the Tanami REE project.

MARCH 30, 2022: Metallurgical testwork delivers positive results to support Tanami heavy rare earth project potential.



GEORGE BAUK
EXECUTIVE DIRECTOR

PVW RESOURCES
(ASX:PVW)

COMPANY PROFILE

PVW Resources is closing in on the next major discovery in an emerging heavy rare earth province in Western Australia.

Armed with a strong balance sheet and the same highly skilled team that successfully led Northern Minerals to the discovery and eventual start-up of the Browns Range rare earth elements (REE) project in Western Australia, PVW is working hard to replicate that success at its Tanami project.

Executive director George Bauk, an experienced executive and director with over 30 years spent in the resources industry, is the former head of Northern Minerals, where he led the transition of the company to a heavy rare earths carbonate producer.

Non-executive director Colin McCavana is the founding director and former chairman

of Northern Minerals who oversaw the development of Browns Range, while consultant geologist Robin Wilson led the team that made the major discovery.

PVW recently kicked off an aggressive 35,000m drilling program on the 1,270km² landholding to unlock the district-scale rare earths and gold potential.

The Tanami project has the hallmarks for success, sitting in a similar geological setting to Northern Minerals' Browns Range project and with the right style of mineralisation and structures. It is also located only about 90km to the north south of the Browns Range project, which has an operational processing facility.

The project features an 18km long corridor with strong potential for a major new heavy REE discovery. Early exploration has already identified drill-ready targets with significant high-grade potential after rock chip samples returned grades of up to 12.45% total rare earth oxides.

A 2021 field program highlighted the prospectivity of the Watts Rise-Castella Trend, where rock chip and soil sampling defined a large drill target area at Castella and multiple drill targets at Watts Rise.

China controls over 99% of heavy rare earths supply, and the tensions between the Asian powerhouse and other major economies has prompted an urgent push to diversify the supply chain.

Governments around the world are injecting significant amounts of cash into projects to help shore up supply

and downstream processing for critical applications including renewable energy, electric vehicles, and defence technology.

But Tanami is more than just an emerging new heavy rare province; it is also an underexplored gold region that hosts one of the most productive gold mines in Australia – Newmont's 14Moz Callie mine.

Historic drilling has delivered intercepts including 12m at 2.94g/t from surface and 5m at 6.99g/t from surface at the Watts Rise prospect, which remains open along strike and at depth but has never been followed up by previous owners.

Recent rock chip sampling also returned results of up to 8.94g/t Au as well as significant rare earths grades.

PVW also has gold prospective exploration ground in the Leonora and Kalgoorlie regions, as well as nickel, copper, and platinum group elements prospective tenure in the West Yilgarn region.

The Tanami heavy REE project has all the right ingredients to be a company making, globally significant discovery, providing several value drivers for a significant re-rating in PVW.



KEY POINTS

- **Company Name:** St George Mining
- **Company ASX code:** SGQ
- **Key Commodities:** Nickel, copper, cobalt, PGEs and lithium
- **Key Personnel:** John Prineas, Executive Chairman | Julian Hanna, General Manager, Growth and Development | Dave Mahon, Exploration Manager
- **Locations:** Western Australia
- **Market Cap as of 31/08/22:** \$16.08M
- **Share price range - Low/High:** \$0.024 - \$0.085
- **W:** stgeorgemining.com.au

INVESTMENT HIGHLIGHTS

AUGUST 23, 2022: Maiden diamond drilling program at Paterson Project returns potential for a large mineral copper-gold system at the project.

JULY 29, 2022: Results from June Quarter surveys at Mt Alexander combined with existing geophysical database to select most-prospective areas for nickel-copper-PGE deposits.

JUNE 23, 2022: High-impact exploration programs yield priority drill targets for nickel, copper and PGE at Ajana and Mt Alexander, and copper sulphides at Paterson.



JOHN PRINEAS
EXECUTIVE CHAIRMAN

ST GEORGE MINING

(ASX:SGQ)

COMPANY PROFILE

St George Mining is well set up to ride the electrification megatrend, with 100% owned projects that have opportunities for large scale development in five battery metals, including the nickel, lithium and platinum group elements (PGE), across WA.

At its flagship Mt Alexander Project, St George has already had considerable exploration success, finding high-grade nickel-copper-cobalt-PGE mineralisation only 30m from surface and occurring over a 4.5km strike.

To date, exploration has uncovered impressive intersections including 17.45m @ 3.01% nickel, 1.31% copper, 0.13% cobalt and 1.68 grams per tonne (g/t) total PGEs from only 37.45m.

St George says the intrusive nickel sulphide system being explored at Mt Alexander is geologically similar to many significant North American deposits that will help bridge the demand-supply gap as electric vehicle (EV) production continues to accelerate.

Nickel is a key ingredient of EV batteries, which led the International Energy Agency (IEA) to forecast in July that the world will need 60 new nickel mines by 2030 to achieve carbon reduction pledges.

St George is also completing lithium fieldwork at Mt Alexander, where pegmatite outcrops may be part of the same system that hosts the major nearby lithium discovery announced by Red Dirt Metals.

The Paterson Project in the East Pilbara lies in one of Australia's most highly endowed mineral regions, the Paterson Province. It is only 50km from Rio Tinto's major Winu copper-gold deposit and also in the same region as the hugely successful Nifty (2 million tonne copper) and Telfer (27 million ounce gold) deposits, and the Havieron Project being explored in a Newcrest-Greatland joint venture.

In an important milestone for St George's Paterson Project, the maiden diamond drill program was completed in late August and showed potential for a large copper-gold system. The company is now eagerly awaiting assay results, due next month, so it can better plan follow-up drilling.

The Ajana and Broadview Projects are the least developed of St George's projects, with discussions over access arrangements

progressing in advance of a maiden drill program at Ajana planned for Q4 2022.

Both Ajana and Broadview lie close to the western edge of the mineral-rich Yilgarn Craton, a large mineral-rich region that has spawned numerous major mines and has been described as "Australia's premier gold and nickel province".

Ajana is in the midwest, close to Geraldton and its major port, in a large unexplored area within the Northampton Block which hosts numerous base metal deposits. The project is prospective for intrusion hosted nickel-copper PGE mineralisation.

St George's Broadview Project is just 150km east of Perth and in the same region as market darling Chalice Mining's Julimar discovery, which currently boasts a 350 million tonnes nickel-copper-PGE (platinum group elements) resource. Broadview is also considered prospective for nickel-copper-PGE deposits as well as copper and gold.

Other tenement holders in the region include global mining major Anglo American, which has more than 10,000km² of ground, and fellow ASX lister Impact Minerals which is establishing its Arkun nickel-copper-gold project.

**KEY POINTS**

- **Company Name:** Technology Metals Australia
- **Company ASX code:** TMT
- **Key Commodities:** Vanadium, ilmenite
- **Key Personnel:** Ian Prentice, Managing Director | Michael Fry, Non-executive Chairman | Carmen Letton, Non-executive Director | Jacqueline Murray, Non-executive Director
- **Locations:** WA
- **Market Cap as of 31/08/22:** \$67.14M
- **Share price range - Low/High:** \$0.270 - \$0.620
- **W:** tmtlimited.com.au

INVESTMENT HIGHLIGHTS

AUGUST 5, 2022: The Integration Study for the Murchison Technology Metals Project (MTMP) increases mine life to 25 years and delivers an updated ore reserve of 44.8Mt at 0.89% vanadium oxide.

JULY 14, 2022: TMT kicks off a feasibility study to produce vanadium electrolyte utilising its own high-quality vanadium feedstock.

JUNE 8, 2022: An Early Works agreement for a gas pipeline is executed with APA Operations, a key mitigation activity.



IAN PRENTICE
MANAGING DIRECTOR

TECHNOLOGY METALS AUSTRALIA

(ASX:TMT)

COMPANY PROFILE

TMT's Murchison Technology Metals Project (MTMP) in Western Australia comprises the Gabanintha and Yarrabubba Vanadium Projects that combine to form a mammoth resource of 146.2Mt grading 0.8pc vanadium pentoxide.

Gabanintha, 40km south of Meekatharra, contains 5.5km strike length of high-grade mineralisation, one of the most highly-regarded vanadium deposits in the world.

It represents the bulk of the mineral resource and the site of the proposed processing plant and associated infrastructure, while Yarrabubba is a satellite deposit of the MTMP itself.

Yarrabubba represents an opportunity to

leverage higher vanadium production early in the mine's development due to higher concentrate grades and an additional ilmenite by-product.

Positioning itself as a long term, low cost and stable critical mineral supplier, Technology Metals hopes to take advantage of the burgeoning vanadium redox flow (VRFB) battery sector.

VRFBs are regarded as a safer alternative to lithium-ion and better suited to large scale applications such as stationary storage, and while they come at a higher upfront cost, they tend to have a far longer life compared to lithium-ion batteries.

Back in July, the company kicked off a feasibility study looking into the production of vanadium electrolyte to support the growing market for longer duration energy storage batteries.

Under the MoU with Japan-based partner LE System Co, TMT has not only established a wholly owned subsidiary - vLYTE Ltd - but will be working towards commercialisation of the vanadium electrolyte business.

"As we move closer to a development decision on the MTMP vanadium project, we are increasing our focus on these downstream project enhancement initiatives," managing director Ian Prentice said.

"With an increased need for optimisation of renewable energy generation and with Technology Metals on track to be the world's next pure low-cost vanadium producer, the company is well-placed to become the preferred supplier of vanadium for these batteries."

For the first half of 2022, TMT's main focus was on completing the final elements of the

Integration Study for Yarrabubba that kicked off in late 2021. The strategy was to combine the high grade, high quality Yarrabubba deposit with the Gabanintha vanadium deposit to form the Murchison Technology Metals Project.

The higher vanadium in concentrate grades (1.61% V₂O₅), excellent recoveries and the potential for highly sought-after ilmenite by-product revenue from Yarrabubba was expected to materially enhance the economic metrics in the early years of the project, lowering the MTMP development risk.

A key aspect of the Integration Study was the updated Yarrabubba ore reserve estimate of 15.88Mt at 0.87% vanadium pentoxide and 10.03% titanium oxide, a 69% increase on the previous ore reserve, and the company merged Yarrabubba into the MTMP plan in August 2022.

The study also generated a global ore reserve estimate for the entire MTMP of 44.48Mt at 0.89% vanadium pentoxide, which meets the investment criteria for Technology Metals to actively pursue the implementation phase of the project. The project is anticipating a target annual V₂O₅ production of 27.5Mtpa per year and an annual average ilmenite production of 96,500 tpa in the first nine years.

A commercial tendering process to update the economics of the project is underway and is expected to lead to a development decision, due by the end of 2022.



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