

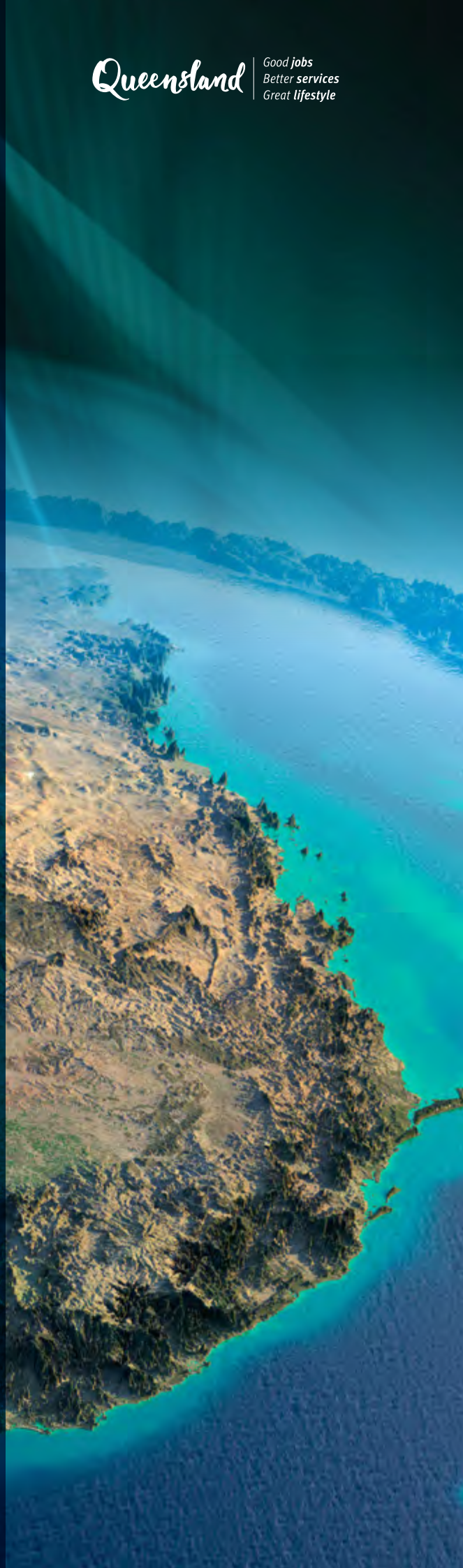


critical minerals

Queensland Critical Minerals **Prospectus**



Rich in resources,
ready for tomorrow.



Acknowledgement of Country

The Department of Resources acknowledges Aboriginal peoples and Torres Strait Islander peoples as the Traditional Owners and custodians of the land, sea and community, and recognises their continuing contribution towards creating this strong and prosperous state of Queensland.

We pay our respects to Elders past, present and emerging, and acknowledge those of the stolen generation who are still finding their way home.

The Country is sacred. Everything on the land has meaning and all people are one with it. We acknowledge First Nations peoples' sacred connection as central to culture and being. We acknowledge the stories, traditions and living cultures of First Nations peoples and commit to shaping our state's future together.

We recognise the contribution of First Nations peoples and communities to the State of Queensland and how this continues to enrich our society more broadly.





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A message from the Deputy Premier and Treasurer

Already, investors and industry from around the world are choosing Queensland to establish new industries, build world first technologies and create good local jobs—we want to build on that momentum.

With this government's stewardship, the industry has emerged stronger, with a clear vision of future opportunities. Those opportunities are a true end-to-end supply chain backed by the resources below the ground and perhaps our greatest asset, our people.

I invite you to make Queensland's critical minerals the next commodity in your investment portfolio.

Cameron Dick MP

Deputy Premier, Treasurer and Minister for Trade and Investment



A message from the Minister for Resources and Critical Minerals

Queensland will be at the forefront in helping Australia and the world industrialise and decarbonise.

We are aiming high and being bold to build on Queensland's already globally successful resources industry.

Put simply, Queensland won the geological lottery.

Our ancient land has a long and diverse geological history which has left a wide variety of minerals spread across this great state. Through ingenuity, partnerships across fences, states and countries, and good old-fashioned Queensland grit, Queensland resources are already used all around the world.

Now, the world is demanding and making the shift towards a cleaner, greener low-emission economy.

Vast amounts of critical minerals will be needed to build the wind turbines, the solar panels and storage batteries that are needed to decarbonise.

Queensland is already heeding the call.

Through the Queensland Critical Minerals Strategy, we are working with industries, and communities here and across the globe to unlock our great critical mineral resources.

Our ambition will see us not just exploring and mining these resources but also processing and manufacturing the renewable energy, defence and medical technologies the world needs.

Importantly, we are seizing these opportunities now. Our unlimited resource potential is only matched by our unlimited drive and commitment to capitalise on this generational opportunity.

It also goes without saying that Queensland is a safe, reliable and ethical resources jurisdiction—with an ESG track record that global mining jurisdictions envy.

We are already working with domestic and international investors ready to take the next step in what promises to be a new industrial revolution.

I Invite you to be Queensland's next resource industry investor.

Scott Stewart MP

Minister for Resources and Critical Minerals

There's never been a better time to invest

The global race to secure critical minerals and supply chains has resulted in fierce investment competition.

In this context, there is no better place to invest than Queensland, Australia.

Australia has a long track record of extracting and delivering minerals reliably, securely and ethically—a major supplier of those minerals is Queensland.

Queensland has some of the richest mineral producing areas with key enabling infrastructure already in place. Our legislated renewable energy targets and investment in future energy infrastructure also means Queensland mineral projects will be ready to command 'green price premiums'.

Queensland is already renowned as a fast, easy and flexible mining jurisdiction to do business with. However, the Queensland Government is doing more—actively advocating and supporting the development of more critical mineral projects across the state, including accelerating the exploration, extraction, processing, and value-adding of critical minerals.

This commitment is verified through targeted policies that also complement national incentives. In particular, the Queensland Critical Minerals Strategy which oversees A\$315 million of initiatives to move faster and smarter, maximise investment, build value chains, and foster research and environmental, social, and governance (ESG) excellence.

The Queensland Critical Minerals Prospectus showcases projects ready for investment at different project stages. This information is complemented by details of Queensland's critical mineral sector, including known endowments, and the actions government is taking to accelerate the development of this sector.





Global and domestic demand for Queensland's critical minerals

Global demand for critical minerals is predicted to continue to increase over the coming decades to ensure the world can build the clean energy technologies needed to reach the goals of the Paris Agreement.¹ The International Energy Agency (IEA) estimates that demand for minerals could grow by three-and-a-half times by 2030, in seeking to achieve net zero emissions by 2050.

While newly announced projects indicate that supply is catching up with clean energy ambitions, the IEA confirms that the adequacy of future supply is far from assured.²

Domestically, national and state renewable and clean energy targets in Australia will also drive local demand for critical minerals and critical mineral products.

The Queensland Government has committed to reducing greenhouse gas emissions by 75 per cent by 2035 and both the Australian and Queensland governments have committed to net zero emissions by 2050. Queensland has also legislated a renewable energy target of 80 per cent by 2035.

This combination of global and domestic demand will drive significant and accelerated growth in the supply, processing, refining and manufacturing of critical minerals—offering investment opportunities at all stages of the value chain, both within Queensland and exported to our international partners.

Australia has bi-lateral collaborations on critical minerals with many countries including the United States, India, Germany, the United Kingdom, South Korea and within the European Union.

¹ <https://unfccc.int/process-and-meetings/the-paris-agreement>

² <https://www.iea.org/reports/critical-minerals-market-review-2023/implications#abstract>

Queensland, Australia – trusted to supply the world



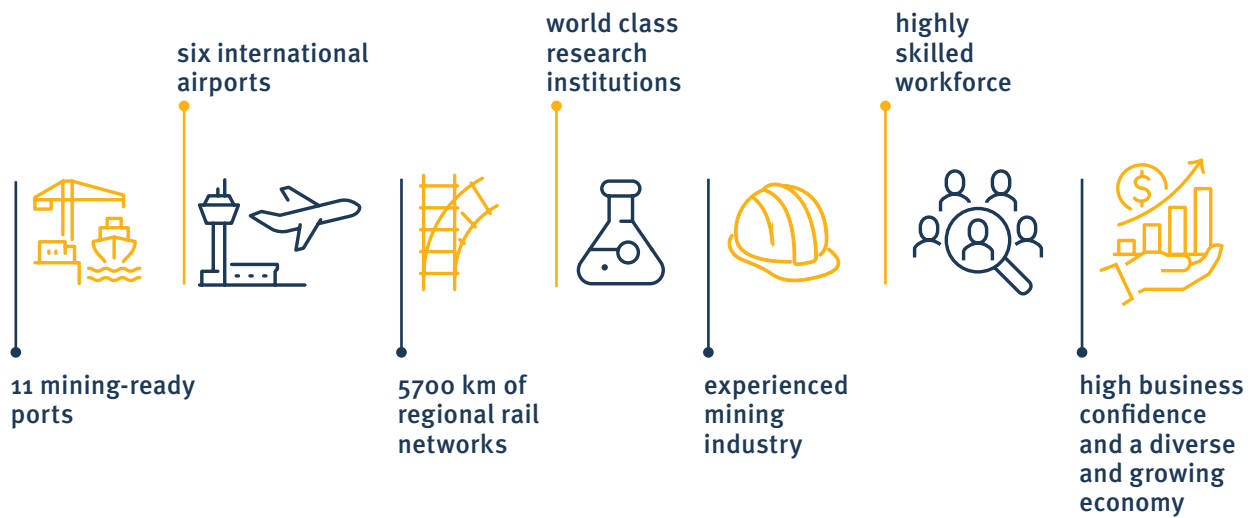


Queensland's **advantage**

Located in the north-eastern part of Australia, Queensland is a premier resource investment destination.

Over the past two decades, Queensland's economic growth has exceeded the national average. Investors can benefit from being part of one of the best-performing state economies in Australia. Queensland has some of the strongest business conditions of all mainland states. These conditions, coupled with consistently high levels of business confidence, positions Queensland for continuing strong growth.

Queensland is already recognised as a secure and competitive supplier of minerals—mining was Queensland's largest industry in 2022–23, worth A\$86.5 billion in nominal gross value added (GVA) terms.



Green price premium ready

Queensland's investment into infrastructure that will decarbonise the state's electricity system and legislated clean energy targets means projects connected to Queensland's energy grid will be ready to demand a green price premium.

Deep ESG stewardship

Underpinning these green policies and investments is a rigorous regulatory framework. This framework has provided the foundation for resource companies to maintain a legacy of high-quality ESG-based practices.

The Queensland Government is committed to maintaining the highest standards of environmental regulation, fair and safe working conditions, and engagement with First Nations communities as strong ESG foundations.



Environment

- » Legislated renewable energy and emissions reduction targets.
- » Transparent, consultative and robust environmental requirements for large resource projects.



Social

- » Legislated commitment to ensure communities near large resource projects benefit from the construction and operation of that project.
- » A legislated commitment to move towards a Path to Treaty between the Queensland Government and Aboriginal and Torres Strait Islander peoples.



Governance

- » A long history of a stable system of government and political framework.
- » Established, independent regulator to assist the resources industry to meet their obligations to protect and promote the safety and health of workers.

A skilled and growing workforce

Queensland's resources industry already employs around 77 000 people, and will continue to be a profession of choice for decades to come.

Queensland's unrivalled culture and lifestyle will ensure that access to skilled workers will continue to grow in line with population growth predictions. In 2023, Queensland's population was estimated at almost 5.5 million people. By 2030, the population is forecast to grow to over 6 million people.³

The Queensland Government is capitalising on the increasing population by growing the size, skills and adaptability of the state's workforce. The Queensland Workforce Strategy 2022–2032 will deliver innovative and practical solutions to ensure Queensland has a ready workforce to support growth, which is also supported by A\$1.2 billion in training, development and growth initiatives.

The large, skilled workforce is complemented by an advanced onshore mining equipment, technology and services industry, and an established services hub with professional and technical services spread right across the state.



A resource and energy innovation state

Queensland's intellectual capability in geoscience and mining is well established, and has generated capacity for the benefit of investors, manufacturers, retailers and customers along the supply chain.

Over the past two decades the Queensland Government has invested more than A\$8 billion in research, development and innovation.

This investment is also complemented by significant private sector commitments, with over A\$139 million dedicated to research and development activities across all parts of the mining industry in the 2021–22 financial year.

Queensland also boasts academic hubs specialising in mining and critical minerals, including James Cook University in Townsville, Resources Centre of Excellence in Mackay and the Sustainable Minerals Institute at The University of Queensland in Brisbane.

Driving discoveries through information

Queensland's world class pre-competitive geoscience data has been fuelling discoveries and business outcomes for decades. The data is fully digital, free to all users, and available as raw data or visualised through GeoResGlobe.⁴

Complementing this digital data is around 6000 km of drill core from Queensland's known mineral deposits, and coal and petroleum strata. The samples can be inspected and, in some cases, taken for further analysis. Exploration Data Centres are located in South East Queensland and the North West Minerals Province.

³ Business Queensland, 'Benefits of doing business in Queensland': <https://www.business.qld.gov.au/industries/invest/queensland#queenslands-highly-skilled-workforce>.

⁴ GeoResGlobe <https://georesglobe.information.qld.gov.au/>

Queensland's critical mineral opportunity

Queensland has some of the world's richest mineral producing areas, with major deposits of copper, lead, zinc, nickel, cobalt, tungsten, graphite, vanadium and silica, as well as silver, phosphate and rare earth elements. These minerals exist alongside a large selection of other minerals in Queensland—especially in the world-renowned North West Minerals Province.

Queensland is host to large and long-lived copper mining activities, with new deposits still being discovered, and developments still being successfully progressed.

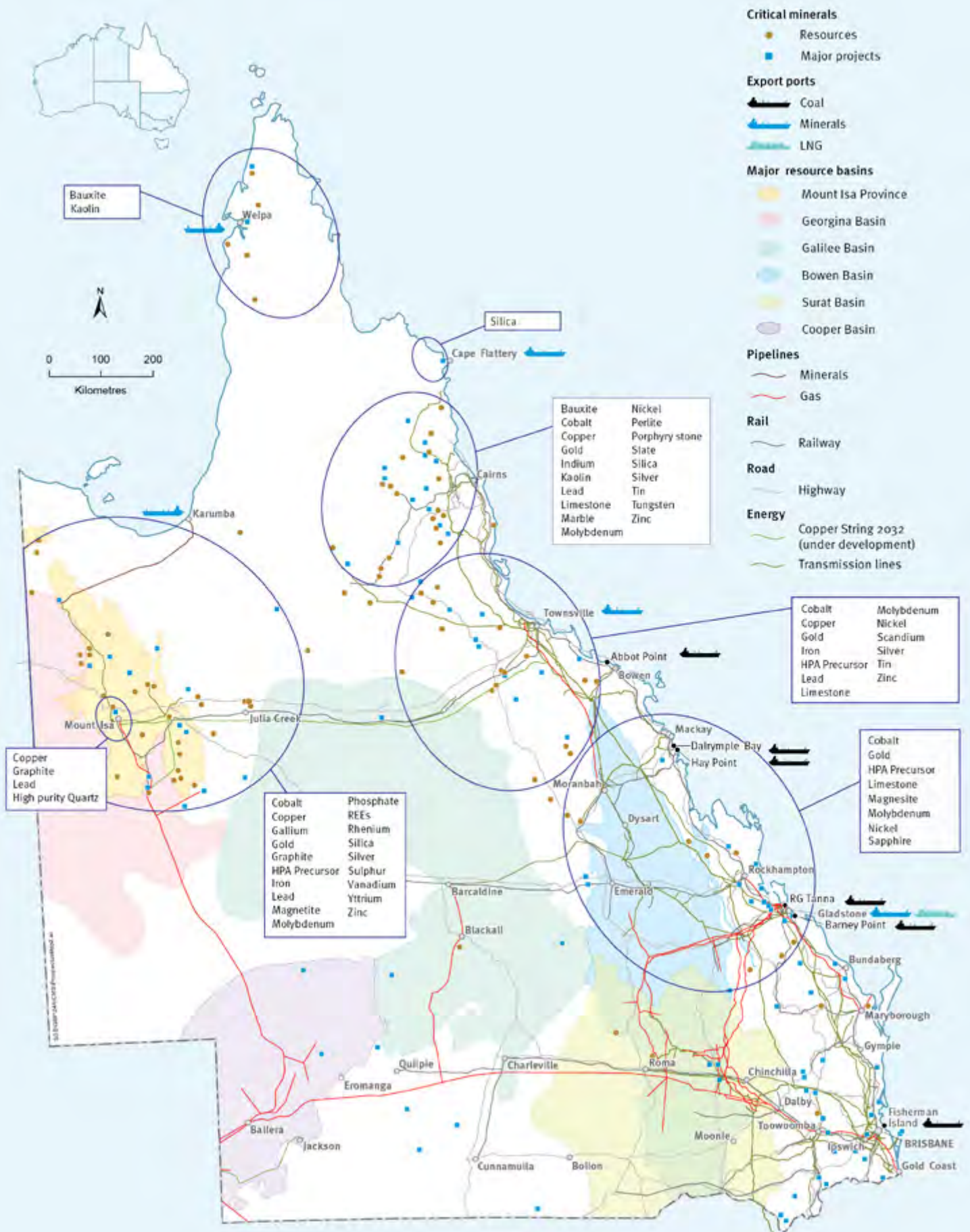
There are emerging suppliers in vanadium, and new projects for cobalt are being explored, with significant potential from existing and abandoned mine-site tailings.

High-purity alumina projects in Queensland are also showing early success and companies are ready for new partners.

A range of other critical minerals, including rare earth elements, are found across multiple sites in Queensland, including in secondary sources such as mine tailings and bauxite residue.



Our sophisticated infrastructure network overlaid by a diverse, rich and geographically dispersed resource endowment offers investors limitless potential.



Invest in a priority sector supported by government

Government industry facilitation offices

If you are looking for general information about operating in Queensland or investing into Queensland's critical minerals sector, call Critical Minerals Queensland or the Department of Resources.

Critical Minerals Queensland

Critical Minerals Queensland (CMQ) is a facilitation office within the Department of Resources. Based in Townsville, CMQ is a central point for industry, investors and the community to engage with the Queensland Government about critical minerals.

Contact

Lead, Critical Minerals Queensland
Paul Holden
Email: criticalminerals@resources.qld.gov.au
Office: 445 Flinders Street, Townsville, Queensland

Department of Resources

The Department of Resources works closely with the resources industry, and across the government to assess, negotiate and advise on innovation, enterprise and resource industry wide proposals. The department also has a regulatory role for existing operations to ensure all activities are managed fairly, responsibly, and sustainably.

Contact

Director-General
Warwick Agnew
Email: ODG@resources.qld.gov.au
Office: 1 William Street, Brisbane, Queensland

If you are looking to invest in the Queensland resources industry from overseas, call Trade and Investment Queensland.

Trade and Investment Queensland

Trade and Investment Queensland (TIQ) is the Queensland Government's dedicated global business agency, with representatives in 21 locations across the world.

Through this network of local and international officers, TIQ supports you to navigate the nuance of Queensland's investment and trade sector by:

- » facilitating introductions to industry and service providers
- » providing detailed industry knowledge and market intelligence
- » developing business cases
- » assisting with site visits
- » liaising with government including linking in with our dedicated Critical Minerals Queensland Office
- » providing investment ready project support
- » advising on business support grants, funding, incentives and projects.

TIQ can also support and identify projects ready for investment.

Contact

Acting Global Investment Commissioner
Michelle Matthews
Email: TIQ.Concierge@tiq.qld.gov.au
Office: 1 William Street, Brisbane, Queensland.

Government funding programs and financial bodies

Critical Minerals Queensland can facilitate introductions to Government financial bodies. Contact CMQ via criticalminerals@resources.qld.gov.au.

Queensland Critical Minerals and Battery Technology Fund

The Queensland Critical Minerals and Battery Technology Fund is a A\$170 million fund providing support to Australian businesses to enhance the extraction and processing of critical minerals in Queensland, and to accelerate the development of battery technologies and the production of precursor or advanced materials in Queensland.⁵

The fund is being delivered by Queensland Investment Corporation and Queensland Treasury.

Northern Australia Infrastructure Facility (Australian Government)

The Northern Australia Infrastructure Facility (NAIF) is a A\$7 billion lending facility providing loans to infrastructure projects in northern Australia. For the purposes of the NAIF and Queensland, northern Australia includes those parts of Queensland north of Gladstone. NAIF investments can be used to develop new infrastructure or to materially enhance existing infrastructure. NAIF can lend up to 100% of the debt, provided there is appropriate risk sharing.⁶

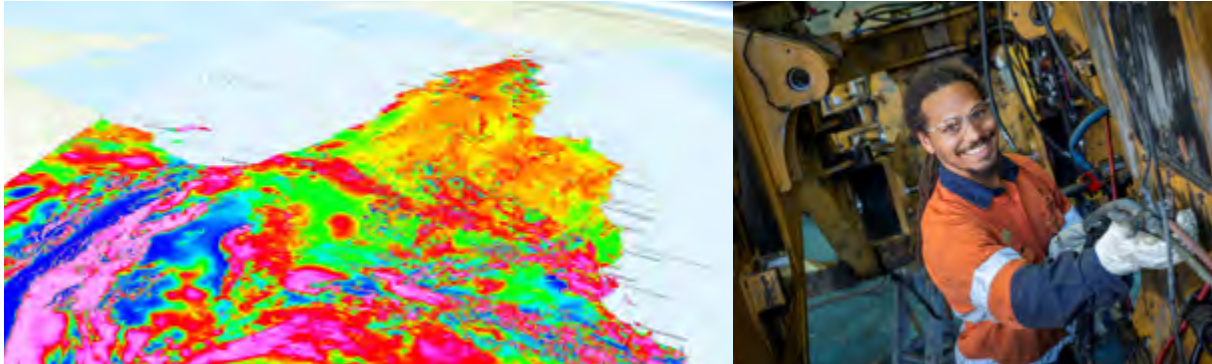
Export Finance Australia (Australian Government)

Export Finance Australia (EFA) provides commercial finance for exporting businesses and Indo-Pacific infrastructure development, including those businesses involved with the critical minerals supply chain. EFA financial instruments include direct loans, guarantees and bonds, insurance products, including credit insurance and political risk insurance and project and buyer finance.



⁵ For more information, contact the Critical Minerals and Battery Technology Fund via qcmbtf@qic.com

⁶ Queensland Treasury, Northern Australia Infrastructure Facility <https://www.treasury.qld.gov.au/programs-and-policies/northern-australia-infrastructure-facility/>



Government industry-enabling levers

Queensland Resources Industry Development Plan

The Queensland Government has a 30-year plan to grow and diversify the resources industry. The Queensland Resources Industry Development Plan (QRIDP) provides the way forward to transform the state's resources industry, with over 40 actions and A\$68.5 million of committed funding.

Queensland Energy and Jobs Plan

The Queensland Energy and Jobs Plan (QEJP) is a A\$62 billion commitment that will transform Queensland's energy system to deliver clean, reliable and affordable energy. The centrepiece of the plan is a SuperGrid transmission backbone connecting renewable energy generation and storage across the state to provide green energy for hydrogen production, battery manufacturing, and critical mineral mining and processing.

CopperString 2032

A key action of the QEJP, and a critical component of the new SuperGrid, is the CopperString 2032 project. CopperString 2032 is a A\$5 billion investment in a 1100 km high-voltage electricity transmission line from Townsville to Mount Isa. It will connect Queensland's North West Minerals Province to the national electricity grid, providing energy certainty to the region's burgeoning critical minerals sector. Early works on CopperString began in 2023.

Queensland Critical Minerals Strategy

The Queensland Critical Minerals Strategy (QCMS) builds on the QRIDP, bringing clear focus to the development of a critical minerals sector. The QCMS will oversee A\$315 million of investment into growing Queensland's critical mineral sector.

Queensland New-Industry Development Strategy

The Queensland New-Industry Development Strategy (QNIDS) sets out the Queensland Government's approach to proactively developing the industries that will be in demand in a decarbonising world. QNIDS targets six key industries for growth including critical minerals processing, manufacturing and product development.

Legislated Coordinator-General function

Queensland's Coordinator-General has wide-ranging powers to plan, deliver and coordinate large-scale infrastructure projects. The majority of projects considered by the Coordinator-General have been within the minerals and energy sector.

A snapshot of government funded initiatives

QLD	A\$5 billion	Own and deliver the 1100 km CopperString 2032 project.
QLD	A\$300 million	Upgrade the rail connection from the North West Minerals Province to the Port of Townsville.
QLD	A\$77 million	Build the first Queensland Resources Common User Facility.
QLD	A\$75 million	Establish Critical Mineral Zones to accelerate projects through a place-based approach.
QLD	A\$55 million	Reduce rents to A\$0 for critical mineral explorers.
QLD	A\$22.6 million	Funding explorers to unlock the next generation of critical mineral projects.
QLD	A\$30 million	Accelerate development of resource projects in the North West Minerals Province in the next five years.
AUS	A\$53.8 million	Funding for Queensland resource projects to onshore value chains under the Modern Manufacturing Initiative.
AUS	A\$26.7 million	Funding for Queensland resource projects to accelerate early and mid-stage projects under the Critical Minerals Accelerator Initiative.
AUS	A\$8.4 million	Funding for Queensland resource projects to advance projects towards financing and production under the Critical Minerals Development Program.

CASE STUDY

Australian-first critical minerals demonstration common user facility

The Queensland Government has invested A\$77 million to build common user infrastructure in Townsville to support the development, extraction, and production of critical minerals.

The Queensland Resources Common User Facility (QRCUF) is the first of its kind for Australia and will accelerate the development of critical mineral commercial mining projects.

Located near the resource-rich North West Minerals Province, the facility will pilot production processes and research products, produce mineral samples at scale and assess potential by-products, waste streams and recyclable materials.

The state-owned mineral processing facility will be operational for vanadium processing in 2025, with capacity to expand over time to encompass processing other critical minerals like cobalt and rare earth elements.



Artist's impression of Cleveland Bay Industrial Park where the QRCUF will be built.

Investment summary

This section includes a non-exhaustive list of Queensland critical mineral projects seeking investment partners. There are more projects than those listed here, and more profiles will be added periodically.

Critical Minerals Queensland will facilitate introductions to other projects according to your specific needs. Contact CMQ at criticalminerals@resources.qld.gov.au.

CRITICAL MINERAL	PROJECT	STAGE	PAGE
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	Milo	Publicly announced	52
	Brisbane Mineral Separation and Processing Plant	Feasibility	53

INVESTMENT OPPORTUNITIES:

Queensland copper



Export value
(2023)

A\$2700m



Refined copper
produced

204 kt



Resources
(contained Cu)

11 000 kt



Full time
employees

5000



Exploration
expenditure

A\$170m



Investment
projects

A\$2300m

Queensland has a 150-year history of copper production, with the first mines and smelters being established in Central and South East Queensland as early as in the 1860 and 70s.

Queensland’s advantage

- » Currently, Queensland’s copper represents about a quarter of Australia’s mined copper output and 50 per cent of Australia’s refined copper. This is equivalent to 1 per cent of global primary copper production.
- » Most produced copper is exported to international markets, mainly in Asia, primarily in the form of refined metal (>99.99 per cent Cu).
- » The value of Queensland’s copper exports was A\$2.7 billion in 2023, accounting for about 25 per cent of Queensland’s minerals exports.

Processing and production

- » Most of Queensland’s copper is currently mined in the North West Minerals Province, smelted at Mount Isa, and further refined in Townsville.
- » The grade of mined copper and copper-gold ores in Queensland is currently in the range of 0.2–2.4 per cent Cu, averaging about 1.3 per cent well above world’s average of 0.5 per cent.

Exploration >>>

over 30 explorers

Mining >>>

10 operating projects

Smelting >>>

One copper smelter, one copper refinery,
and four SX / SX-EW plants

Refining >>>

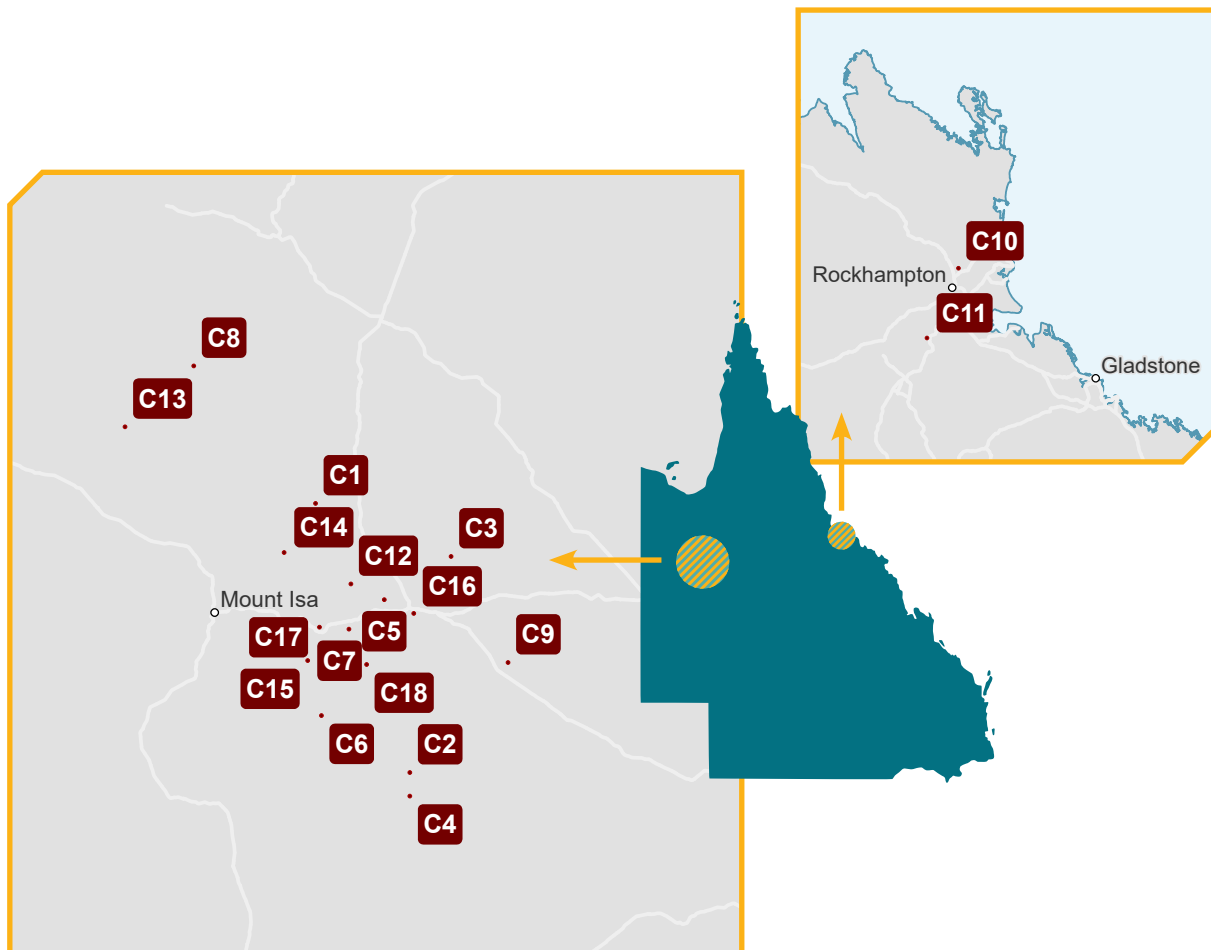


Queensland copper

Operation	Company	Product	Resources	Code
Operating – extraction				
Mount Isa Copper Operations	Mount Isa Mines Ltd (Glencore)	concentrate, anodes	168 Mt @ 1.69% Cu	
Capricorn Copper	29Metals Ltd	concentrate	62.2 Mt @ 1.8% Cu, 9 g/t Ag, 360 ppm Co	
Anthill	Austral Resources Australia Ltd	concentrate	12.53 Mt @ 0.66% Cu	
Starra Line	Chinova Resources Pty Ltd	concentrate	5.96 Mt @ 0.78% Cu, 1.6 g/t Au	
Eloise	AIC Mines Ltd	concentrate	5.7 Mt @ 2.41% Cu, 0.59 g/t Au, 9.8 g/t Ag	
North Queensland Copper Operations	Aeris Resources Ltd	concentrate	3.386 Mt @ 2.5% Cu, 0.3 g/t Au, 1.6 g/t Ag	
Ernest Henry	Evolution Mining Ltd	concentrate	101.5 Mt @ 1.25% Cu, 0.73 g/t Au	
Operating – processing and refining				
Mount Isa Copper Smelter	Mount Isa Mines Ltd (Glencore)	anodes	-	
Townsville Copper Refinery	Copper Refineries Pty Ltd (Glencore)	cathodes	-	
Mt Kelly Processing Plant	Austral Resources Australia Ltd	cathodes	-	
Mt Cuthbert	Mt Cuthbert Resources Pty Ltd	cathodes	-	
Prospective				
Eva Copper Project	Harmony	concentrate	354.7 Mt @ 0.42% Cu; 184 Mt @ 0.07 g/t Au	C1
SWAN	Chinova Resources Pty Ltd	concentrate	354 Mt @ 0.6% Cu and 0.35 g/t Au	C2
Ernest Henry Mine Extension	Evolution Mining Ltd	concentrate	971 Mt @ 1.30% Cu and 0.76 g/t Au	C3
Mount Dore	Chinova Resources Pty Ltd	cathodes	70 Mt @ 0.6% Cu	C4
Rocklands Copper Cobalt Project	Copper Resources Australia Pty Ltd	concentrate	55.4 Mt @ 0.64% Cu, 290 ppm Co, 0.15 g/t Au and 5.1% magnetite	C5
Kalman	Hammer Metals Ltd	concentrate	39.1 Mt @ 0.53% Cu, 0.27 g/t Au, 0.10% Mo, and 2.1g/t Re	C6
White Range Project	Fetch Metals Pty Ltd	cathodes	29.3 Mt @ 0.82% Cu, 0.2g/t Au and 0.03% Co	C7
Mount Oxide	True North Copper Ltd	concentrate	15.98 Mt @ 1.43% Cu and 6.91 g/t Ag; 9.15 Mt @ 0.23% Co	C8
Jericho	AIC Mines Ltd	concentrate	14.1 Mt @ 2.0% Cu, 0.4 g/t Au and 2.2 g/t Ag	C9
Mt Chalmers	Qmines Ltd	concentrate	11.3 Mt @ 0.76% Cu, 0.08% Pb, 0.22% Zn, 0.42 g/t Au and 4.52 g/t Ag	C10

Queensland copper

Operation	Company	Product	Resources	Code
Mt Morgan	Heritage Minerals Pty Ltd		10 Mt @ 0.16% Cu and 1.2 g/t Au	C11
Millenium	Metal Bank Limited; and Global Energy Metals Corp	concentrate	8.4 Mt @ 0.29% Cu, 0.09% Co and 0.12g/t Au	C12
Lady Colleen	Austral Resources Australia Ltd	cathodes, concentrate	3.15 Mt @ 1.73% Cu, 4.4% Ca and 2.4% Mg	C13
Barbara	Aeris Resources Ltd	concentrate	2.2 Mt @ 2.0% Cu and 0.2 g/t Au	C14
Overlander	Hammer Metals Ltd		1.8 Mt @ 1.2% Cu and 445 ppm Co	C15
Cloncurry Copper Project (Restart)	True North Copper Ltd	concentrate	12.55 Mt @ 0.82% Cu and 0.19 g/t Au	C16
Jubilee	Hammer Metals Ltd	concentrate	1.4 Mt @ 1.41% Cu and 0.62 g/t Au	C17
Duck Creek	Transition Resources Pty Ltd	concentrate	0.9 Mt @ 1.49% Cu	C18



PROJECT SPOTLIGHT:

Cloncurry Copper Project (Restart)

True North Copper Limited (ASX:TNC)Copper, cobalt and gold | **SEEKING FUNDING TO INCREASE PRODUCTION CAPACITY**

Project status | production expected Q4, 2024

Publicly announced | Feasibility | FID | **Producing**

Initial mine life

4.6 years
(2023)

CAPEX

A\$1.5m
(2024)

Pre-tax NPV 10%

A\$88.4m
(2024)

Pre-tax IRR 10%

240%
(2024)

Copper mining restart underway

The Cloncurry Copper Project (Restart) in North West Queensland incorporates four open pit deposits (Great Australia, Orphan Shear, Taipan and Wallace North) and will leverage an extensive existing infrastructure network to minimise overall capital expenditure requirements. While the project restart has a relatively short life of mine, True North Copper has reiterated a commitment to extending the project's mine life by actively pursuing exploration and expansion opportunities within the Great Australia and Wallace North deposits.

Over the initial life of mine, the Cloncurry Copper Project (Restart) is expected to mine and process around 4.8 Mt of ore, delivering 35 000 t of copper and 29 koz gold of contained metal.

Key project facts

- » The restart study for the Cloncurry Copper Project (Restart) was completed in February 2024, following True North Copper's acquisition of the project in August 2022.
- » True North Copper has secured a binding offtake agreement with Glencore for 100 per cent of copper concentrate for up to 1 Mt of ore per year for the life of mine.
- » The Cloncurry Copper Project (Restart) is a fully permitted project including mining leases and environmental authorities for both copper oxide and sulphide production.
- » True North Copper has recently completed the refurbishment of a copper sulphate crystallisation plant. The plant is now fully operational, with copper sulphate production commenced in mid-2023.

	Category	Tonnage (Mt)	Cu (%)	Au (g/t)	Cu (kt)	Au (koz)
Mineral Resources (2024)	Indicated	10.63	0.78	0.18	82.98	60.34
	Inferred	2.13	0.92	0.24	19.57	16.23
	Total	12.55	0.82	0.19	102.52	76.73
	Probable	4.70	0.80	0.13	37.5	20.0
	Total	4.70	0.80	0.13	37.5	20.0

Scan here for more information



PROJECT SPOTLIGHT:

Eva Copper Project

Harmony (JSE:HAR & NYSE:HMY)**Copper and gold | SEEKING SUPPLIERS FOR CONSTRUCTION AND OPERATING PHASES****Project status | updating DFS, FID expected in 2025**Publicly announced | **Feasibility** | FID | ProducingMine life
min. 15 years
(2023)**354 Mt**
mineral resource @
0.42% Cu**2–3 year**
construction phase
post-FID**55 ktpa**
copper
17 kozpa gold

High volume copper and gold mine

Eva Copper is an iron-oxide copper-gold resource poised to become the largest new metal mine in North West Queensland. Eva Copper will be a conventional open-cut mine comprising of multiple pits with a low strip ratio. It will be mined in a select sequence, feeding a copper concentrator, based on a proven processing flow sheet and technology selection. The ore bodies of Eva Copper are wide and predictable, while a modern plant design and conventional technology is expected to minimise low production ramp-up risk.

Key project facts

- » Eva Copper was declared as a 'Prescribed Project' by the Queensland Government in March 2024, with five mining leases and an environmental authority already granted for the project.
- » Harmony purchased a 100 per cent stake in the project in December 2022, and is currently reviewing the previous feasibility study to address opportunities identified in the due diligence process.
- » A reserve declaration is expected with the feasibility study update, while a final investment decision is expected in late 2025 after further approvals are obtained. A March 2024 update from Harmony suggested that the revised feasibility study anticipated that the processing facility will have greater capacity than initially indicated, as well as potentially increased production profile.
- » Initial site preparatory works have been commissioned and will continue in 2024–25. This includes site access roads, temporary accommodation facilities, fencing and laydown areas.

Scan here for more information





INVESTMENT OPPORTUNITIES:

Queensland vanadium



Potential annual product value (2030)

A\$500m



Potential mine production (2030) (V2O5 content)

40 kt



Resources (contained V₂O₅)

25 000 kt



Full time employees (2030)

1000+



Prospective projects

7



Investment opportunity

A\$1000m+

Vanadium is quickly emerging as a major battery mineral for large grid-scale energy storage, essential to decarbonisation of the global economy.

Queensland's advantage

- » Queensland's major mineral occurrences of vanadium are located in the Julia Creek area, represented by vanadium-rich shale within marine sediments of the Early Cretaceous Toolebuc Formation.
- » There are currently seven vanadium projects in Queensland at different stages of development.
- » The proposed final products range from a low-grade concentrate (~2 per cent V₂O₅) to higher value products such as vanadium oxide flake (98 per cent), high-purity battery-grade vanadium oxide, battery electrolyte and Vanadium redox flow batteries (VRFBs).
- » Potential by-products can include high-purity alumina (HPA), molybdenum, and/or oil.

Processing and production

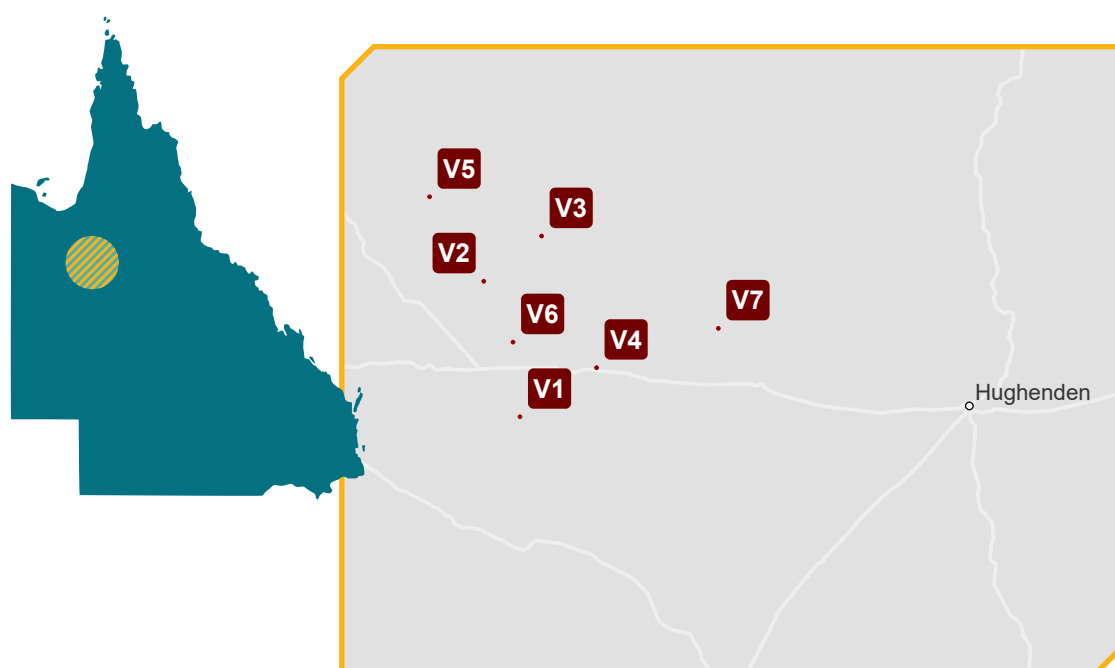
- » Australia holds one of the world's largest known reserves and resources for vanadium, but currently does not produce this critical mineral.
- » VRFBs have a long life cycle, unlimited energy capacity, are not flammable, and are fully recyclable at the end of life.
- » Other applications for vanadium include high-strength low alloy steel, chemicals, superalloys and catalysts.

Exploration >>>	Mining >>>	Refining >>>	Manufacturing >>>	Recycling >>>
Seven projects	One project under construction (2024+)	Refining opportunities onshore	One operating vanadium electrolyte plant and potential battery manufacturing	Potential vanadium battery electrolyte and spent catalyst recycling



Queensland vanadium

Operation	Company	Product	Resources	Code
Operating				
Vecco Vanadium Electrolyte Manufacturing Facility (Townsville)	Vecco Group Pty Ltd	vanadium electrolyte		
Under development				
Saint Elmo	Multicom Resources Ltd	vanadium pentoxide, high-purity alumina	494 Mt @ 0.28% V ₂ O ₅ and 0.014% Mo	V6
Prospective				
Julia Creek	QEM Ltd	vanadium pentoxide	2.9 bt @ 0.31% V ₂ O ₅	V1
Richmond - Julia Creek	Richmond Vanadium Technology Ltd	vanadium pentoxide	1.8 bt @ 0.36% V ₂ O ₅	V2
Lindfield Project	Critical Minerals Group Ltd	vanadium pentoxide, molybdenum oxide	713 Mt @ 0.32% V ₂ O ₅ , 130 ppm Mo, 3.4% Al ₂ O ₃	V4
Allaru	AusVan Battery Metals Pty Ltd	vanadium pentoxide	618 Mt @ 0.45% V ₂ O ₅	V5
Cambridge	Velox Energy Materials Inc	vanadium pentoxide	206.2 Mt @ 0.33% V ₂ O ₅ , 240 ppm MoO ₃	V7
Vecco Critical Minerals Project	Vecco Group Pty Ltd	vanadium pentoxide, high-purity alumina		V3



PROJECT SPOTLIGHT:

Saint Elmo

Multicom Resources Pty Ltd (Private Company)

Vanadium and HPA | **SEEKING OFFTAKE**

Project status | development commenced

Publicly announced | Feasibility | **FID** | ProducingMine life
min. 30 years
(2024)CAPEX
A\$350m
(2024)NPV
n/aIRR
n/a

Queensland's first vanadium and HPA project in final development stages

The Saint Elmo Project, located near Julia Creek in the North West Minerals Province, aims to mine vanadium and process vanadium pentoxide, HPA and other critical mineral products. Multicom Resources intends to capitalise on the growing demand for vanadium in high strength steel production, vanadium batteries and emerging technologies. Saint Elmo has an extensive resource deposited at a shallow depth with a low strip ratio.

It has an initial annual production target of over 7000 t of vanadium pentoxide and HPA per annum with government approval granted for up to 26 000 t per annum production. The project is directly connected to established road, rail and port services to exports its products.

Key project facts

- » Multicom Resources has entered the project execution phase, with construction commencing late 2023.
- » The Saint Elmo Project is fully permitted with mining leases and environmental authorities.
- » In February 2020, the Queensland Government declared Saint Elmo as a 'Prescribed Project'.
- » Multicom Resources completed a detailed feasibility study for the project and built a pilot plant in Perth (Western Australia) that produced products for marketing purposes.

	Category	Tonnage (Mt)	Vanadium		Molybdenum	
			Grade (%)	Contained (t)	Grade (%)	Contained (t)
Mineral Resources (2017)	Measured	20.50	0.28	57 400	0.012	2 500
	Indicated	228	0.30	684 000	0.016	36 300
	Inferred	245	0.26	637 000	0.013	31 000
	Total	493.50	0.28	1 378 400	0.014	69 900

Scan here for more information



PROJECT SPOTLIGHT:

Vecco Critical Minerals Project

Vecco Group Pty Ltd (Private Company)

Vanadium, HPA and molybdenum | **SEEKING OFFTAKE, DEBT, EQUITY AND/OR STRATEGIC PARTNERSHIPS**

Project status | EPBC open for public comment

Publicly announced | **Feasibility** | FID | Producing

Mine life

28 years

(2024)

CAPEX (Stage 1)

A\$715m

(2024)

Pre-tax NPV 8%

A\$1942m

(2024)

Pre-tax IRR 8%

22.08%

(2024)

Vertically integrated vanadium battery supply chain

The Vecco Critical Minerals Project is a key component of Vecco Group's integrated plan to establish an international vanadium battery supply chain. The mining stage of the project is located in the vanadium-rich Julia Creek region of North Queensland, with vanadium electrolyte manufacturing facilities in Townsville (operational), the United States and Europe (planned).

Mining operations are expected to commence in mid-2027, with expected annual production of up to 8700 t of vanadium pentoxide, 4000 t of HPA and 600 molybdenum.

Key project facts

- » The Vecco Critical Minerals Project was declared a "Prescribed Project" by the Queensland Government in September 2023, with mining lease applications and the environmental authority application submitted in the same month.
- » Vecco Group opened Australia's first commercial-scale vanadium battery electrolyte manufacturing facility in Townsville (Queensland) in June 2023, which was supported through the Queensland Government's Industry Partnership Program. An expansion of the facility to 300 MWh per annum is expected in 2027.
- » Production from the Vecco Critical Minerals Project mine is manufactured into battery material by the vertically integrated downstream manufacturing facilities. In late 2023, Idemitsu Australia, Sumitomo Electric Industries and Vecco Group signed a collaboration agreement to build a complete manufacturing supply chain in Australia (from mining to energy storage).

Scan here for more information



PROJECT SPOTLIGHT:

Richmond – Julia Creek

Richmond Vanadium Technology (ASX:RVT)

Vanadium | **SEEKING OFFTAKE, DEBT, EQUITY AND/OR STRATEGIC PARTNERSHIPS**

Project status | Bankable Feasibility Study expected mid 2025

Publicly announced | Feasibility | FID | Producing

Mine life
min. 25 years
(2024)CAPEX
A\$242m
(2021)Post-tax NPV 10%
A\$613m
(2021)Post-tax IRR 10%
38%
(2021)

Globally significant vanadium deposit for vanadium redox flow batteries

The Richmond – Julia Creek Vanadium Project, located in North Queensland, is the largest non-titanomagnetite vanadium deposit of its kind globally, and is expected to produce a significant supply of vanadium for the steel and emerging energy storage markets. The project involves the development of an open cut, free dig vanadium mining operation and on-site processing facility. It has several advantages including very large reserves, low capex and a long mine life. Initial annual production targets include a mining rate of 4.2 Mt to produce 790 000 t of vanadium concentrate and then converted to 12 701 t of vanadium pentoxide.

Key project facts

- » A bankable feasibility study is currently underway and is expected to be completed in mid-2025. A draft Environmental Impact Statement is expected in similar timeframes and will be used to support the final investment decision.
- » Focused on complete supply chain from raw material to vanadium electrolyte and all vanadium redox flow battery for the growing long duration energy storage market.
- » The Richmond – Julia Creek Vanadium Project was the first critical minerals project in Queensland to be awarded 'Coordinated Project' status.
- » Richmond Vanadium Technology is represented on the 'Future user engagement protocol' panel for the Queensland Government's Queensland Resources Common User Facility.

	Category	Tonnage (Mt)	Vanadium (%)	Vanadium (kt)
Mineral Resources (2019)	Indicated	430	0.50	2150
	Inferred	1408	0.31	4540
	Total	1838	0.36	6650
	Probable	459	0.49	2250
	Total	459	0.49	2250

Scan here for more information



PROJECT SPOTLIGHT:

Lindfield Project

Critical Minerals Group (ASX:CMG)

Vanadium, HPA and molybdenum | SEEKING OFFTAKE, EQUITY, DEBT AND/OR STRATEGIC PARTNERSHIPS**Project status | Scoping study complete, feasibility expected in 2024****Publicly announced | Feasibility | FID | Producing**

Mine life

15 years
(2023)

CAPEX

A\$400m
(2023)

Pre-tax NPV

A\$10m
(2023)

Pre-tax IRR

17%
(2023)

Detailed feasibility study for low-cost vanadium project expected soon

The Lindfield Project is a 295 km² tenement located near the town of Julia Creek in Northwest Queensland, with main roads and rail running through the tenement. The project intends to supply vanadium as part of Critical Mineral Group's vision to be a leading manufacturer of high-quality vanadium battery products for the energy storage market. A successful scoping study has been completed for the Lindfield Project, and the feasibility study is underway and pilot plant testing will occur in 2024. The mine is currently expected to be able to produce around 10 500 tonnes of vanadium pentoxide and 550 tonnes of molybdenum trioxide per annum.

Key project facts

- » In June 2024, Critical Minerals Group were granted two new exploration permits located within 35km of the Lindfield Project, with exploration of these areas set to benefit from the learnings and exploration to date at the existing Lindfield tenement.
- » In May 2024, CMG announced a 96 per cent increase to Lindfield Project's Mineral Resource Estimate to 713 Mt at 0.32 per cent V₂O₅, 3.4% Al₂O₃ and 130g/t Mo. Approximately 518 Mt (72 per cent) of the resource is located within 20m of surface.
- » Critical Minerals Group recently signed a License Agreement with Lava Blue Limited, a mineral processing technology firm, to develop capability in the production of HPA.
- » Critical Minerals Group has a longstanding strategic investment partnership with Idemitsu Australia.

	Category	Tonnage (Mt)	V ₂ O ₅ (%)	Al ₂ O ₃ (%)	Mo (g/t)
Mineral Resources (2024)	Indicated	491	0.32	3.4	130
	Inferred	222	0.31	3.5	132
	Total	713	0.32	3.4	130

Note: Refer to ASX announcement on 10 May 2024

Scan here for more information

INVESTMENT OPPORTUNITIES:

Queensland silica



Export value
(2023)

A\$150m



Production

3 Mt



Resources
(SiO₂)

1000 Mt+



Full time
employees

150



Number of
prospective
projects

A\$5m



Investment
opportunities
(mining)

A\$700m+

Queensland has been one of the major global high purity silica producers since 1967.

Queensland's advantage

- » Queensland has some of the highest purity silica deposits globally, as well as known deposits of lump quartz suitable for silicon metal production.

Processing and production

- » There are currently several new projects for silica sand, as well as an interest in lump quartz mining for potential silicon and polysilicon production in Queensland. This can also open opportunities for domestic manufacturing of solar panels.
- » Silicon metal (Si), produced from silica (SiO₂), is an important alloying element and the basis for all modern electronics.
- » The main application of silica is glass manufacturing. High purity silica is required for higher value markets such as extra clear glass for solar panels.

Exploration >>>

Ongoing exploration activities plus two to five prospective projects for high purity silica sand and lump quartz

Mining >>>

One operating project

Smelting & refining >>>

Potential silicon metal and polysilicon production

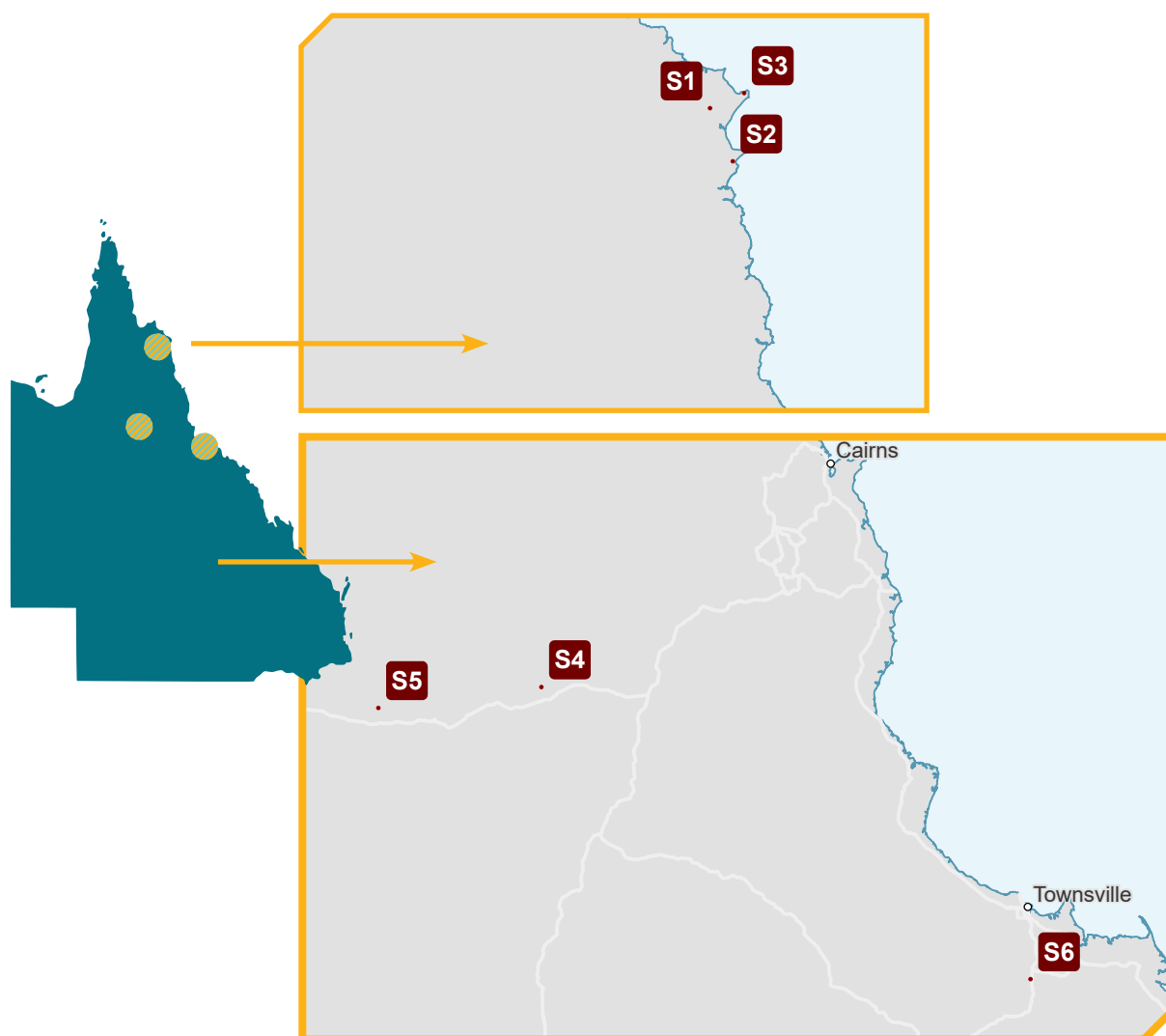
Manufacturing >>>

Potential manufacturing opportunities, including for solar panels



Queensland silica

Operation	Company	Product	Resources	Code
Operating				
Cape Flattery	Cape Flattery Silica Mines Pty Ltd	silica sand	N/A	
Prospective				
Northern Silica Project	Diatreme Resources Ltd	silica sand	235 Mt @ 99.29% SiO ₂	S1
Galalar Silica	Diatreme Resources Ltd	silica sand	75.5 Mt @ 99.18% SiO ₂	S2
Cape Flattery Silica Sand	Metallica Minerals Ltd	silica sand	49.5 Mt @ 99.10% SiO ₂	S3
Quartz Hill	Australian Silica Quartz Group Ltd	lump quartz	17.3 Mt @ 99.04% SiO ₂	S4
Sugarbag Hill	HPQ (Resources) Pty Ltd	lump quartz	1.2 Mt @ 99.0% SiO ₂	S5
Project Green Poly	Quinbrook Infrastructure Partners Pty Ltd	Polysilicon		S6



PROJECT SPOTLIGHT:

Cape Flattery Silica Sand

Metallica Minerals Limited (ASX:MLM)

Silica sand | **SEEKING OFFTAKE, DEBT, EQUITY AND/OR STRATEGIC PARTNERSHIP**

Project status | updated Definitive Feasibility Study completed in November 2023

Publicly announced | **Feasibility** | FID | Producing

Mine life

15 years
(2023)

CAPEX

A\$236.7m
(2023)

Post-tax NPV 10%

A\$434.4m
(2023)

Post-tax IRR 10%

29.7%
(2023)

High quality silica for solar photovoltaic glass

The Cape Flattery Silica Sand Project is located in the Cape York Peninsula in Far North Queensland. The project intends to extract and process raw sand to produce a high purity silica sand product for use in high-quality glass manufacturing, in particular for solar photovoltaic glass. The project will produce up to 4 Mt of high-purity silica sand annually, with first production forecast to be in Q4, 2027. This silica sand product is planned to be exported to customers by ship from within the nearby Cape Flattery port.

Key project facts

- » Metallica Minerals completed an updated Definitive Feasibility Study (DFS) in November 2023, which built on the July 2023 DFS. The updated DFS provided additional support for the project's potential as a low-cost, high purity silica sand operation.
- » The Cape Flattery project was declared a 'Coordinated Project' by the Queensland Government in December 2023 and has applied for its environmental authority from the Commonwealth Government for production of up to 4 mtpa of raw sand.
- » Detailed metallurgical bulk test work has proven the project can produce high purity silica sand suitable for use in the production of high-quality glass, such as that required in solar modules.
- » The project has secured strong offtake interest from parties in China, South Korea and Japan. Metallica Minerals signed non-binding MoUs with Eternal Asia Supply Chain Management Ltd in December 2023 and with Mitsui in August 2022.

	Category	Tonnage (Mt)	SiO ₂ (%)	Fe ₂ O ₃ (%)	TiO ₂ (%)	Al ₂ O ₃ (%)
Mineral Resources (2023)	Measured	16.10	99.20	0.08	0.12	0.22
	Indicated	33.20	99.05	0.10	0.18	0.25
	Inferred	0.20	99.00	0.12	0.27	0.28
	Total	49.50	99.10	0.09	0.16	0.24
Ore Reserves (2023)	Probable	47	99.11	0.09	0.14	0.15
	Total	47	99.11	0.09	0.14	0.15

Scan here for more information



PROJECT SPOTLIGHT:

Northern Silica Project

Diatreme Resources Limited (ASX:DRX)

Silica sand | **SEEKING OFFTAKERS AND DOWNSTREAM PROCESSORS IN GLASS PRODUCTION**

Project status | Pre Feasibility Study expected mid 2024

Publicly announced | Feasibility | FID | Producing

Mine life	CAPEX	Post-tax NPV 8%	Post-tax IRR 8%
25 years (2023)	A\$534.8m (2023)	A\$830m (2023)	32% (2023)

Premium quality silica sand with Pre-Feasibility Study and maiden ore reserve expected soon

The Northern Silica Project is one of the world's largest deposits of high purity silica sands and is aiming to become a leading supplier of low-cost, premium quality 'low iron' silica sand product. Located 14km west of the Port of Cape Flattery in North Queensland, the project has easy access to the international market, where it aims to cater to the rapidly expanding photovoltaic glass markets.

Under the proposed two-stage expansion, the project is expected to ramp up annual production from around 3 Mt of silica sand to around 5 Mt of silica sand after two years of operation.

Key project facts

- » The Queensland Government designated Northern Silica Project a 'Coordinated Project' in January 2024 and a 'Project of Regional Significance' in August 2023.
- » Diatreme Resources is expecting to complete a Pre-Feasibility Study by mid-2024, along with establishing a maiden ore reserve. Diatreme has also made significant progress with its environmental impact study.
- » The project secured a non-binding MoU for offtake in July 2023 with Flat Glass, one of the world's largest manufacturers of PV glass.
- » Diatreme Resources has partnered with Sibelco, a global materials solutions group, for the Northern Silica Project. Sibelco will provide Diatreme Resources with technical and project expertise.

	Category	Silica sand (Mt)	SiO ₂ (%)	Fe ₂ O ₃ (%)
Mineral Resources (2024)	Measured	49.50	99.33	0.11
	Indicated	120.50	99.32	0.10
	Inferred	65.00	99.20	0.12
	Total	235.00	99.29	0.11

Scan here for more information



INVESTMENT OPPORTUNITIES:

Queensland cobalt and nickel



Potential annual product value (2030)

A\$1500m+



Potential production (2030)

43 kt Ni
5 kt Co



Resources

2900 kt Ni
280 kt Co



Full time employees (2030)

2000+



Number of prospective projects

5



Investment opportunities (mining)

A\$5000m+

Australia holds the world’s second largest known reserves for both nickel and cobalt, with production in Western Australia.

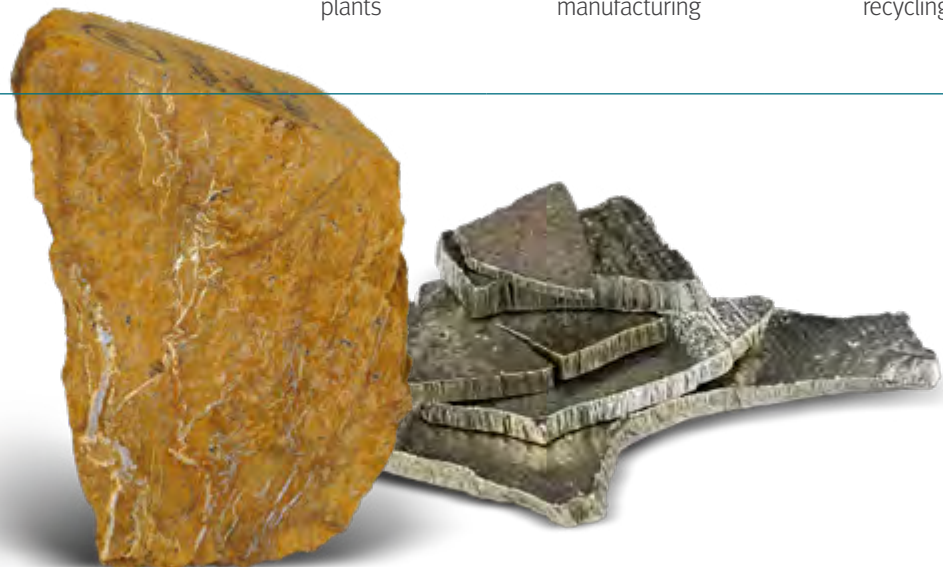
Queensland’s advantage

- » Queensland has a long history of nickel and cobalt mining and refining, but currently does not produce these metals.
- » There are currently three major projects focused on nickel and/or cobalt in Queensland, including mining and processing of nickel laterite and polymetallic sulphide ores.
- » Potential co-products include scandium and HPA.
- » In addition, there are significant opportunities for cobalt co-extraction from copper ores and historic mine waste.

Production and processing

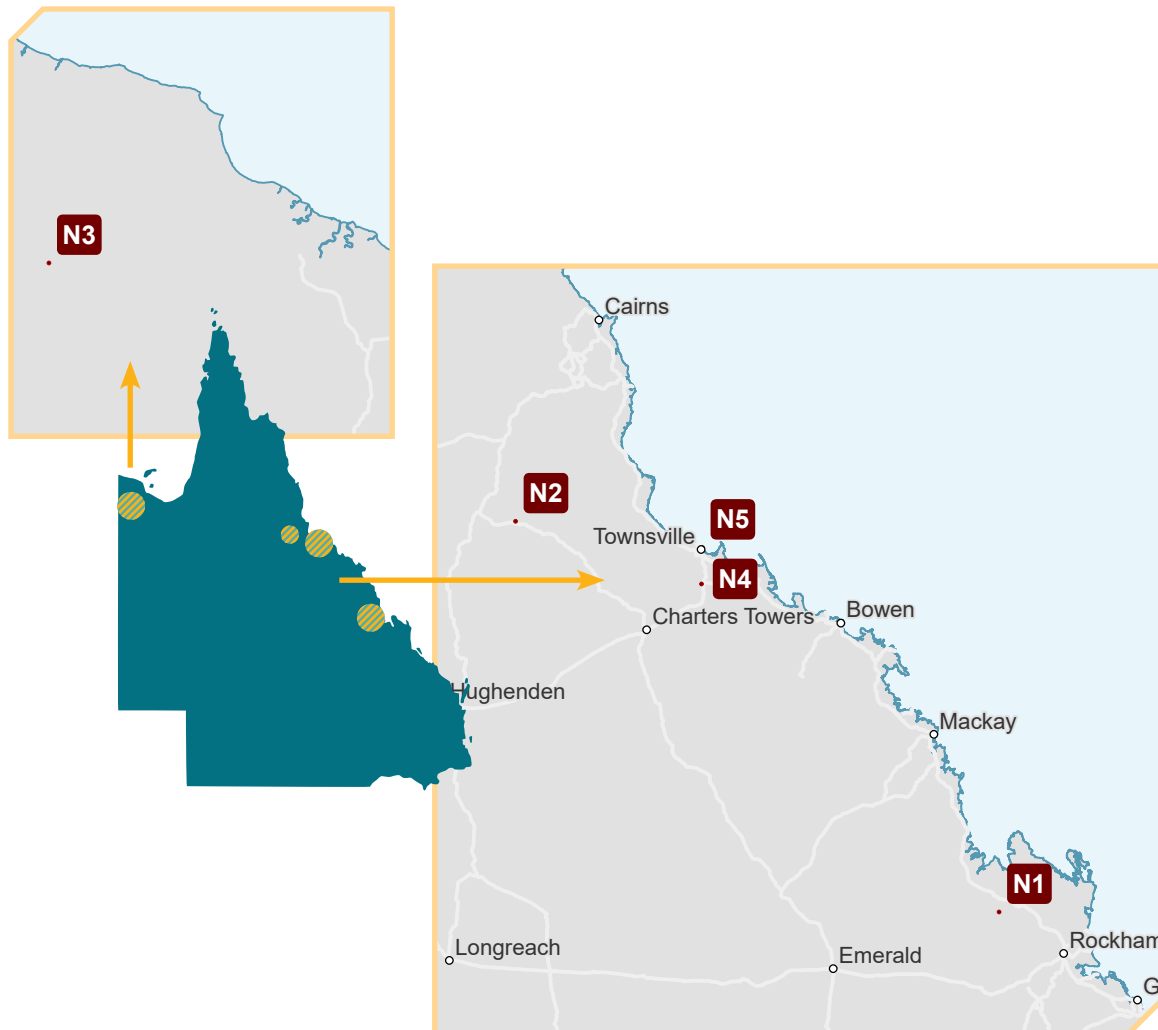
- » Nickel and cobalt are two important critical minerals that often occur together and co-produced in the same process.
- » Nickel is primarily used in stainless steel, but also in the fast-growing battery market, particularly for electric vehicles (EVs).
- » The main application of cobalt is in batteries, where it is used alongside nickel.
- » Cobalt-intensive lithium-ion batteries have the highest energy density among all commercially available batteries, being mainly employed in EVs.

Exploration >>>	Mining >>>	Refining >>>	Manufacturing >>>	Recycling >>>
Three exploration projects, two to three prospective operating mines, plus co-extraction of cobalt from copper ores and mine waste	No operating mines	Two potential refining plants	Potential battery manufacturing	Potential battery recycling



Queensland cobalt and nickel

Operation	Company	Product	Resources	Code
Prospective				
Marlborough	Marlborough Nickel Pty Ltd	N/A	210 Mt @ 1.02% Ni and 0.06% Co	N1
Sconi	Australian Mines Ltd	mixed hydroxide precipitate	115.8 Mt @ 0.64% Ni and 0.06% Co	N2
Walford Creek	Aeon Metals Ltd	metal sulphates	72.6 Mt @ 0.64% Cu, 1.17% Pb, 0.87% Zn, 28 g/t Ag, 0.12% Co and 0.06% Ni	N3
Townsville Energy Chemicals Hub	Queensland Pacific Metals Ltd	nickel sulphate, cobalt sulphate, HPA		N4
Pure Battery Technology Processing Plant (Townsville)	Pure Battery Technologies Ltd	nickel sulphate, cobalt sulphate		N5



PROJECT SPOTLIGHT:

Townsville Energy Chemicals Hub (TECH)**Queensland Pacific Metals Limited (ASX:QPM)**

Nickel cobalt | **SEEKING EQUITY FUNDING TO COMPLETE BFS AND PROCEED TO FID. HPA OFFTAKE AGREEMENT**
 Project status | Bankable feasibility study near completion

Publicly announced | **Feasibility** | FID | Producing

Refinery design life

30 years
(2022)

CAPEX

A\$1.75b
(2022)

Post-tax NPV 8%

A\$3.035b
(2022)

Post-tax IRR 8%

16.1%
(2022)

Critical minerals refinery to support lithium-ion battery manufacturing

The TECH Project will be a modern and sustainable, high-purity critical minerals refinery developed to meet the strong forecast growth in demand for nickel and cobalt sulphates from the lithium-ion battery manufacturing sector—primarily used in EVs. Stage 1 has a nameplate capacity of 1.05 million dry metric tonnes (dmt) of ore per year with a proposed expansion to increase capacity to 2.15 million dmt and produce up to 32 700 t of nickel metal and 3600 t of cobalt metal in sulphate form. The TECH Project is well placed for the future having secured ore supply agreements and offtake agreements.

Key project facts

- » Global leading ESG credentials include zero solids waste, no process liquid discharge and negative CO₂ emissions.
- » The project has secured offtake agreements with General Motors, LG Energy Solution and POSCO for 100 per cent nickel sulphate and cobalt sulphate production.
- » The Queensland Government declared TECH as a 'Prescribed Project' in 2021 and a 'Significant Investment' project in April 2023.
- » The project has received primary approvals to begin construction, including development permit and environmental authority, and is progressing towards Final Investment Decision following completion of engineering designs.
- » The project has received indicative commitments of A\$1.4 billion+ from government backed agencies.

Metal	Final product	Ore grade (%)	Recovery to final production (%)	Stage 1 annual nameplate production	Stage 1&2 annual nameplate production
Nickel	Nickel sulphate	1.60 Ni	95.20	15 922 t	32 784 t
Cobalt	Cobalt sulphate	0.18 Co	92.30	1746 t	3 579 t
Iron	Hematite pellets suitable for sinter feed	42.00 Fe	93.00	607 395 t	1 245 160 t
Aluminium	4N HPA	1.59 Al	n/a	4 000 t	4 000 t
Magnesium	Magnesium oxide	1.95 Mg	70.00	28 856 t	59 154 t

Scan here for more information



PROJECT SPOTLIGHT:

Sconi

Australian Mines Limited (ASX:AUZ)

Nickel cobalt | **SEEKING OFFTAKE, DEBT, EQUITY AND/OR STRATEGIC PARTNERSHIPS**

Project status | Bankable Feasibility Study complete

Publicly announced | **Feasibility** | FID | ProducingMine life
min. 30 years
(2019)CAPEX
US\$974m
(2019)Post-tax NPV 8%
A\$817m
(2019)Post-tax IRR 8%
15%
(2019)

High quality battery-grade nickel and cobalt materials

The Sconi Project, located in Greenvale, North Queensland, intends to supply high-quality, battery-grade nickel and cobalt materials in support of the green energy transition, and aims to differentiate itself as a carbon neutral, secure and responsible raw material supplier in a Tier-1 jurisdiction. It plans to be one of the most cost-effective producers of high-grade nickel and cobalt laterite ores in the world, with its on-site processing capabilities. The project is planned to be commissioned in 2028 and has the potential to produce on average 46 800 t of nickel sulphate and 7000 t of cobalt sulphate annually.

Key project facts

- » Brown-fields, low technical risk and low cost long life producer.
- » Mining leases for the project have been granted and Australian Mines is currently progressing through the Environmental Impact Assessment.
- » Australian Mines was the first mineral resource company to be certified 'Carbon Neutral' under the Australian Government's Climate Active program.
- » Over the life of the project, Sconi is expected to support advanced battery placement in approximately 5–6 million high performance EVs.

	Category	Tonnage (Mt)	Nickel (%)	Cobalt (%)
Mineral Resources (2019)	Measured	19.70	0.80	0.07
	Indicated	73.80	0.62	0.06
	Inferred	22.30	0.54	0.05
	Total	115.80	0.64	0.06
Ore Reserves (2019)	Proved	8.10	0.72	0.09
	Probable	49.20	0.56	0.08
	Total	57.30	0.58	0.08

Scan here for more information



INVESTMENT OPPORTUNITIES:

Queensland graphite



Potential product value (2032)

A\$300m+



Potential production (2032)

100 kt+



Resources (TGC)

4500 kt



Full time employees (2032)

800+



Prospective projects

3



Investment opportunity

A\$500m+

Graphite is mainly used in steelmaking and refractory applications. However, it also plays a significant role in low-emissions technologies, being used in batteries.

Queensland’s advantage

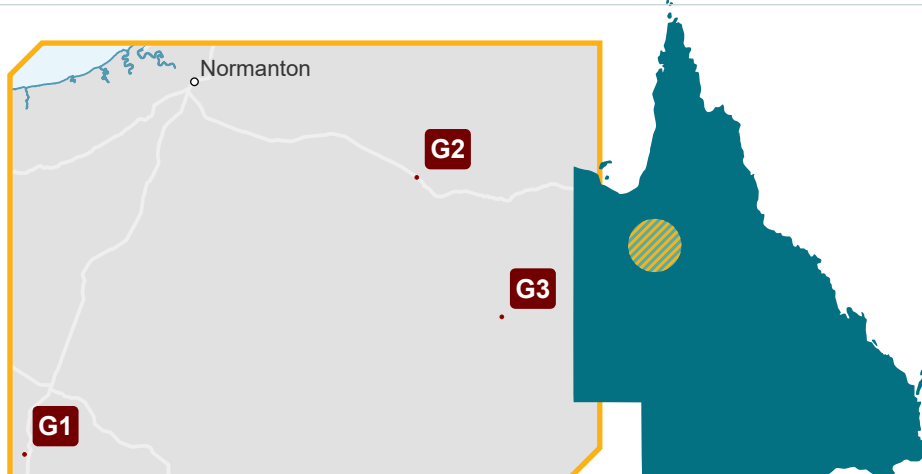
- » Queensland has some of the highest grade known graphite deposits globally.
- » There are currently three graphite projects in Queensland.
- » The final potential product is purified spherical graphite for batteries.

Processing and production

- » There is currently no graphite mining in Australia.
- » Graphite is the largest by weight mineral component in lithium-ion batteries.

Exploration >>>	Mining >>>	Refining >>>	Manufacturing >>>
Ongoing exploration activities plus up to three prospective projects	No operating mines	Potential refining plant	Potential battery manufacturing

Operation	Company	Product	Resources	Code
Prospective				
BAM Graphite	Axon Graphite Ltd	graphite concentrate	36.9 Mt @ 12.16% Total Graphitic Carbon	G1
Golden Gate	Crater Gold Mining Ltd	graphite concentrate		G2
Esmeralda	Graphinex Pty Ltd	graphite concentrate		G3



PROJECT SPOTLIGHT:

BAM Graphite

Axon Graphite Limited (IPO forthcoming)

Graphite | **SEEKING OFFTAKE, EQUITY AND/OR STRATEGIC PARTNERSHIPS**

Project status | Publicly announced

Publicly announced | Feasibility | FID | Producing

Mine life
n/aCAPEX
n/aNPV
n/aIRR
n/a

Vertically integrated Battery Anode Materials manufacturing company

The vertically integrated Battery Anode Material (BAM) Graphite Project combines secure access to high grade graphite deposits and a planned BAM manufacturing facility in Northern Queensland. The BAM facility will be supported by a substantial, world class inventory of high-grade natural graphite deposits—the Burke, Corella, and Mount Dromedary graphite deposits.

The project aims to produce spherical, purified graphite for international lithium-ion battery anode makers in the United States, Japan, the European Union, India and Korea for use in EVs and battery energy storage systems.

Key project facts

- » Axon Graphite Limited was recently created as a joint venture between Lithium Energy Limited (ASX:LEL), which owns the Burke and Corella graphite deposits) and NOVONIX (ASX:NVX), which owns the Mount Dromedary graphite deposit. The prospectus for Axon's IPO is expected mid-2024.
- » Combining the Burke and Mount Dromedary deposits, that form part of the same graphite mineralisation zone, has created an opportunity to enhance the scale and economics of the project, and provide the opportunity to attract new capital or partners to be part of a significant and long-life BAM project.
- » Prior to the establishment of Axon, Lithium Energy had completed comprehensive metallurgical flowsheet development testwork, producing a graphite flake concentrate of over 95 per cent TGC.
- » Completed BAM testwork produced two marketable products with a purity of over 99.95 per cent TGC.

	Category	Tonnage (Mt)	TGC (%)	Contains Graphite (kt)
Mineral Resources (2023)	Measured	1.00	12.90	131
	Indicated	13.10	14.18	1855
	Inferred	22.80	11.04	2513
	Total	36.90	12.16	4498

Scan here for more information



PROJECT SPOTLIGHT:

Esmeralda

Graphinex Pty Ltd (Private Company)

Graphite | **SEEKING OFFTAKE, DEBT, EQUITY AND/OR STRATEGIC PARTNERSHIP**

Project status | Full scale drill program underway

Publicly announced | Feasibility | FID | Producing

Mine life
n/aCAPEX
n/aNPV
n/aIRR
n/a

Vertically integrated graphite battery anode company

With nine tenements in North Queensland, Graphinex's flagship Esmeralda Graphite Project is Queensland's largest graphite resource. Esmeralda is a key component of Graphinex's focus to develop an integrated business model to produce high-quality Battery Anode Material, a key component of lithium-ion batteries.

Key project facts

- » Idemitsu Australia announced a strategic investment in Graphinex in April 2024. The investment has accelerated Graphinex's exploration and development activities for the Esmeralda Graphite Project.
- » Graphinex was awarded funds of up to A\$290 000 through the 2024 Queensland Collaborative Exploration Initiative. Graphinex will target the graphite orebody with a planned deep drill hole targeting the extent of the graphite orebody. As at June 2024, a further full scale drill program is underway.
- » Graphinex's board and management team have significant experience in Queensland-based critical minerals projects. Mr Tom Northcott, Chairman and Co-Founder is Managing Director (and Founder) of Vecco Group. Mr Art Malone, Managing Director and Co-Founder, has more than 15 years experience in resources including multiple executive and board roles within the Critical Minerals sector. Mr Marc Palmer, CCO of Idemitsu Australia, has more than 17 years experience with Idemitsu within a more than 28 year career in financial services.
- » Graphinex produced a world class battery specification PSG/SpG 99.96 per cent purity through battery anode refining using Esmeralda drill core.
- » A site in Townsville (North Queensland) has been secured for a 300 tpa demonstration facility, which is expected to be constructed in early 2025.

Scan here for more information





INVESTMENT OPPORTUNITIES:

Queensland tungsten


 Export value
 (2022)

A\$20m

 Mine production
 (WO₃) (2023)

500 t

 Resources
 (contained WO₃)

170 000 t

 Full time
 employees (2023)

100

 Prospective
 projects

3

 Investment
 opportunity

A\$200m+

Queensland has a long history of tungsten mining, starting from 1890s.

Queensland's advantage

- » Australia currently has three operating tungsten mines, with the major mine being Mt Carbine in Far North Queensland.
- » In addition to one active mine, there are three other tungsten projects in Queensland.
- » The final product from Mt Carbine is export-ready tungsten concentrate (50 per cent WO₃), but there are also opportunities for further processing into alloys and chemicals.
- » Potential by-products for tungsten projects include molybdenum and bismuth, as well as construction aggregates.

Processing and production

- » Tungsten's major application is cemented carbides (~60 per cent of total market), whose hardness is close to that of diamond, used for cutting tools and in wear-resistant materials for mining, oil drilling, construction, etc.
- » Tungsten and its alloys are also used in electronics, power plants and nuclear reactors, aerospace and defence.

Exploration >>>

Ongoing exploration activities in Far North Queensland plus three prospective projects

Mining >>>

One operating mine

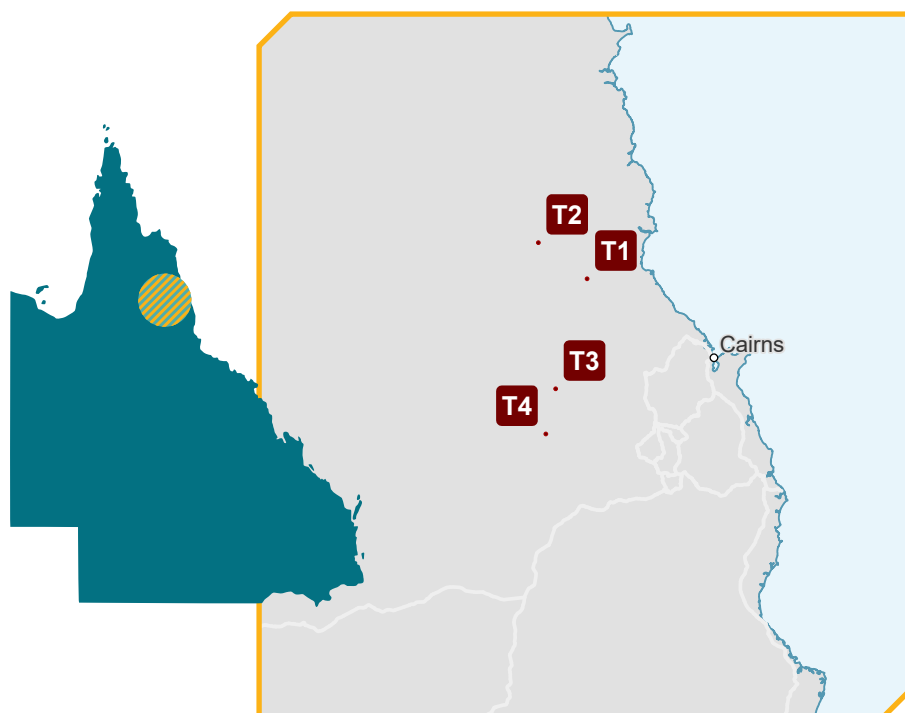
Manufacturing >>>

Long-term opportunities for advanced processing



Queensland tungsten

Operation	Company	Product	Resources	Code
Operating				
Mt Carbine	EQ Resources Ltd	tungsten concentrate	42.5 Mt @ 0.23% WO ₃	T1
Prospective				
Watershed	Tungsten Mining NL	tungsten concentrate	49.3mt @ 0.14% WO ₃	T2
Wolfram Camp (abandoned mine)	EQ Resources Ltd	tungsten concentrate, molybdenum concentrate	2.4 Mt @ 0.29% WO ₃	T3
Bamford Hill (historic mine)	EQ Resources Ltd	tungsten concentrate, molybdenum concentrate		T4



Scan here for more information

PROJECT SPOTLIGHT:

Mt Carbine

EQ Resources Limited (ASX:EQR)**Tungsten | SEEKING DEBT, EQUITY AND/OR STRATEGIC PARTNERSHIP****Project status |** mining re started under stage 1 and 2, potential stage 3 expansionPublicly announced | Feasibility | FID | **Producing**Mine life
min. 12 years
(2024)CAPEX
A\$26.3m
(2023)Pre-tax NPV 8%
A\$307m
(2023)Pre-tax IRR 8%
477%
(2023)

Re-opened historical mine with exploration and expansion potential

Mt Carbine is a historic tungsten mine in Far North Queensland that was a major producer during the 1970s and 1980s. EQ Resources followed a staged approach to re-opening the mine. Stage 1 involved mining and processing the historic stockpile (started in 2020) and Stage 2 focused on commencing open pit mining (re-started in June 2023). As a result of Stage 2, annual production is expected to produce around 4000 t of tungsten concentrate.

The deposit has exploration upside, with potential for future underground operations to access additional tungsten resources. Combined with the acquisition of the Spanish Barruecopardo tungsten mine and the successful tender for the Wolfram Camp historic mine, EQ Resources has positioned itself to be one of the top western tungsten concentrate producers outside of China.

Key project facts

- » In 2023, EQ Resources received a A\$6 million grant from the Australian Government's Critical Mineral Accelerator Initiative to support Stage 2. A proposed third phase could see underground mining, where significant additional mineral resources are located below and next to the Stage 2 pit.
- » In May 2024, a three-year funding facility for up to A\$20 million to enable EQ Resources to fast-track expansion plans at Mt Carbine was approved by The Queensland Investment Corporation. The first tranche of funding (A\$12 million) is expected to support a doubling of processing capacity and commencement of underground drill testing. The second tranche (A\$8 million) would support further underground drill testing and to start a trial of underground mining.
- » EQ Resources entered into a joint venture with CRONIMET in 2019 that included an offtake arrangement for the export of tungsten concentrate. In 2023, an MoU was signed between EQ Resources, CRONIMET and Masan High-Tech Materials Corporation to allocate 70 per cent of the Mt Carbine production to Masan for the next four years.

	Category	Tonnage (Mt)	WO ₃ (%)	Contained WO ₃ (mtu)
Mineral Resources (2023)	Indicated	30.94	0.21	6 343 868
	Inferred	11.51	0.28	3 271 100
	Total	42.45	0.23	9 614 968
Ore Reserves (2023)	Probable	15.70	0.15	2 393 150
	Total	15.70	0.15	2 393 150



INVESTMENT OPPORTUNITIES:

Queensland high-purity alumina (HPA)



Potential annual product value (2030)

A\$600m+



Potential production (2030)

20 kt+



Full time employees (2030)

300



Prospective projects

5+



Investment opportunity

A\$635m+

Australia is quickly emerging as a new supplier of HPA.

Queensland's advantage

- » Australia's first HPA production facility—HPA First—started operations in November 2022, located in Gladstone in central Queensland.
- » HPA First uses smelter-grade alumina as a feedstock material and is currently undergoing an expansion of operations with the support from the Federal and State governments.
- » There are other potential HPA projects in Queensland, which consider producing HPA from different sources. These include two kaolin mining projects, and several projects aiming to produce HPA as a by-product alongside nickel-cobalt or vanadium—other important battery minerals.

Processing and production

- » HPA is a specialty product with aluminium oxide content of 99.99+ per cent or 4N+.
- » Higher grades, such as 5N (99.999 per cent) or 6N (99.9999 per cent), are needed in some applications, attracting premium pricing.
- » The HPA market is driven by three major applications: light-emitting diode (LED) lighting, synthetic sapphire material for high quality scratch-resistant lenses and glass, and ceramic coating in lithium-ion batteries.
- » Application in batteries is expected to be the major future growth driver in global demand for HPA, including requiring very-high purity level products.

Exploration >>>

Ongoing exploration activities plus two prospective projects for kaolin mining that will lead to HPA production

Mining >>>

No operating mines

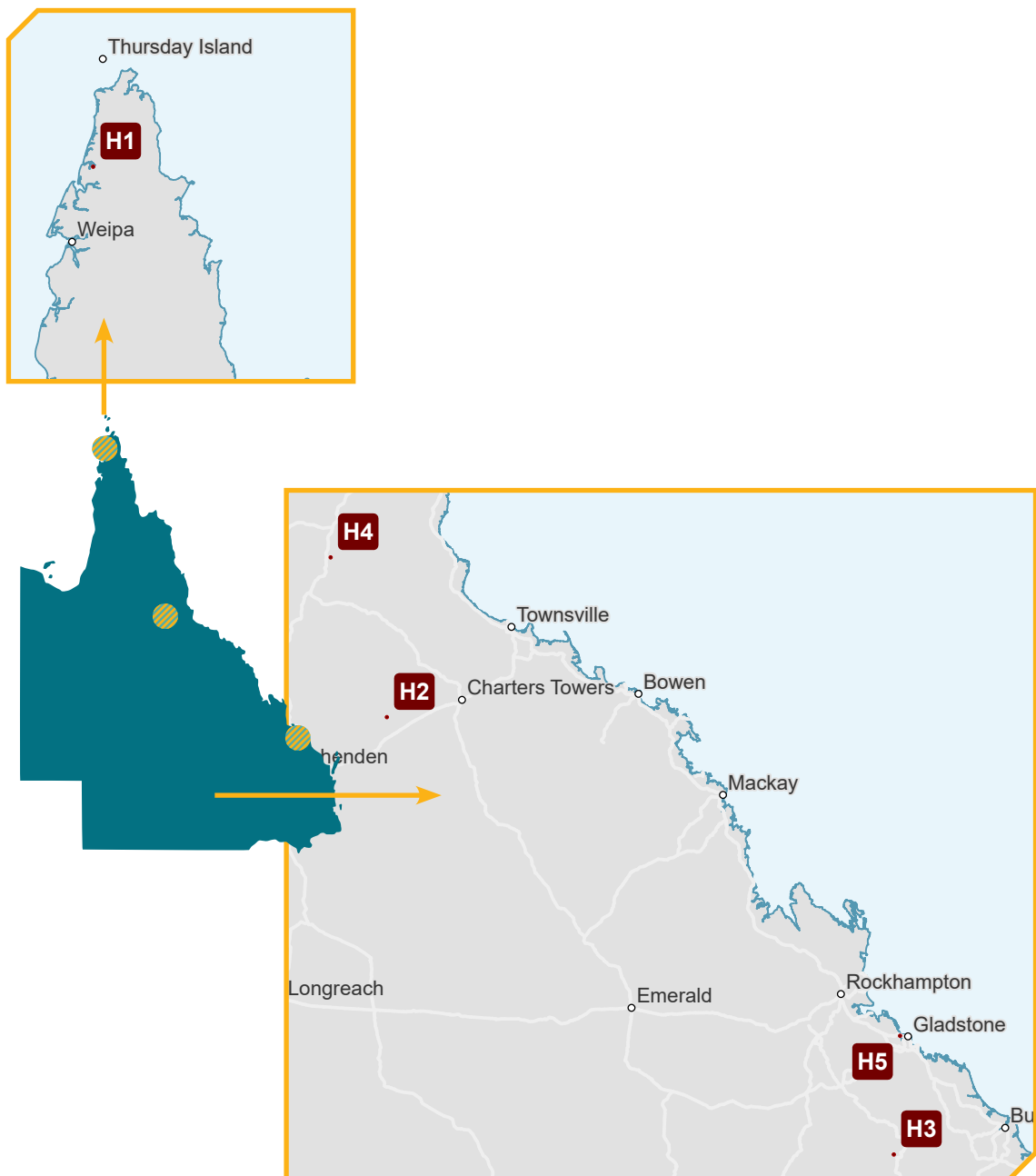
Manufacturing >>>

One operating HPA plant, and several other potential projects



Queensland high-purity alumina (HPA)

Operation	Company	Product	Resources	Code
Operating				
HPA First	Alpha HPA Ltd	4–5N HPA and precursors		H5
Prospective				
Bauxite Hills	Metro Mining Ltd	high-grade bauxite	118.7 Mt @ 49.2% Al ₂ O ₃ and 14.1% SiO ₂	H1
Kaolin Deposit	Intergroup	metakaolin, HPA	44.0 Mt @ 17.7% Al ₂ O ₃ and 32.0% kaolinite	H2
Abercorn	Zeotech Pty Ltd	kaolin, HPA	39.06 Mt @ 28.6% Al ₂ O ₃	H3
Lava Blue HPA	Lava Blue Ltd	HPA	14 Mt @ 28% Al ₂ O ₃	H4



PROJECT SPOTLIGHT:

HPA First Project

Alpha HPA Limited (ASX:A4N)**High purity alumina | SEEKING OFFTAKE, DEBT, EQUITY AND/OR STRATEGIC PARTNERSHIPS****Project status |** Final Investment Decision for Stage 2 taken, construction commencing mid 2024Publicly announced | Feasibility | **FID** | Producing

Mine life n/a	CAPEX A\$553m (2024)	NPV n/a	IRR n/a
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Production capacity set to be extended after Stage 2 FID taken

Alpha HPA's HPA First Project in Gladstone (Central Queensland) aims to be one of the largest single HPA refineries in the world using a proprietary technology in its process and leveraging the existing industrial infrastructure in the Gladstone region. Alpha HPA is currently producing around 350 t per annum as part of Stage 1, with planned production of up to 10 000 t per annum as part of Stage 2.

The project intends to deliver product for high technology markets, including the semiconductor, lithium-ion battery and LED lighting sectors across the United States, Asia and Europe.

Key project facts

- » In late May 2024, Alpha HPA announced has taken a FID on Stage 2 of the project support by DFS outcomes and secured financing arrangements. Project execution of Stage 2 has commenced, with construction beginning mid-2024 and first production targeted for mid-2026.
- » In April 2024, Alpha HPA has secured a A\$400 million financing feasibility from the Australian Government to advance the HPA First Project. Additionally, Alpha HPA received a A\$21.7 million Industry Partnership Program grant in 2022 from the Queensland Government and a A\$45 million modern manufacturing initiative grant from the Australian Government.
- » Industrial feedstock for the plant is sourced directly from Rio Tinto's nearby alumina refinery in Yarwun, while reagents are sourced from Orica Yarwun under a binding 10-year agreement (with potential for a 10-year extension).
- » Alpha HPA has signed a MoU with CleanCo (the Queensland Government owned electricity generation and trading company) for up to 100 per cent renewable energy supply. A by-products offtake has also been secured, with reagents to be recycled on a 100 per cent basis and returned to Orica Yarwun for further processing.

Scan here for more information



PROJECT SPOTLIGHT:

Lava Blue HPA

Lava Blue Ltd (Unlisted Public Company)

High purity alumina | **SEEKING OFFTAKE, EQUITY AND/OR STRATEGIC PARTNERSHIPS**

Project status | expansion planning is underway for the start of small scale HPA production

Publicly announced | Feasibility | **FID** | Producing

Mine life
n/a

CAPEX
n/a

NPV
n/a

IRR
n/a

Leading processes development to manufacture high purity materials

Lava Blue is developing a range of high purity materials for use in the manufacture of advanced batteries and other renewable energy technologies. The first product to be brought to market will be HPA via license agreements with strategic partners, targeting 25 000 t per annum of licensed production by 2028. The Lava Blue HPA process can accept a wide variety of aluminium-rich feedstocks including kaolin clay and aluminium rich mine waste.

Lava Blue has an extensive mineral property portfolio in Northern Queensland and an active minerals exploration and development program. Its resource endowments include aluminium rich kaolin, manganese, cobalt, high purity quartz, vanadium, rare earths and copper, tungsten and tin exploration prospects.

Key project facts

- » Lava Blue was recognised as a key player in Queensland's Battery Industry Strategy and previously received a A\$5.2 million grant from the Australian Government.
- » The demonstration plant commissioned in mid-2023 in Brisbane (South East Queensland) will shift from research and demonstration to small-scale commercial production in 2025–26, targeting 800–1000 t of HPA per annum.
- » Strategic partnerships with several companies to add HPA as a valuable co-product to their mineral processing developments using Lava Blue's technology:
 - Queensland Pacific Metals is planning to use aluminium hydroxide to produce HPA as part of their TECH project in Townsville (North Queensland).
 - Vecco Group is planning to recover aluminium from the waste stream generated from their vanadium project.
 - Critical Minerals Group is planning to develop their production capability for HPA and potentially additional co-products at their vanadium project.

Scan here for more information



INVESTMENT OPPORTUNITIES:

Queensland rare earth elements (REEs)


 Resources estimate
 (contained REO)

500 kt

 Prospective
 projects

5

Australia is currently a major global REE producer, with one mine in operation in Western Australia and several other projects under consideration.

Queensland's advantage

- » There is not yet commercial REE production in Queensland. However, mineral occurrences of REEs have been known for a long time, for both primary and secondary deposits.
- » There are currently several potential REE projects in Queensland, and further exploration activities are under way.
- » There is also a potential for producing REEs as a by-product of other minerals, including alongside copper, bauxite, phosphates and vanadium mining.

Processing and production

- » REEs are critically important for renewable energy generation and storage, EVs, electronics, energy efficient lights, aerospace and defence technologies.
- » The REE market is largely driven by rare earth permanent magnets, which account for about 30 per cent of REE use by weight but close to 90 per cent by value.

Exploration >>>

Ongoing exploration activities

Mining >>>

Two potential projects for REEs as a primary commodity, and three projects for REEs as a by-product

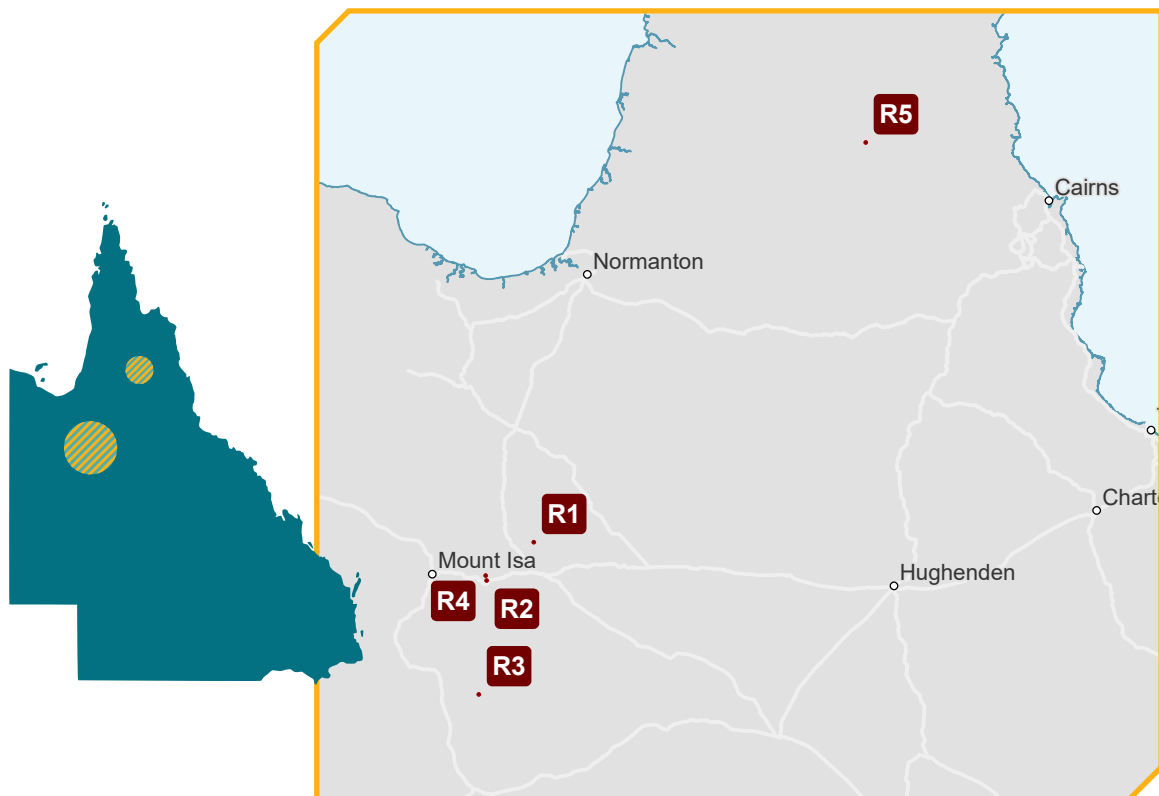
Manufacturing >>>

Long-term opportunities for refining and advanced processing



Queensland rare earth elements (REEs)

Operation	Company	Product	Resources potential	Code
Prospective				
Milo	IsoEnergy Ltd	REE concentrate	88.4 Mt @ 0.34% CuEq; 176 Mt @ 0.75% P ₂ O ₅ , 620 ppm REO	R1
Elaine Dorothy	Hammer Metals	REE concentrate	27 Mt @ 0.1-0.3% REO	R2
Korella Bore	Chatham Rock Phosphate	REE concentrate, phosphates	2.7 Mt @ 13.0% P ₂ O ₅ , 0.1% REO	R3
Mary Kathleen Tailings	QLD Government	REE concentrate	7 Mt @ 2-4% REO	R4
Sandy Mitchell	Ark Mines Ltd	REE concentrate	21.7 Mt @ 1419 ppm monazite equivalent	R5



PROJECT SPOTLIGHT:

Milo

IsoEnergy Limited (TSXV:ISO)

Rare earth elements | **SEEKING OFFTAKE, DEBT, EQUITY AND/OR STRATEGIC PARTNERSHIP**

Project status | exploration

Publicly announced | Feasibility | FID | Producing

Mine life

11 years
(2012)

CAPEX

A\$792m
(2012)

NPV
n/a

IRR
n/a

Exploration and development potential for heavy and light REE

The Milo Project, located near Cloncurry in North West Queensland, has the potential to become a mid-tier producer of both light and heavy rare earth oxide products with key credits for copper and phosphate. Previous work indicated potential production of up to 5300 t of copper and 3500 t of TREEYO per annum, as well as possibilities to produce phosphate.

The project has strong exploration potential with open-ended mineralisation to the north, south and at depth, and historical drilling indicating the resource is part of a much larger mineralised system.

Key project facts

- » The Milo Project was acquired by IsoEnergy Limited in December 2023 through its merger with Consolidated Uranium. The project was previously owned by GBM Resources before it was sold to Consolidated Uranium in early 2022. Previous drilling work and resource estimates were conducted by GBM Resources from 2010 to 2012.
- » The Milo deposit is a large Iron-Oxide Copper-Gold (IOCG) breccia style system. Exploration potential at Milo is considered to be very good with most of the previous work directed at the Milo Gossan and mineralisation is still open ended to the north, south and at depth.
- » Previous drilling has indicated the presence of at least 10 heavy and light REE. Drilling has suggested the presence of CeO₂, La₂O₃, Nd₂O₃, Y₂O₃, Dy₂O₃ and Er₂O₃ in the Milo deposit.

	Mineral	Tonnage (Mt)	Grade	Contained metal
Mineral Resources – Inferred (2012)	CuEq	88.40	0.34%	301 000
	P ₂ O ₅	176	0.75%	1 330 000
	TREEYO	176	620 ppm	108 000

Scan here for more information



PROJECT SPOTLIGHT:

Brisbane Mineral Separation and Processing Plant (MSPP)

RZ Resources Limited (unlisted public company)

Finished titanium and zircon products, and a rare earth concentrate | **SEEKING DEBT, EQUITY, OFFTAKE AND STRATEGIC PARTNERS TO FUND MSPP UPGRADE AND/OR THE COPI MINE**

Project status | MSPP production anticipated in 2026; Copi mine production anticipated late 2027

Publicly announced | **Feasibility** | FID | Producing

Processing life (30+ years)			
Mine life	CAPEX	Post-tax NPV	Post-tax IRR
17 years (base)	~\$65m (MSPP)	A\$770m (base)	18% (base)
22+ years (extension)	~\$930m (Copi) (2023)	\$1156m (expansion) Copi and MSPP (2023)	20% (expansion) Copi and MSPP (2023)

Project summary

The RZ Resources mineral separation and processing plant (MSPP), located on the Brisbane River, is the only processing facility of a similar size and scale on the east coast of Australia able to process a heavy mineral concentrate to produce finished titanium and zircon products, and a rare earth concentrate for direct delivery to downstream customers. The MSPP was previously owned and operated by Iluka and Sibelco and following a proposed upgrade is anticipated to be in operation by 2026.

RZ Resources is an Australian-owned critical minerals company which, in addition to having important downstream processing capability, has the Copi Mine Project in NSW with 2.54 billion tonnes of JORC Resource and growing, which will provide the MSP with material to process.

Additionally, the MSPP will be upgraded to create a centre of excellence hub, building on our potential for advanced manufacturing, with the capability to assess and process material from third-party producers in Australia, rather than have those raw materials sent offshore for processing. The plan is to have the MSPP operational before the Copi Mine using third party material.

Key project facts

- » The MSPP can process up to 450 000 tonnes per annum (tpa) of heavy mineral concentrate a year, including:
 - 100 000 tpa of heavy mineral concentrate utilising gravity separation
 - 60 000 tpa of conductor concentrate (ilmenite, rutile, HiTi) and zircon concentrate (zircon, monazite)
 - Cleaning processing turning conductor concentrate into ilmenite, rutile and HiTi products and processing of non-conductor concentrate into zircon and monazite products.

Scan here for more information



- » Final products can be packaged, stored and dispatched directly from the MSPP.
- » About half of MSPP's total capacity will be available to support other critical mineral mines in Australia and the rehabilitation of old mine sites over and above the material to be processed from the Copi Mine Project.

	Category	Tonnage (Mt)	Total HM (%)	Ilmenite (% HM)	Leucoxene (% HM)	Rutile (% HM)	Zircon	Monazite and Xenotime (% HM)
Mineral Resources (2023)	Indicated	1960	1.3	45	8.9	15	15	1.19
	Inferred	580	0.9	43	9.4	15	12	0.98
	Total	2540	1.2	45	9.0	15	15	1.15
Mineral Reserve (2023)	Probable	428		47	9.9	14	17	1.44
	Total	428		47	9.9	14	17	1.44

*from Copi Mine Project, at least half of which is anticipated to be processed at the MSPP

Note: Valuable Heavy Mineral grades are reported as a percentage of THM



CS11262 07/24

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