Australian Government
Australian Trade and Investment Commission

Australian Critical Minerals Prospectus

Scan the QR code to view the interactive, online version.

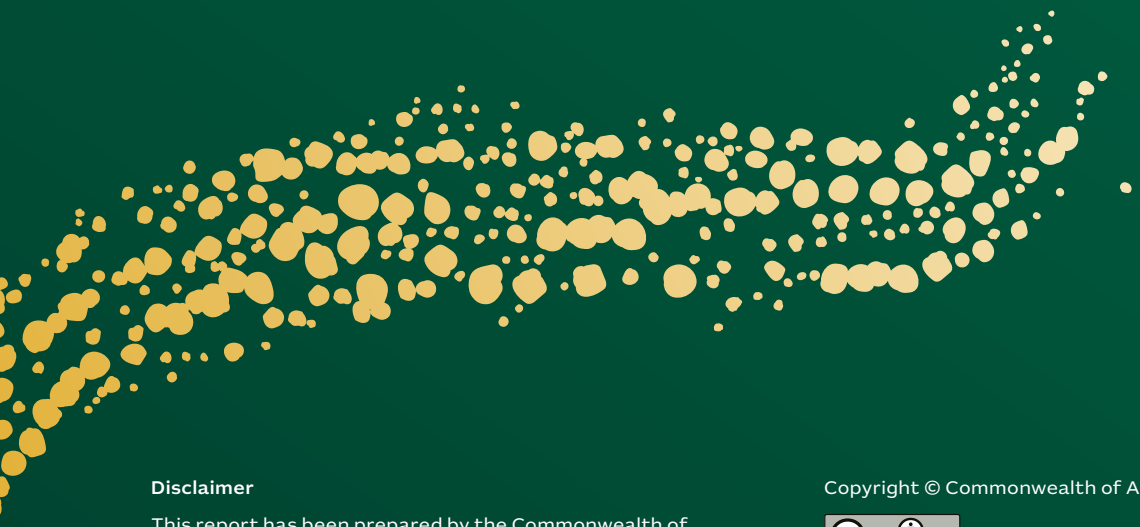
AUSTRALIA

Acknowledgement of Country

In delivering the Australian Critical Minerals Prospectus, we pay respect to our First Nations peoples, their Elders, and their ancestors who have always cared and continue to care for our lands, water, and communities.

First Nations people are the Traditional Owners and custodians of the lands and waters on which critical minerals mining and processing takes place. Their voices and knowledge are critical to the success and sustainability of the critical minerals sector.

Austrade recognises First Nations people's continuing contribution towards creating a strong and prosperous nation, and we thank them for their custodianship of the Country that we live and work on today.



Publication date: February 2026

Foreword

The Albanese Government is committed to fast-tracking the exploration, extraction, processing, and refining of critical minerals, and is actively supporting the development of projects across the country.

Australia has vast resources of the critical minerals that the world is going to need to decarbonise and build the industries of the future. These minerals underpin technologies that are driving electric vehicles, hydrogen electrolysers, solar panels, wind turbines, data centres and batteries. They strengthen Australian manufacturing and the defence and digital systems on which our security and prosperity depend.

This February 2026 edition of Austrade's Australian Critical Minerals Prospectus profiles 78 projects across 60 unique companies. It features a new section focused on Australia's Critical Minerals Midstream capabilities with 29 investable projects highlighted. It is not an exhaustive list and will continue to grow as Australian capability and capacity expands.

A focus on midstream capabilities signals a clear investable pipeline that moves beyond mining to include midstream processing capability – minimising waste and creating more value onshore. The projects profiled in this prospectus are intended to reflect the depth of critical minerals processing opportunities in Australia.

With its significant geological endowment, its history as a global leader in resource project development, a highly skilled workforce, robust environmental, social and governance practices, and a transparent regulatory environment, Australia is at the forefront of the exploration, extraction, production, and processing of critical minerals.

Senator the Hon Don Farrell
Minister for Trade and Tourism
Special Minister of State

Australia: A secure, reliable source of critical minerals

Australia is home to some of the world's largest reserves of critical minerals, including lithium, cobalt and rare earths. We are a world leader in resources exploration, extraction, production and processing and our industry has a reputation for safety, high labour standards, First Nations engagement and environmental responsibility. Australia's critical minerals industry has the potential to build supply chain security and deliver on a net zero future.

The Australian Critical Minerals Prospectus is one way Austrade facilitates offtake and investment in critical minerals. This document summarises the 78 investment-ready projects featured in the interactive, online version of the Prospectus. To access the latest project information, and learn more about Australia's advantages and government support for critical minerals, scan the QR code or visit **international.austrade.gov.au/criticalminerals**.

New Midstream section

This edition of Austrade's Australian Critical Minerals Prospectus features a new section focused on Australia's Critical Minerals Midstream capabilities with 29 investable projects highlighted. It is not an exhaustive list and will continue to grow as Australian capability expands. The new Midstream section highlights projects that add significant value to critical minerals supply chains through the processing, refining, and production of high grade materials needed for advanced technologies. The Critical Minerals Midstream is crucial for creating robust and resilient supply chains which will further increase the strength of Australia's trade network and reinforce economic security. A focus on midstream capabilities signals a clear investable pipeline that moves beyond mining to include midstream processing capability – creating more value onshore. This shift is deliberate. The projects profiled in this prospectus are intended to exemplify critical minerals processing in Australia.

Growing global appetite for critical minerals

The critical minerals market has seen rapid growth over the past 5 years. It is expected to grow between two and fourfold by 2030[1]. There is also a need to diversify our trade. This is to avoid vulnerabilities arising from volatile prices or highly concentrated supply chains.

Australia is well positioned to meet this growing demand. We can become a globally significant, secure, and responsible supplier of raw and processed minerals, with benefits such as:

- a world-class mining industry, including expertise in mining equipment, technology and services (METS)
- a highly skilled workforce
- world leading environmental, social and governance (ESG) practices
- comprehensive financial incentives and whole of government support.

Critical Minerals Strategy

Strategy 2023–2030 sets out a vision to grow Australia's critical minerals wealth, create Australian jobs, strengthen global clean energy supply chains and support the path to net zero. Implementation of the Strategy includes support to finance critical minerals mining and processing projects, and investing in our international partnerships.

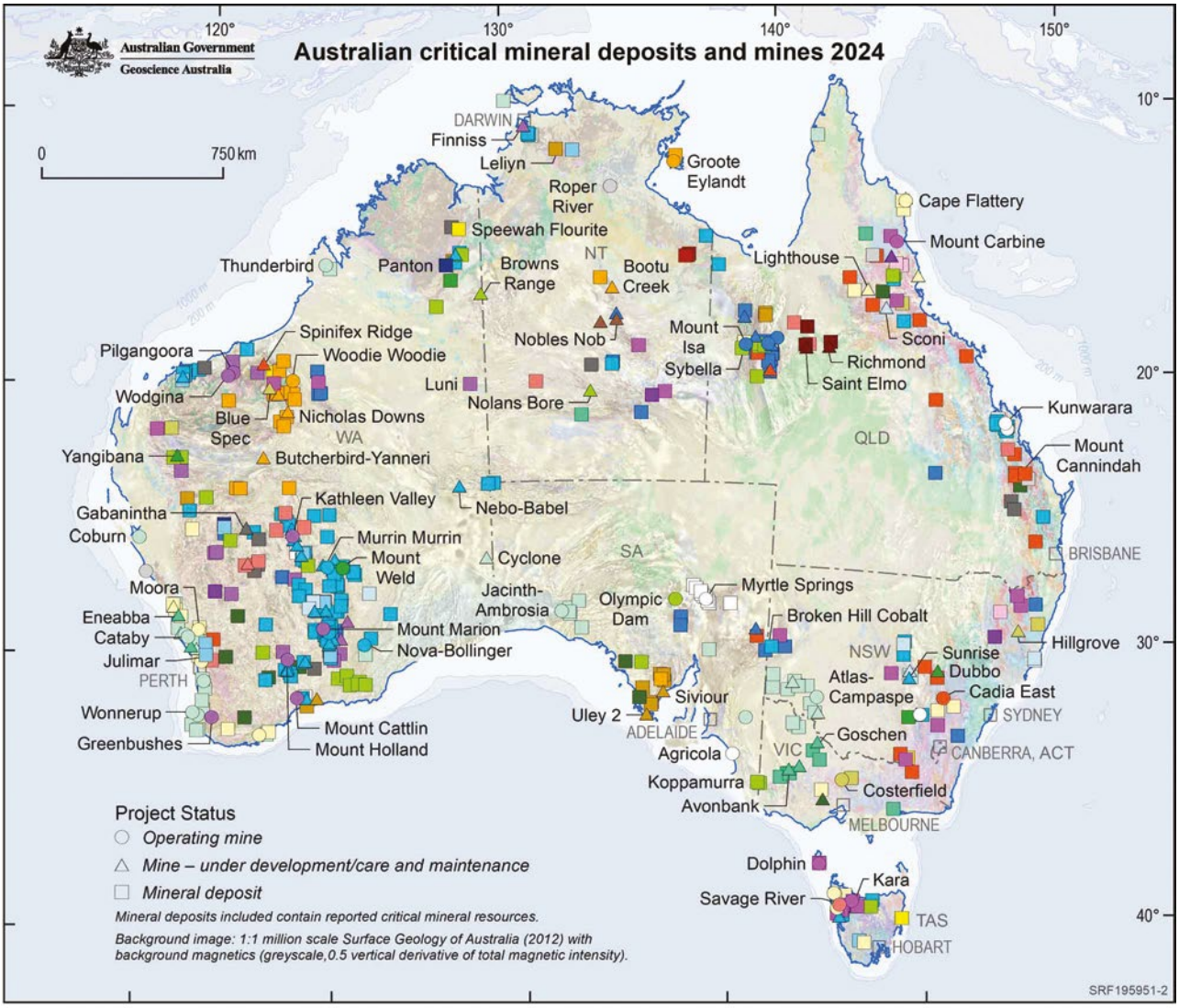
Future Made in Australia

Through the Future Made in Australia plan, the Australian Government will invest A$22.7 billion to maximise the benefits of the net zero transition and secure Australia's place in a changing global landscape.

For the critical minerals industry, this includes:

- Investments in mineral exploration and strengthened trade relationships
- A Critical Minerals Production Tax Incentive to support downstream processing and refining, offering a 10 per cent offset for eligible costs over 12 years starting in 2027–28.

1. IEA (2023) World Energy 2023, IEA Paris



Commodity Type

- *Antimony*
- *Bismuth, +/- Cobalt, +/- Indium*
- *Chromium, +/- Cobalt, +/- Nickel, +/- PGE*
- *Cobalt*
- *Nickel, +/- Cobalt, +/- PGE*
- *Platinum Group Elements (PGE), +/- Cobalt, +/- Nickel*
- *Scandium, +/- Cobalt, +/- PGE, +/- Nickel*
- *Fluorine*
- *Graphite*
- *High Purity Alumina*
- *Indium*
- *Lithium, +/- Tantalum, +/- Niobium*
- *Magnesium*
- *Manganese*
- *Molybdenum, +/- Rhenium*
- *Heavy Mineral Sands (HMS) – Titanium, Zirconium*
- *HMS – Titanium, Zirconium, REE*
- *Rare Earth Elements (REE)*
- *REE, Niobium, Zirconium, +/- Hafnium, Lithium, Tantalum, Gallium*
- *Silicon (High Purity Silica/Quartz)*
- *Tungsten*
- *Tungsten, Molybdenum*
- *Titanium*
- *Titanium, Vanadium*
- *Vanadium*
- *Vanadium, +/- REE, +/- Gallium*
- *Vanadium, Molybdenum*

Upstream summaries

This is a non-exhaustive list of advanced Australian critical minerals projects. There are more projects than those listed here. Austrade is able to facilitate introductions to other projects according to your specific needs.

For further information, please contact your local Austrade representative or email criticalminerals@austrade.gov.au

Rare Earth Elements

Scandium

Silicon

Titanium

Tungsten

Vanadium

Midstream summaries

This is a non-exhaustive list of advanced Australian critical minerals projects. There are more projects than those listed here. Austrade is able to facilitate introductions to other projects according to your specific needs.

For further information, please contact your local Austrade representative or email criticalminerals@austrade.gov.au

Antimony

Larvotto Resources Ltd
ASX-listed (LRV)

Commodity(ies):
Antimony, Gold and Tungsten

Hillgrove Antimony and Gold Project

Investment summary

Larvotto is developing the world class Hillgrove Antimony and Gold Project, Australia's largest antimony deposit and top 10 globally. The Hillgrove PFS completed in August 2024 delivered robust financials using conservative prices (US$2,000/oz gold and US$15,000/t antimony) with financials updated at spot prices in February 2025 (US$2,750/oz gold and US$51,000/t antimony) demonstrating significant upside with a post-tax $NPV_{8\%}$ of over A$0.8b. Completion of the DFS is imminent (targeting Q1 2025) including further metallurgical testwork, process plant and tailings management optimisation. First ore production targeted early-2026. Larvotto is committed to achieving development and producing antimony and gold in the near future at Hillgrove with the Project targeting production of 7% of global antimony supply. The Project is significantly de-risked due to extensive existing infrastructure (over A$200m spent to date on underground mine and processing plant on Care and Maintenance) and permitting already in place. There is no Native Title claims and no heritage issues identified. LRV welcomes discussions on investment as it approaches FID.

Project description

Located near Armidale NSW, Hillgrove has a long mining history, having produced over 750,000oz gold and 40,000t antimony. The 2024 PFS is based on restarting underground mining of ~0.5mtpa ore, and the on-site processing plant including a gravity circuit to recover gravity recoverable gold doré, followed by flotation circuits to produce antimony and gold concentrates with demonstrated recoveries from historic production. Larvotto has identified multiple high-grade drill targets with an Exploration Target of 2.8 to 3.6Mt @ 7.4 to 9.5g/t AuEq (containing 670 to 1,082koz AuEq) identified in June 2024 outside of the current Mineral Resources.

Mineral Resources as at Aug-24 (7.4g/t AuEq cut-off):

Resource Category	Tonnes (Mt)	Au Grade (g/t)	Sb Grade (%)	AuEq Grade (g/t)
Measured	0.45	3.6	3.8	12.1
Indicated	3.98	4.8	1.3	7.7
Inferred	2.84	4.0	0.9	6.1
Total	**7.26**	**4.4**	**1.3**	**7.4**
Contained (Au koz, Sb kt)		**1,036**	**39**	

Ore Reserves as at Aug-24 @ 6.0g/t AuEq cut-off:

Reserve Category	Tonnes (Mt)	Au Grade (g/t)	Sb Grade (%)	AuEq Grade (g/t)
Probable Open Pit	0.38	1.9	1.7	5.8
Proved Underground	0.39	2.6	1.9	6.9
Probable Underground	2.38	3.5	1.0	5.8
Total	**3.15**	**3.2**	**1.2**	**6.0**
Contained (Au koz, Sb kt)		**320**	**39.0**	**606**

Project Status
Pre-Feasibility Study completed in Aug 2024 with updated results at spot exchange rates and metal prices announced in Feb 2025 (Feb 2025).

Offtake Available
None (Antimony concentrate agreement with WogenResources, 5,500t/pa for initial 7 years)

Min Mine Life (Years)
7

Post-tax IRR
IRR: 242%

Capital Cost
A$69m (net of pre-production revenue)

Post-tax $NPV_{8\%}$
A$812M

Product & Annual Production Rate

- Gold doré: 6.15kozpa
- Gold concentrate containing 34.85kozpa Au
- Antimony concentrate containing 5.4ktpa Sb

Kwinana Cobalt Refinery
Broken Hill Cobalt Project

Cobalt

Cobalt Blue Holdings Ltd
ASX-listed (COB)

Commodity(ies):
Cobalt, Nickel, Sulphur

Investment summary

Cobalt Blue (COB), in partnership with Iwatani Australia, is developing the Kwinana Cobalt Refinery (KCR), producing cobalt sulphate for batteries and metal for industry/defence. COB is also developing the Broken Hill Cobalt Project (BHCP) to produce an intermediate cobalt-rich mixed metal hydroxide (MHP) and high-purity elemental sulphur. Due to the low cobalt price environment, work on BHCP has been paused.

Project description

Cobalt Blue is in the process of developing the Kwinana Cobalt Refinery (KCR), a strategic opportunity to create a secure, ex-China supply chain for high-grade cobalt metal for defence and industry. The plant will be located at the Doral Fused Material site in East Rockingham WA. Iwatani Australia, the minority joint venture partner in the refinery, owns the site. It will be a mid-stream processing facility, capable of taking various feedstock materials—including hydroxides, sulphides, and recycled battery 'black mass'—from international, domestic, and future COB-owned projects. Works Approval permitting has been granted and COB is evaluating equity, debt, and offtake partnerships to finance the Refinery.

The Broken Hill Cobalt Project (BHCP) will produce MHP and elemental sulphur from an open-pit mine and on-site processing plant. A pilot plant was commissioned in 2021, and a demonstration plant commenced operations in 2022. In 2025, the Australian Government extended Major Project Status to BHCP in recognition of its national significanceLargely due to the current low cobalt price environment, in 2024, COB paused completion of the DFS and is currently undertaking a review to assess the viability of a condensed, higher-margin project. Project was given 3-year extension to major project status in July 2025. Work on the EIS and First Nations approvals for the BHCP has also been paused.

Mineral Resources as at Nov-23 (275ppm CoEq cut-off):

Resource Category	Tonnes (Mt)	Co (%)	S (%)	CoEq (%)
Measured	24	0.091	9.6	0.114
Indicated	60	0.064	7.0	0.081
Inferred	43	0.063	7.0	0.080
Total	**127**	**0.069**	**7.5**	**0.087**
Contained (kt)		**87.3**		

No Ore Reserves Available

Project Status
BHCP: Pre Feasibility Study (July 2020)
KCR: Feasibility Study completed in Nov 2023 and updated in Oct 2024

Offtake Available
Yes

Min Mine Life (Years)
BHCP: 20

Post-tax IRR
BHCP: 18.9%
KCR: 23%

Capital Cost
BHCP: A$560m
KCR: A$60m

Post-tax NPV$_{8\%}$
BHCP: A$554m
KCR: $A90m

Product & Annual Production Rate

BHCP:
- **Cobalt mixed hydroxide precipitate:** ~10,000tpa (containing ~3,000tpa cobalt metal)
- Sulphur: ~300,000tpa

KCR:
- **Cobalt sulphate:** ~17,000tpa (containing ~3,000tpa cobalt metal)

Kalgoorlie Nickel Project and Goongarrie Hub

Cobalt

Ardea Resources Ltd
ASX-listed (ARL)

Commodity(ies):
Cobalt, Nickel, Potential for Scandium and Rare Earth Elements.

Investment summary

The 2023 Goongarrie Hub PFS confirmed the Project's status as one of the world's largest, lowest-cost sources of battery materials. Mining leases granted and expanded environmental baseline surveys to be finalised in 2025 for EPA referral. ARL's ESG policies and governance structure ensures the Project will be undertaken to the highest standards with the Company enjoying strong local stakeholder support. Mining and Heritage Protection Agreement negotiations with Traditional Owner groups have commenced. In April 2024, ARL selected Sumitomo Metal Mining and Mitsubishi Corporation as its development partners, who are earning a 50% interest in the Goongarrie Hub.

Project description

The Goongarrie Hub is a premier nickel-cobalt project with world-class infrastructure in the well-established, supportive Kalgoorlie mining district in WA. Low strip ratio open-pit mining will feed 3.5Mtpa goethite dominated ore into two high-pressure acid leach autoclaves over a 40+ year life. ARL's PFS considered proven hydrometallurgical processing to produce a mixed Ni/Co hydroxide precipate. Power will be generated utilising the waste steam from the on-site acid plant, reducing CO_2 emissions. The Project DFS, commenced in May 2024, and is assessing a switch to a higher purity mixed sulphide precipitate (MSP) final product. All key workstreams remain on track for a target DFS completion in H1, 2026. Goongarrie is part of ARL's Kalgoorlie Nickel Project (KNP), the largest nickel-cobalt project in the developed world providing optionality to develop multiple processing hubs and expand production. Ardea also controls 20km of strike at Kalpini that is highly prospective for primary nickel sulphides.

Mineral Resources as at Jun-23 (0.5% Ni cut-off):

Resource Category	Tonnes (Mt)	Co (%)	Ni (%)
Measured	18	0.085	0.94
Indicated	277	0.046	0.70
Inferred	289	0.037	0.67
Total	**584**	**0.043**	**0.69**
Contained (kt)		**250**	**4,044**

Ore Reserves as at Jul-23:

Reserve Category	Tonnes (Mt)	Co (%)	Ni (%)
Proved	16.7	0.09	0.96
Probable	177.4	0.05	0.68
Total	**194.1**	**0.05**	**0.70**
Contained (kt)		**99**	**1,365**

Project Status
Pre Feasibility Study (July 2023)

Offtake Available
25%

Min Mine Life (Years)
40

Post-tax IRR
23%

Capital Cost
A$3.117b

Post-tax NPV$_{7\%}$
A$4.980b

Product & Annual Production Rate

- Mixed hydroxide precipitate (39.9% Ni and 2.9% Co): 145.4ktpa (containing: 29.0ktpa nickel metal and 2.1ktpa cobalt metal

LOM averages, higher in initial years with Year 1 to 5 (post ramp up) production >34ktpa nickel and >3ktpa cobalt.

Kalkaroo

Cobalt

Havilah Resources Ltd
ASX-listed (HAV)

Commodity(ies):
Copper, Gold, Cobalt, Rare Earth Elements, Molybdenum

Investment summary

Kalkaroo is one of the largest undeveloped open-pit copper-gold-critical minerals deposits in Australia containing approximately 1.1m tonnes of copper, 3.1m ounces of gold and 23,000 tonnes of cobalt in JORC resources. The orebody is open at depth and along strike and has excellent potential for resource expansion with further drilling. Mining leases, a Native Title mining agreement and comprehensive environmental studies are in place for Kalkaroo. Havilah is seeking an investment partner to help it develop the Project.

Project description

Kalkaroo is favoured by its proximity to the regional mining centre of Broken Hill with its skilled workforce, the transcontinental railway line and Barrier Highway. It is an area that is endowed with abundant solar and wind energy opportunities and substantial groundwater suitable for ore processing purposes. Regional exploration during the past 12 months has advanced several nearby multicommodity copper-critical minerals prospects that could potentially provide additional ore feed for Kalkaroo. Mining is likely to be by conventional open-pit methods. The ore is amenable to standard flotation to produce a high-grade, low impurity copper concentrate and also a by-product cobalt-rich pyrite concentrate. Modifications to the flow sheet are being studied to optimise recovery of a by-product bastnasite concentrate, high in the more valuable REEs (Nd, Pr, Tb, Yb), and also by-product molybdenite.

Mineral Resources as at Mar-17 (0.4% cut-off):

Resource Category	Tonnes (Mt)	Copper (%)	Gold (g/t)	Cobalt (%)
Measured	97.6	0.50	0.47	–
Indicated	34.9	0.39	0.41	–
Inferred	113.0	0.42	0.33	–
Inferred (cobalt only)	193.3	–	–	0.012
Total	**245.5**	**0.45**	**0.40**	
Contained (kt Cu, Co & koz Au)		**1,097**	**3,105**	**23.2**

Ore Reserves as at Jan-18:

Reserve Category	Tonnes (Mt)	Copper (%)	Gold (g/t)
Proved	90.2	0.48	0.44
Probable	9.9	0.45	0.39
Total	**100.1**	**0.47**	**0.44**
Contained (kt Cu & koz Au)		**474**	**1,407**

Project Status
Pre Feasibility Study completed June 2019 – being updated with additional studies including those recently completed by OZ Minerals / BHP.

Offtake Available
Potentially available for LOM.

Min Mine Life (Years)
> 20 open pit, based on recent BHP mining optimisation studies.

IRR
Being updated

Capital Cost
Being updated

NPV
Being updated

Product & Annual Production Rate

- Copper (metal and in concentrate): 30,000tpa
- Gold (metal and in concentrate): 72,000oz pa
- Cobalt (in pyrite concentrates): ~500tpa
- REE (in bastnasite concentrate): under study

**Estimates only based on the 2019 PFS. Current study outcomes may alter these numbers.*

NiWest Nickel Cobalt Project

Cobalt

Alliance Nickel Ltd
ASX-listed (AXN)

Commodity(ies):
Nickel (as nickel sulphate hexahydrate) and Cobalt (as cobalt sulphate heptahydrate)

Investment summary

AXN is an emerging battery chemicals producer focussed on developing its high-grade NiWest Nickel-Cobalt Project, located near Leonora, WA, and adjacent to Glencore's Murrin Murrin Mine. The DFS released in November 2024 confirmed NiWest as a high-margin, long-life project. EPA referral for the Project has been submitted. The Nyalpa Pirniku People are the Native Title Claimant group. In May 2023, the Company announced a strategic partnership with Stellantis NV, comprising an equity investment and an offtake agreement for 40% of future production. In February 2024, the company signed a non-binding offtake term sheet with Samsung SDI. Major Project Status was awarded May 2024.

Project description

The Project is well serviced with infrastructure including rail, established mining towns, arterial bitumen roads, and communications. NiWest will be a low strip (2.0:1) conventional open-pit mine, with approximately 2.3Mtpa of run-of-mine ore mined at average grades of 1.06% Ni and 0.07% Co for the first 27 years. There is an opportunity to extend the high-grade profile through potential conversion of Inferred Resources. Ore will be crushed, agglomerated then heap leached, with pregnant liquor solution recovered from leaching and then neutralised prior to recovery of nickel and cobalt. The recovery will be via highly efficient direct solvent extraction and crystallisation to produce high-purity (+99.95%) nickel and cobalt sulphate products for the battery market. Process recoveries of 78% for nickel and 85% for cobalt are expected, with planned annual production of ~90,000 tonnes nickel sulphate and ~7,000 tonnes cobalt sulphate.

Mineral Resources as at Nov-23 (0.8% Ni cut-off):

Resource Category	Tonnes (Mt)	Ni (%)	Co (%)
Measured	17.77	1.07	0.069
Indicated	58.04	1.06	0.073
Inferred	17.59	0.94	0.060
Total	**93.40**	**1.04**	**0.070**
Contained (kt)		**971**	**65**

Ore Reserves as at Nov-24 (0.5% Ni cut-off):

Reserve Category	Orebody	Tonnes (Mt)	Ni (%)	Co (%)
Probable	Mt Kilkenny	37.4	0.95	0.07
Probable	Hepi	4.2	0.99	0.06
Probable	Wanbanna	12.4	0.94	0.06
Probable	Eucalyptus	30.7	0.93	0.06
Total		**84.7**	**0.94**	**0.06**
Contained (kt)			**799**	**55**

Project Status
Pre Feasibility Study (November 2024)

Offtake Available
60% in Years 1-5 100% from Year 6 (noting that the binding Stellantis offtake agreement contains renewal provisions)

Min Mine Life (Years)
27 (mine)
35 (processing)

Post-tax IRR
17.64%

Capital Cost
A$1,651m

Post-tax NPV$_{8\%}$
A$1,504m

Product & Annual Production Rate

- Nickel sulphate (hexahydrate 99.95% purity): 87.8ktpa (containing 20ktpa nickel) (first 27 years production)
- Cobalt sulphate (heptahydrate >99.9% purity): 7.2ktpa (containing 1.5ktpa cobalt) (first 27 years production)

Rover 1

Cobalt, Bismuth

Castile Resources Ltd
ASX-listed (CST)

Commodity(ies):
Gold, Copper, Cobalt, Magnetite, Bismuth

Investment summary

Castile is developing the Rover 1 Project in the prolific gold-copper mining province of Tennant Creek, Northern Territory. Rover 1 is a polymetallic, high-grade iron oxide copper gold (IOCG) deposit that will produce gold doré, copper, cobalt sulphate, and high-grade magnetite. The high purity (99%) copper and cobalt sulphate produced will be available for direct sale to EV and battery manufacturers. The gold doré and 96.75% magnetite product (suitable for green steel) provide further diversity and revenue streams. Following completion of a successful Pre-Feasibility Study in November 2022, a Bankable Feasibility Study is now nearing completion. Final metallurgical analysis has been completed for pilot plant testing to begin. Under the previous Government, Rover 1 was awarded Major Project Status by the NT, has EIS Terms of Reference approved by the NT EPA, and agreements are in place with Traditional Owners. Castile is open to development funding proposals at either project or corporate level in addition to debt and offtake financing agreements.

Project description

Rover 1 will be a high-grade underground mine utilising long hole open stopping with battery electric load and haul vehicles. The magnetite product will be separated with sulphides floated and oxidised with the solids treated using conventional carbon-in-leach. The pregnant liquor will be treated using EMEW technology to extract copper then, with all processing carried out on-site in accordance with Castile's strategy of extracting "every dollar of value from every tonne that we mine". The Rover 1 deposit remains open at depth and there are similar underexplored prospects nearby on Castile's ground.

Mineral Resources as at Sep-22 (2g/t AuEq Cut-off):

Resource Category	Tonnes (Mt)	Gold g/t	Copper (%)	Cobalt (%)	Magnetite (%)
Indicated	3.97	1.83	1.59	0.07	23.6
Inferred	1.61	1.57	1.25	0.07	22.1
Total	**5.58**	**1.76**	**1.49**	**0.07**	**23.2**
Contained		**315.2koz**	**83.2kt**	**4.0kt**	**1,295kt**

Ore Reserves as at Nov-22:

Reserve Category	Tonnes (Mt)	Gold g/t	Copper (%)	Cobalt (%)	Magnetite (%)
Probable	3.11	2.02	1.52	0.07	22.92
Total	**3.11**	**2.02**	**1.52**	**0.07**	**22.92**
Contained		**201.8koz**	**47.4kt**	**2.2 kt**	**713.3kt**

Project Status
Pre Feasibility Study (Nov 2022)

Offtake Available
Yes, in 2026

Min Mine Life (Years)
8

IRR
Pre-Tax IRR: 45.7%
Post-Tax IRR: 34.5%

Capital Cost
A$280.2m

$NPV_{6.5\%}$
Pre-Tax: A$451.7m
Post-Tax: A$302.6m

Product & Annual Production Rate

- Cu metal (99%): 6.9ktpa
- Au doré: 28.7kozpa
- Co metal (99%): 0.3ktpa
- High Grade Magnetite Concentrate (96.5% Fe_3O_4): 75.3ktpa
- Bismuth Concentrated: TBA

(Steady state annual production rates)

Sunrise Battery Materials Complex

Cobalt

Sunrise Energy Metals Ltd
ASX-listed (SRL)

Commodity(ies):
Nickel, Cobalt, Scandium

Investment summary

A Definitive Feasibility Study for the Sunrise Project was completed in late 2020 confirming the Project's status as one of the world's largest and lowest-cost new sources of critical minerals. The Project is development ready with all technical studies completed and all key permits secured. Work is currently progressing on finalising agreements with Traditional Owners, securing easements for the Electrical Transmission Line and designing the oversize transport route for the Project. The Company is in discussions for investment and long-term offtake, seeking to secure a funding package for a Final Investment Decision.

Project description

The Sunrise Project in central-west NSW will be a fully integrated supplier of high-purity nickel and cobalt sulphate for the electric vehicle (EV) battery supply chain, as well as one of the world's largest producers of scandium oxide for defence and semiconductor applications. The Project consists of a shallow open-cut mine, a hydrometallurgical processing plant to leach and separate metals and a refinery for production of battery-grade nickel and cobalt sulphate and scandium oxide. Ore reserves support up to 50 years of operations. With ~A$250m invested to date, the Project is development-ready, with lowest quartile operating costs and industry-leading emissions performance. An energy supply study has confirmed the Project's electricity can be fully supplied by renewable power. Technical studies have also shown that additional equipment could be incorporated for on-site production of precursor cathode active material and battery black mass recycling. The Company also holds tenements over the Syerston Scandium resource and other targets within the Macquarie Arc. Until market conditions improve (Ni & Co prices), activities at the Sunrise project remain focused on minimizing holdings cost and preserving project opportunity.

Sunrise Project Nickel-Cobalt Mineral Resources as at Sep-20 (0.35% nickel-equivalent cut-off):

Resource Category	Tonnes (Mt)	Co (%)	Ni (%)	Sc (ppm)
Measured	69	0.65	0.11	61
Indicated	89	0.49	0.09	79
Inferred	17	0.26	0.10	289
Total	**177**	**0.53**	**0.10**	**92**
Contained (kt)		**935**	**168**	**16**

Syerston Scandium Project Mineral Resources as at Feb-25 (300ppm Sc cut-off):

Resource Category	Tonnes (Mt)	Sc (ppm (%)
Measured	5.3	436
Indicated	18.2	400
Inferred	36.9	379
Total	**60.3**	**390**
Contained (kt)		**24**

Sunrise Project Nickel-Cobalt Ore Reserves as at Sep-20:

Reserve Category	Tonnes (Mt)	Co (%)	Ni (%)	Sc (ppm)
Proved	65.4	0.67	0.11	55
Probable	77.9	0.52	0.09	41
Total	**143.2**	**0.59**	**0.10**	**47**
Contained (kt)		**845**	**143**	**7**

Project Status
Feasibility Study (September 2020)

Offtake Available
100%

Min Mine Life (Years)
50

Post-tax IRR
15.4%

Capital Cost
US$1,826m

Post-tax NPV$_{8\%}$
US$1,207m

Product & Annual Production Rate
Annual Production Rate:

- Nickel sulphate: 96,800tpa (contained Ni metal: 21,300tpa)
- Cobalt sulphate: 21,000tpa (contained Co metal: 4,400tpa)
- Scandium oxide: Up to 180tpa

(Years 2-11)

Wingellina Nickel-Cobalt Project

Cobalt

Nico Resources Limited
ASX-Listed (NC1)

Commodity(ies):
Cobalt, Nickel

Investment summary

The Wingellina Project is a globally significantly, long-life nickel-cobalt project. A PFS was completed in December 2022, demonstrating attractive economics for the Project. The Project has EPA approval (2024) and a Project Agreement with the Traditional Owners registered in 2011. Recent work has included an independent resource update and metallurgical test work which has confirmed the leaching kinetics and suitability of High-Pressure Acid Leaching (HPAL) as the processing option. The Project was awarded Major Project Status by the Federal Government in November 2024. Wingellina offers a number of development options, and the company welcomes discussions with strategic and offtake partners to assist in the development of the Project.

Project description

The Project is a world-class, nickel-cobalt oxide deposit and forms part of NiCo Resources' Central Musgrave Project (CMP), located near BHP's West Musgrave development in WA. Wingellina is one of the world's largest limonite deposits, ideal for HPAL due to its high Fe content and low Mg grades and excellent leaching kinetics. Low cost open-pit mining operations (1.1:1 LOM strip ratio) will produce an average of 4.3Mtpa ROM. Ore will be processed on site to produce a mixed hydroxide precipitate (MHP) at 33% Ni and 3% Co, containing around 40ktpa nickel and 3ktpa cobalt. The Project will use around 90% renewable energy at steady-state operations, aligning with Nico's project design commitment to limit CO_2 emissions and has nearby access to significant water resources (2,000tds) and neutralizer (calcrete 40mt). Notably, the Project benefits from the A$1.2b in government funding allocated to upgrade and seal the Outback Way – a key transport corridor.

Mineral Resources as at Aug-24 (0.4% nickel cut-off):

Resource Category	Tonnes (Mt)	Nickel (%)	Cobalt (%)
Indicated	164.1	0.93	0.06
Inferred	23.3	0.72	0.03
Total	**187.3**	**0.91**	**0.06**
Contained (kt)		**1,698**	**106**

Ore Reserves as at 2016:

Reserve Category	Tonnes (Mt)	Nickel (%)	Cobalt (%)
Probable	168.4	0.93	0.07
Total	**168.4**	**0.93**	**0.07**
Contained (kt)		**1,561**	**122.6**

Project Status
Pre Feasibility Study (December 2022)

Offtake Available
100%
(Nickel and Cobalt)

Min Mine Life (Years)
42

Post-tax IRR
18% ungeared

Capital Cost
A$2.9b (incl. A$0.5b contingency)

Post-tax $NPV_{8\%}$
A$3.34b (US$21,472/t nickel price, A$: US$0.67 exchange rate)

Product & Annual Production Rate

- Mixed hydroxide precipitate (MHP) (33% Ni and 3% Co): 120,000tpa (containing ~40ktpa nickel and ~3ktpa cobalt metal)

Speewah Fluorite Project

Fluorine

Tivan Limited, Japan Fluorite Corporation (JFC) JV
ASX-Listed (TVN), Japan Fluorite Corporation (JFC – a Joint Venture between Sumitomo Corporation and Japan Organization for Metals and Energy Security (JOGMEC))

Commodity(ies):
Fluorite (Acid grade fluorspar (>97% CaF_2 (calcium fluorite))

Investment summary

The Speewah Fluorite Project, located in the East Kimberley, hosts Australia's only JORC-compliant fluorite resource. The Project will establish Australia's first fluorite mining and processing industry, producing premium acid-grade fluorspar (>97% CaF_2) for export into strategic global markets including semiconductors, EV batteries, and advanced energy systems. Sumitomo Corporation has entered a landmark binding joint venture, committing up to A$60.3 million in staged equity for a 22.5% interest and rights to 100% offtake (80% on a take-or-pay basis). JOGMEC subsequently acquired a 49% equity interest in Sumitomo's special purpose subsidiary, Japan Fluorite Corporation. The Australian Government conferred Major Project Status and awarded a A$7.4m International Partnerships in Critical Minerals grant. First Nations, environmental and regulatory approvals are progressing in step with the Project's pathway towards DFS and FID. DFS targeted for Q2 2026, FID in August 2026 and first shipments to Japan in 2027.

Project description

The Speewah Fluorite Project is located 100km south of the Port of Wyndham, WA. The Pre-Feasibility Study completed in July 2024 confirmed strong economics based on open-pit mining and on-site processing of 0.8mtpa ore, using a crushing, grinding, and flotation flowsheet to produce premium acid-grade fluorspar (>97% CaF_2). Testwork has produced concentrate grades of up to 99% CaF_2, confirming product quality at the top end of global benchmarks. The Project has a well-defined resource expansion pathway, with an Exploration Target of +1.9-3.9m high-grade tonnes. The Speewah site also hosts Australia's largest JORC-compliant vanadium titanomagnetite resource. Tivan is strongly committed to robust ESG practices and fostering durable stakeholder alignment.

Mineral Resources as at Aug-24
(High-Grade Mineral Resource @ 10% CaF_2 Cut-off):

Resource Category	HG Resource Tonnes (Mt)	HG Resource CaF_2 (%)
Indicated	5.8	23.2
Inferred	2.8	21.9
Total	**8.6**	**22.8**
Contained (Kt)	**1,950**	**1,950**

The Total Mineral Resource for the Project is 37.3Mt @ 9.1 % CaF_2, containing 3,330kt CaF_2.

No Ore Reserves Available

Project Status
Pre Feasibility Study (July 2024)

Offtake Available
0% (Sumitomo Corporation has the rights to 100% offtake (80% on a take-or-pay basis)

Min Mine Life (Years)
10.6

IRR
Pre-tax IRR: 37.9%
Post-tax IRR: 33.2%

Capital Cost
A$236.3m

$NPV_{8\%}$
Pre-tax: A$480.1m
Post-tax: A$354.7m

Product & Annual Production Rate
- Acid grade flurospar (97% CaF_2): 140ktpa

Battery Anode Material Project

Graphite

Renascor Resources Ltd
ASX-listed (RNU)

Commodity(ies):
Graphite

Investment summary

Renascor's proposed Battery Anode Material (BAM) Project is a South Australian-based, vertically-integrated graphite project to produce sustainably sourced purified spherical graphite (PSG) for use in lithium-ion batteries. The Project has been granted Major Project Status and has received conditional approval for a A$185 million Loan Facility from the Australian Government. The BAM Project is at an advanced development stage, with a Definitive Feasibility Study completed in 2023, major upstream project approvals (Environmental, Mining & Native Title) in place and the downstream project is in the final development assessment stages. Renascor has commenced detailed design and long lead infrastructure procurement for the upstream project, and is currently constructing a downstream, pre-commercial scale PSG demonstration plant. Renascor is considering both additional offtake and investment in the project.

Project description

The BAM Project combines an upstream graphite mining and mineral processing project with a downstream graphite shaping and purification facility to process graphite concentrates into PSG. The upstream project, located on the Eyre Peninsula in SA, includes:

- Shallow open-pit mining of the Siviour graphite deposit, the largest graphite Reserve outside Africa and second largest Proven Reserve globally, and
- Processing via crushing, grinding, flotation, filtering and drying to produce graphite concentrates (94% to 95% TGC).

The downstream BAM project, located in Bolivar SA, will further process Siviour graphite concentrates into PSG using Renascor's eco-friendly purification process. Stage 1 will produce ~75,000tpa graphite concentrate initially for export then, commencing in Year 2, for processing into PSG. Stage 2 expansion, commencing in Year 4, will increase graphite concentrate production to ~150,000tpa and PSG production to ~100,000tpa.

Mineral Resources as at Sep-23 (2.3% TGC cut-off):

Resource Category	Tonnes (Mt)	TGC (%)
Measured	16.9	8.6
Indicated	56.2	6.7
Inferred	50.5	6.5
Total	**123.6**	**6.9**
Contained (kt)		**8,500**

Ore Reserve as at Aug-23:

Reserve Category	Tonnes (Mt)	TGC (%)
Proved	16.8	8.2
Probable	45.0	6.6
Total	**61.8**	**7.0**
Contained (kt)		**4,300**

Project Status
Feasibility Study (August 2023) (Battery Anode Material Study including Stage 1 and Stage 2 phased development).

Offtake Available
100%

Min Mine Life (Years)
40

Post-tax IRR
26%

Capital Cost
Stage 1:
Mine and Processing Plant: A$214.5m
PSG Facility: A$394.6m
Stage 2:
Mine and Processing Plant: A$173.3m
PSG Facility: A$377.2m

Post-tax NPV$_{10\%}$
A$1.5b

Product & Annual Production Rate
- Graphite concentrate: (94 to 96% TGC): 75,000tpa to 150,000tpa
- Purified spherical graphite: 50,000tpa to 100,000tpa

Graphite

Lincoln Minerals Ltd
ASX-listed (LML)

Commodity(ies):
Graphite

Kookaburra Graphite Project

Investment summary

Lincoln is developing its 100% owned, high-grade Kookaburra Graphite Project (KGP) located 35km north of Port Lincoln on SA's Eyre Peninsula. KGP is an advanced-stage, long-life project with an Updated PFS completed in November 2024 delivering strong economics for production of high-grade graphite concentrate in a two-stage development, with low start-up capital. Initial mining will commence on a granted ML. There is no Native Title or known heritage issues. A draft PEPR application submitted in 2017 will be modified and re-submitted in H2 2025. Lincoln is targeting FID for the KGP in late-2026 and first production in 2027. A "Mine to Battery" Scoping Study examining purified spherical graphite production for use as battery anode material is underway targeting completion in H2 2025. Lincoln welcomes discussions with strategic investors and offtake partners.

Project description

In April 2024, Lincoln defined an Updated KGP Total Mineral Resource of 12.8Mt @ 7.6% TGC, including a high-grade core of 2.9Mt @ 13.6% TGC from surface, more than doubling the previous MRE. EM surveys indicate the likelihood of significant extensions of mineralisation with an additional Exploration Target of 6-126mt @ 4-16% TGC. The October 2024 Lincoln Updated PFS is based on a two-stage development, with 75ktpa open-pit mining and processing on-site (flotation) producing 10,000tpa of high-quality graphite concentrate. Commencing in year 3, Stage 2 ramps up to 500ktpa ore mined and processed producing 60,000tpa graphite concentrate. The KGP's high-grade core starting from surface with no pre-stripping required, along with close proximity to infrastructure, regional towns, and airports contribute to its low-cost start-up capital cost (A$29m).

Mineral Resources as at Apr-24 (2% TGC cut-off):

Resource Category	Tonnes (Mt)	TGC (%)
Measured	1.0	11.8
Indicated	4.9	8.8
Inferred	7.0	6.1
Total	**12.8**	**7.6**
Contained (kt)		**973**

The Kookaburra Gully Mineral Resource includes a high-grade Core Total Mineral Resource of 2.9Mt@ 13.6% TGC commencing from surface.

No Ore Reserves Available

Project Status
Updated Pre-Feasibility Study (October 2024)

Offtake Available
100%

Min Mine Life (Years)
15+

Pre-tax IRR
41%

Capital Cost
A$29m (Stage 1)
A$24m (Stage 2)

Pre-tax $NPV_{10\%}$
A$114m

Product & Annual Production Rate

Stage 1:
- Graphite concentrate (>95 TGC): 10,000tpa

Stage 2:
- Graphite concentrate (>95% TGC): 60,000tpa

Graphinex Esmerelda Anode Project

Graphite

Graphinex Pty Ltd
Privately held

Commodity(ies):
Graphite

Investment summary

Graphinex is developing Australia's first vertically integrated mine-to-anode material business. Graphite concentrate will be supplied from Graphinex's Esmeralda mine located near Croydon, QLD for processing in Townsville, QLD to produce high performance Coated Spherical Purified Graphite (CSPG) used for Battery Anode Material in lithium-ion batteries. Regulatory approvals are progressing with the EIS Terms of Reference agreed and completion of major approvals expected in 2026. Traditional Owner agreements are progressing and expected to be signed in 2026. The Queensland Government has fast-tracked the project by granting Coordinated Project status. A BFS is underway targeting FID in 2026. Esmeralda is the world's largest graphite reserve in a developed country. Graphinex is actively engaging offtake partners and welcomes investment discussions with strategic and financial investors.

Project description

The Pre-Feasibility Study completed in March 2025 is based on open-pit mining of 3.5Mtpa ore and processing using flotation to produce a graphite concentrate at the Esmeralda mine site over a 50 year life. Graphite concentrate will be transported to Townsville where it will undergo processing via micronisation, spheroidisation, thermal purification and coating to produce high performance CSPG. Graphinex commenced production of CSPG from its 300tpa Townsville Demonstration Facility in July 2025 allowing product qualification with battery manufacturers to commence. Esmeralda is a unique granite-hosted orebody with a tight crystalline structure and larger interlayer spacing which produces high performance anode material. Exploration upside exists along strike and at depth. The Project has a strong ESG focus with low strip ratio and a renewable power option.

Mineral Resources as at December 2024 (3.0% Graphite cut-off):

Resource Category	Tonnes (Mt)	TGC (%)
Indicated	173.10	5.84
Inferred	261.40	5.83
Total	**434.50**	**5.83**
Contained (kt)		**25,331**

Ore Reserves as at 29 March 2025:

Reserve Category	Tonnes (Mt)	TGC (%)
Probable	163.77	5.48
Total	**163.77**	**5.48**
Contained (kt)		**8,975**

Project Status
Pre-Feasibility Study completed March 2025

Bankable Feasibility Study commenced

Offtake Available
High performance Coated Spherical Purified Graphite CSPG): 30-100kpa

Min Mine Life (Years)
50

Post-tax IRR
24.6%

Capital Cost
A$575m

Post-tax NPV$_{8\%}$
A$2.9b

Product & Annual Production Rate

- High performance Coated Spherical Purified Graphite (CSPG): 30-100kpa

McIntosh Graphite Project

Graphite

Green Critical Minerals Ltd (80%), NH3 Clean Energy Ltd (20%)
ASX-listed (GCM),
ASX-listed (NH3)

Commodity(ies):
Graphite

Investment summary

Green Critical Minerals plans to develop a commercial demonstration scale integrated mine and graphite concentrator at their McIntosh Graphite Project in WA. After the successful completion of a pre-feasibility study in June 2025, GCM plan to develop an open cut mine and graphite concentrator plant at the Project site to produce graphite concentrate. The Project is expected to supply both traditional industrial markets and downstream markets.The majority of baseline environmental studies have been completed and regulatory approvals are progressing, including engagement with the Kimberley Land Council representing the First Nations custodians. GCM is seeking offtake partners and welcomes investment discussions to support project development and downstream integration.

Project description

The McIntosh Graphite Project is located in WA's Kimberley region and hosts one of Australia's largest flake graphite resources (32.6Mt @ 4.25% TGC). A PFS completed in June 2025, demonstrates robust economics for the Project based on mining and on-site processing of 380ktpa ore producing ~6.1ktpa of graphite concentrate at 95% TGC and 7.4ktpa of micronised graphite concentrate at 95% TGC (~13.5ktpa total concentrate). The PFS is based on conventional open-pit mining and on-site processing via flotation to deliver flake graphite concentrate at 95% TGC and recoveries >90%. The Project is amenable to fine flake products and an on-site micronising plant will further process ~55% of the graphite concentrate to produce a micronised graphite concentrate. McIntosh benefits from significant exploration upside, with an Exploration Target of 111-157Mt @ 3.5-5% TGC. The Project is located near key infrastructure, including sealed roads and the Wyndham deep-water port, providing direct access to global export markets.

Mineral Resources as at Jun–25 (2% and 3% TGC cut-off):

Resource Category	Tonnes (Mt)	TGC (%)
Indicated	1.7	4.22
Inferred	10.9	4.33
Total	**32.6**	**4.25**
Contained (kt)		**1,385**

Ore Reserves as at Jun–25 (2% TGC cut-off):

Reserve Category	Tonnes (Mt)	TGC (%)
Probable	11.1	3.88
Total	**11.1**	**3.88**
Contained (kt)		**432**

Project Status
Pre-Feasibility Study completed in June 2025

Offtake Available
100%

Min Mine Life (Years)
32.5

Post-tax IRR
25.3%

Capital Cost
A$55.2m

Post-tax NPV$_{8\%}$
A$234m

Product & Annual Production Rate

- Graphite flake concentrate (95%TGC): 6.1kt/pa
- Micronised Graphite Concentrate (95%TGC): 7.4kt/pa

Munglinup

Graphite

Mineral Commodities Ltd
ASX-listed (MRC)

Gold Terrace Pty Ltd (49%)
Unlisted Private Company

Commodity(ies):
Graphite

Investment summary

Mineral Commodities is a global mining and development company focused on the development of high-grade industrial and critical minerals deposits. The Munglinup Graphite Project Feasibility Study completed in 2020 confirmed the ability to produce high-grade graphite concentrate. Environmental approval, expected in the second half of 2025, is the only remaining major approval required prior to construction. We are now also comissioning our graphite anode pilot plant and plan to develop downstream battery anode materials prodcution facilites wihtin Australia. Please note that as at 18 December 2025 MRC is currently in Voluntary Administration.

Project description

The Munglinup Graphite Project is free-dig, open pit mining of high-grade graphite mineralisation, located within a granted mining lease in WA. ROM ore is processed through conventional, multi-stage milling and flotation process to produce high-grade graphite concentrates across a range of flake sizes. The resource is open at depth and along strike. Future work envisaged includes updating studies and additional drilling. MRC, working with its partners, including CSIRO and Doral Fused Materials, completed a Cooperative Research Centres Project to develop a non-hydrofluoric acid purification process to produce high purity value-added battery anode materials from Munglinup concentrate. The Project achieved battery grades (99.95% purity) for spherical graphite with 90% recoveries. Pilot plant operations and optimised integrated ore-anode DFS program are underway, 50% funded through Australian Government critical minerals grant funding.

Mineral Resources as at Jan-20 (5% TGC cut-off):

Resource Category	Tonnes (Mt)	TGC (%)
Indicated	4.5	13.1
Inferred	3.5	11.0
Total	**8.0**	**12.2**
Contained (kt)		**975**

Ore Reserves as at Jan-20:

Reserve Category	Tonnes (Mt)	TGC (%)
Probable	4.2	12.8
Total	**4.2**	**12.8**
Contained (kt)		**543**

Project Status
Feasibility Study (Jan 2020)

Offtake Available
Yes

Min Mine Life (Years)
14

Post-tax IRR
30%

Capital Cost
US$61m

Post-tax NPV$_{7\%}$
US$111m

Product & Annual Production Rate

- Flake graphite concentrate: (>95% TGC): 52ktpa

Graphite

Quantum Graphite Ltd and Sunlands Energy Co. Pty Ltd
ASX-listed (QGL)

Commodity(ies):
Graphite

Quantum Sunlands Eyre Peninsula Graphite Hub (QSEPGH)

Investment summary

The QSEPGH is a complete AU-USA end-to-end graphite supply chain, commencing with the supply of natural flake concentrate from the Uley 2 Project in Eyre Peninsula, SA, and shipping to a planned Sunlands Refinery in South Carolina, USA to produce high purity graphite (HPG) at 99.6% purity for use in the technology, military and lithium-ion battery market segments. The historic Uley mine is part of the Mikkira graphite province, one of the world's largest natural coarse flake graphite provinces. Highlights of the Uley 2 Project include:

- Fully permitted and development ready
- Decades of supplying global manufacturers across multiple market segments
- JV with Sunlands for purification of concentrate and manufacturing of energy storage cells
- Binding offtake agreement with MRI Trading AG for 50ktpa

Project description

The DFS Update completed in Dec 2023 confirmed superior returns from the Uley 2 Graphite Project which includes open pit mining of ~1.2Mtpa ore from the historic Uley Mine and processing on-site via milling, froth flotation and proprietary sequential polishing to produce ~100ktpa of graphite flake concentrate (94% TGC). QGL's process enhances flake graphite recoveries, maximises flake particle size and achieves very high purities. Independent test work has demonstrated that HPG (99.95% gC) can be commercially produced from Uley flake concentrate using Sunlands' proprietary thermal purification process (not included in Dec 2023 DFS Update). A large-scale geophysical survey of the Uley 2/3 ML and adjacent EL was completed in 2024, with targets identified. A resource expansion drilling program over the Uley 2/3 deposits is due to be completed in 2025, targeting significantly increasing resources and reserves.

Mineral Resources as at Nov-21 (3.5% TGC cut-off):

Resource Category	Tonnes (Mt)	Graphite (%)
Measured	0.8	15.6
Indicated	4.2	10.4
Inferred	2.2	8.9
Total	**7.2**	**10.5**
Contained (kt)		**757**

Ore Reserves as at Dec-23:

Reserve Category	Tonnes (Mt)	Mineral 1 (%)
Proved	0.81	11.66
Probable	3.19	11.95
Total	**4.00**	**11.89**
Contained (kt)		**476**

Project Status
Feasibility Study (Dec 2023)
(Uley 2 Stage 1 DFS on graphite flake concentrate production. Excludes US downstream purification facility to produce HPG).

Offtake Available
50%
(50% already committed to MRI for first 5 years).

Min Mine Life (Years)
12

Pre-tax IRR
41.17%
(QSEPGH NPV: not available)

Capital Cost
A$152m
(QSEPGH capital cost inclusive of Uley 2 US$300m)

Pre-tax NPV$_{8.5\%}$
$242m
(QSEPGH NPV: not available)

Product & Annual Production Rate

- Graphite concentrate (94% TGC): 100ktpa, comprising:
  - Ex. Large Flake: +300µm, 97.8% gC,
  - Large Flake: -300+150µm, 97.2% gC,
  - Medium Flake: -150+75µm, 96.6% gC

(QSEPGH HPG production of 100ktpa of 99.95%)

Springdale Mine and Collie Graphite Processing Hub

Graphite

International Graphite Ltd
ASX-Listed (IG6)
Frankfurt-Listed (FRA:H99)

Commodity(ies):
Graphite

Investment summary

International Graphite's global mine-to-market strategy centres on flagship developments in WA, with downstream processing at Collie, fed from a mine and concentrator at Springdale, and an expandable graphite manufacturing facility planned in Germany. Construction of a micronising plant is underway in the Collie Light Industrial Area following completion of the FEED study in March 2025. A Feasibility Study on the Springdale mine and concentrator is progressing with construction start scheduled for 2028. The WA mine is on freehold farmland. Environmental baseline studies have been completed and positive discussions held with the Wagyl Kiap Southern Noongar Aboriginal Corporation. Two mining leases have been granted. Located in a low-risk jurisdiction, with near-term production, strong community and political support, and an expert team, make this a globally significant project.

Project description

International Graphite is building a commercial graphite micronising plant in Collie. Following a 2024 Feasibility Study, a 2025 FEED study defined a two-stage development with Stage 1 production of ~4ktpa using purchased graphite concentrates targeting first production in 2027. A Scoping Study completed in January 2024 demonstrated attractive economics for an integrated Springdale mine and concentrator development and full scale coated spherical purified graphite (CSPG) plant at Collie. At Springdale, planned open pit operations will target ~0.5Mtpa of ore mined at an average grade of 9.5% TGC. Onsite processing via flotation will produce 47ktpa graphite flake concentrate (95% TGC) to be transported to Collie for micronising and further refinement to ultimately produce ~18.6ktpa CSPG used for battery/active anode material. Australian governments have invested A$17.2m to date.

Springdale Project Mineral Resources as at Sep-23 (2% TGC cut-off):

Resource Category	Tonnes (Mt)	TGC (%)
Indicated	11.5	7.5
Inferred	37.7	6.1
Total	**49.3**	**6.5**
Contained Graphite (kt)		**3,200**

No Ore Reserves Available

Project Status
Stage 1: Pre Construction – Collie Micronising Plant
Stage 2: Scoping Study – Integrated Springdale Mine Development and Collie Full Scale CSPG Plant (Jan-24)

Min Mine Life (Years)
Multi Decade. Subject to Feasibility Study.

Offtake Available
100%

Pre-Tax IRR
Stage 1: 43%
Stage 2: 30.5%

Capital Cost
Stage 1: A$6.3m inclusive of expansion infrastructure
Stage 2: A$417m Springdale Mine & Flake Concentrator A$75.7m, Collie CSPG Pant A$341m)

Pre-tax $NPV_{10\%}$
Stage 1: A$26m
Stage 2: A$603m

Product & Annual Production Rate

Stage 1:
- Micronised graphite: ~4ktpa

Stage 2:
- Graphite flake concentrate (95% TGC): 47ktpa
- CSPG: 18.6ktpa

HPA First Project

High Purity Alumina

Alpha HPA Ltd
ASX-Listed (A4N)

Commodity(ies):
High Purity Alumina and High Purity Alumina Hydrates (HPA)

Investment summary

Alpha HPA is commercialising a world's first process technology to deliver ultra-high purity aluminium materials to market, for use in semiconductor, lithium-ion battery, Direct Lithium Extraction (DLE), LED lighting, and synthetic sapphire industries. Stage One of the Gladstone-based HPA First Project, is in small-scale commercial production (~400tpa) of the full product offering; a range of high purity aluminium oxides, hydroxides and nitrates. Construction of the Stage Two, large-scale commercial production facility (~10,000tpa) commenced in September 2024, targeting commissioning in 2027, with all bulk earthworks complete, and civil works, detail design and fabrication of long lead equipment underway. For Stage Two, Alpha HPA has been awarded up to A$66.7m in grants from the Commonwealth and Queensland Governments and up to A$400m in loans from Government agencies (NAIF and EFA). All key approvals in place. Now accepting individual offtake contracts. In May 2024, Alpha HPA commenced production of synthetic sapphire from its high-purity alumina pellets under a new business arm, Alpha Sapphire. FID for expansion of the Alpha Sapphire business is linked to successful technical qualification with semiconductor customers.

Project description

Alpha HPA's premium products are based on its novel Smart SX purification process, which represents the world's first application of solvent extraction purification technology for aluminium. The process is disruptive at a number of levels, including:

- **Low Carbon, High Purity:** By using a common industrial feedstock, recycling all reagents and using 100% renewable electricity, Alpha can manufacture ultra-high purity materials with a carbon footprint reduction of ~70% compared to other processes.
- **Low Cost:** The front end of the purification process is 100% wet-chemical and operates at atmospheric temperatures and pressures with a 100% reagent recycle.
- **Flexibility:** Able to produce a full range of high-purity aluminium materials from a single process.

Mineral Inventory

- **Feedstock:** Common industrial feedstock sourced directly from Rio Tinto's alumina refinery in Yarwun (2.5km away).
- **Reagents:** Sourced directly from Orica Yarwun (adjacent) with binding 10 + 10-year agreements in place.
- **By-products:** Reagents are recycled on a 100% basis and returned to Orica for further processing.

Alpha HPA's process can match or exceed best-in-class purity across its entire product range.

Project Status
Stage 1 (small commercial scale plant): Operating since Nov 22.
Alpha Sapphire: Maiden production May 24.
Stage 2 (Full scale commercial plant): Construction commenced Sept-24. DFS completed and FID (May-24).

Offtake Available
Yes – Now accepting individual offtake contracts

Min Mine Life (Years)
N/A

IRR
N/A
Stage 2 forecast to generate annual EBITDA of: A$255 – 403m
(Refer to investor page of the company website for currently disclosed financial metrics.)

Capital Cost
Stage 1: A$50m (complete)
Stage 2: $A553m (FID – May 2024)

NPV
N/A
Stage 2 forecast to generate annual EBITDA of: A$255M – A$403M

Product & Annual Production Rate

Stage 1

- Al-Nitrate: +350tpa High purity alumina + high purity alumina hydrates: 20-25tpa
- Alpha Sapphire: Ultra Sapphire (Al_2O_3)TM: 7tpa low-carbon synthetic sapphire

Stage 2

- Combination of: Al-nitrates, high purity alumina + high purity alumina hydrates: ~10,000tpa.

HPA Project

High Purity Alumina

Cadoux Ltd
ASX-listed (CCM); FSE: SLD
OTC: FYIRF

Commodity(ies):
High Purity Alumina (HPA)

Investment summary

Cadoux is an emerging global supplier of premium critical minerals to assist the global energy transition to low carbon emissions. Cadoux is prioritising developing an innovative process to produce high purity alumina (HPA) to address the burgeoning growth in industries such as EVs, semiconductors, LEDs and other advanced applications. Cadoux has a staged development approach commencing with a small-scale demonstration and production plant (SSP) at Kwinana to produce ~1,000tpa HPA in stage 1, with further incremental stages to be added over time to achieve final commercial production of 10,000tpa HPA. Our SSP, underpinned by established and demonstrated technology, is completing front end engineering design (FEED) following the completion of a successful Feasibility Study which established excellent project economics. Project permitting at both our Kwinana and Cadoux kaolin project sites including lease, environmental studies and heritage approvals have been completed in line with our development schedule.

Project description

Cadoux has developed a groundbreaking, cost-effective, and environmentally sensitive method for manufacturing premium HPA. The Company's vision is to revolutionise HPA production by leveraging our innovative hydrochloric acid leach and precipitation process utilising optimised feedstock sourced from our 100% owned Kaolin deposit. Through a comprehensive, end-to-end business model, encompassing the entire supply chain from mining to market, we ensure complete traceability and origin authenticity of the HPA we produce. This commitment guarantees the highest product quality and ESG certification for customers. Production facilities in the Kwinana-Rockingham Strategic Industrial Area ensures easy access to raw materials, inbound and outbound logistics and skilled labour from the Perth region.

Cadoux Kaolin Mineral Resources as at Apr-22 (20% Al_2O_3 cut-off grade):

Resource Category	Tonnes (Mt)	Al_2O_3 (ppm)
Measured	0.481	23.56
Indicated	5.743	23.56
Inferred	5.046	21.45
Total	**11.269**	**22.51**
Contained (kt)		**2,537.0**

Cadoux Kaolin Ore Reserves as at Apr-22:

Reserve Category	Tonnes (Mt)	Al_2O_3 (ppm)
Proved	0.290	24.9
Probable	2.914	24.8
Total	**3.205**	**24.8**
Contained (kt)		**795.0**

Project Status
Feasibility Study (April 2021)

Offtake Available
100%. Currently qualifying product with potential customers and developing new markets

Min Mine Life (Years)
>50

Post-tax IRR
55%

Capital Cost
US$202m

Post-tax $NPV_{8\%}$
US$1.014b

Product & Annual Production Rate

Stage 1:
- Premium quality high purity alumina (>99.995% Al_2O_3): 10,000tpa

Final Commercial Production:
- Premium quality high purity alumina (>99.995% Al_2O_3): 10,000tpa

Finniss Lithium Operation and Regional Exploration Targets

Lithium

Core Lithium Ltd
ASX-listed (CXO)

Commodity(ies):
Lithium
(in spodumene concentrate)

Investment summary

Finniss is the only Australian lithium operation located outside of WA. The site has attracted more than A$250m of investment. All mining and processing operations are currently suspended. Core Lithium successfully completed a 'Restart Study' in May 2025, which repositioned Finniss as a longer-life, lower-cost operation. All site infrastructure is being maintained in a restart-ready condition and is wholly owned by Core Lithium. 100% of Spodumene Concentrate offtake is available and Core Lithium is currently advancing a strategic funding process to support a positive FID for restarting the Project.

Project description

The Finniss Project comprises of; open pit and underground mines, a DMS Processing Plant and associated infrastructure, located 88 km by sealed road from Darwin, the nearest export port to Asia and other key markets. The Restart Study is based on; underground mining and the use of bulk stoping geometry producing higher quality ore feed and upgrades to the Processing Plant to increase throughput to 1.2Mtpa, with recoveries of 78%. The restart Project is expected to produce 205 ktpa of high-value, coarse-grained SC6 spodumene concentrate, supported by updated Ore Reserves of 15.2 Mt at 1.26% Li_2O. The Project's scale, grade and long-life ore bodies – with future upside from 'BP33 Deeps' and 'Blackbeard' – positions Finniss as one of the most competitive global spodumene operations. Core Lithium maintains close community ties in the Northern Territory. The Finniss operation is strongly supported by the Northern Territory and Federal Governments.

Total Finniss Project*[1] Mineral Resources as at Apr-25 (0.5% Li_2O cut-off):

Resource Category	Tonnes (Mt)	Li_2O (ppm)
Measured	6.33	1.41
Indicated	21.6	1.29
Inferred	20.3	1.18
Total	**48.5**	**1.26**
Contained (kt)		**608**

Total Finniss Project Ore Reserves as at 5 September 2025:

Reserve Category	Grants[1]		BP33[1]		Carlton[2]		TSF/stockpiles[1]		Total	
	Tonnes (Mt)	Li_2O (%)	Tonnes (%)	Li_2O (%)	Tonnes (Mt)	Li_2O (%)	Tonnes (Mt)	Li_2O (%)	Tonnes (Mt)	Li_2O (%)
Proved	0.9	1.29	2.6	1.27	1.7	1.19	–	–	5.1	1.25
Probable	0.3	1.36	6.7	1.32	2.8	1.19	0.3	0.68	10.1	1.27
Total	**1.2**	**1.31**	**9.3**	**1.31**	**4.5**	**1.19**	**0.3**	**0.68**	**15.2**	**1.26**
Contained (kt)		**15**		**121**		**53**		**2**		**192**

1 *Effective date for Grants, BP33 and TSF/stockpiles is 30 April 2025.*
2 *Effective date of the Carlton Ore Reserves is 5 September 2025.*

Project Status
Grants & BP33 Restart Study 2025 (May 2025)

Offtake Available
Yes 100% available, when mine restarts production

Min Mine Life (Years)
20

IRR
N/A

Capital Cost
A$175m–A$200m*[1]

NPV
N/A

Product & Annual Production Rate
- Spodumene concentrate (SC6 equivalent): 205kpta

Butcherbird High Purity Manganese Project

Manganese

Element 25 Ltd
ASX-listed (E25)

Commodity(ies):
Manganese, Silicon, Iron

Investment summary

Element 25's (E25) Butcherbird Project hosts Australia's largest onshore manganese resource. The 2025 Butcherbird updated Feasibility Study confirmed expansion to ~1.1Mtpa manganese concentrate production to supply both existing manganese alloy customers and E25's planned high-purity manganese sulphate monohydrate (HPMSM) US refinery. The expansion construction is expected to commence in 2026 with commissioning expected later that year, subject to financing. E25 plans to build its first EV lithium-ion battery grade HPMSM refinery in the US in partnership with Stellantis and General Motors and has received a US$166M grant from the US Government Department of Energy, covering up to half the construction costs. Construction is expected to commence in 2026 with commissioning expected in 2028, subject to financing. Further processing facilities are planned for other global battery manufacturing hotspots. All facilities will process secure, ethical manganese supply from E25's Australian Butcherbird Mine which will ensure long-term, secure manganese supply to E25's HPMSM refineries.

Project description

E25's Butcherbird manganese mine is located in the Pilbara region of WA. The 2025 Updated Butcherbird FS is based on expansion of the mine to ~1.1Mtpa manganese concentrate production and includes changes to the processing flowsheet such as; a mineral sizer for primary crushing, a DMS drum for final beneficiation and addition of a tailings screen and thickener. The E25 planned US HPMSM refinery will produce up to 130ktpa of HPMSM for US EV supply chains using E25 patented proprietary technology. Major milestones achieved include offtake with General Motors and Stellantis, site selection, and progressing permitting under the NEPA framework. Early construction works are planned for 2026, subject to financing and permitting.

Mineral Resources as at Oct-24 (7% Mn Cut-off (Measured and Indicated), 8% Mn cut-off (Inferred)):

Resource Category	Tonnes (Mt)	Mn (%)	Si (%)	Fe (%)	Al (%)
Measured	13.0	11.41	20.60	11.59	5.71
Indicated	116.2	10.11	21.05	11.42	6.03
Inferred	145.2	9.79	17.02	15.08	5.87
Total	**274.4**	**10.00**	**18.89**	**13.36**	**5.93**
Contained (kt)		**27.4**	**51.9**	**36.7**	**16.3**

Ore Reserves as at Jan-25:

Reserve Category	Tonnes (Mt)	Mn (%)
Proved	11.9	11.62
Probable	89.5	10.19
Total	**101.4**	**10.36**
Contained (kt)		**10.5**

Project Status
Feasibility Study

Offtake Available
Yes

Min Mine Life (Years)
>18 years (manganese concentrate)

Pre-tax IRR
HPMSM:[*1] 29%;
Butcherbird Expansion[*2]: 96%

Capital Cost
HPMSM: US$289m (Train 1). US$187m (Train 1); Butcherbird Expansion: A$64.8m

Pre-tax NPV$_{8\%}$
HPMSM[*1]: US$1,662m;
Butcherbird Expansion[*2]: A$561m

Product & Annual Production Rate

- HPMSM (battery grade 99.99% purity): 65,000tpa expanding to 130,000tpa with Train 2.
- Manganese concentrate (30-3% Mn): ~1.1Mtpa

*HPMSM: Feasibility Study (Apr-23) based on 130,000tpa HPMSM from 2 trains with manganese concentrate supplied at arm's length market price.[*1] Butcherbird Expansion: Feasibility Study (Jan-25) – mine and concentrator expansions only.[*2]*

Magnesium

Latrobe Magnesium Ltd
ASX-listed (LMG)

Commodity(ies):
Magnesium

Latrobe Magnesium Project

Investment summary

Latrobe Magnesium is constructing its 1,000tpa magnesium Demonstration Plant in the Latrobe Valley, VIC. The first hydromet stage has been completed and commissioned producing MgO in April 2024. Stage 2 will produce magnesium metal with major equipment delivered and housed on-site and first production targeted by February 2026. Following successful commissioning, LMG plans to build its 10,000tpa magnesium Australian Commercial Plant, processing Yallourn Power Station brown coal fly ash. EPA and council approvals for the 10,000tpa plant are expected by the middle of 2026. During 2025, LMG continued development studies on its planned 100,000tpa magnesium International Mega-Plant in Sarawak, Malaysia. LMG welcomes discussions on investment for the commercial plants.

Project description

LMG has developed a unique hydrometallurgical process to process fly ash and ferro nickel slag into magnesium and other valuable products. The process will recycle 100% of these wastes. The 1,000tpa Demonstration Plant is located on LMG's Latrobe Valley site. LMG is working closely with Bechtel on planning to commence a Feasibility Study on the 10,000tpa Australian Commercial Plant, processing Yallourn Power Station brown coal fly ash, to be built on a new site in Latrobe Valley. During 2023, Bechtel completed a PFS on development of a 100,000tpa magnesium International Mega-Plant in Sarawak, Malaysia which will process ferro nickel slag to be supplied from New Caledonia using hydro power. The LMG project is at the forefront of environmental benefit – by recycling plant waste, avoiding landfill, and producing 80% lower CO_2 emissions than the industry average.

Demonstration Plant and Australian Commercial Plant: Based upon initial estimates from Yallourn of both the fly ash in landfill and the fly ash to be produced before closure, there is ~9m tonnes of fly ash at a 10% magnesium content. This resource would allow LMG to produce up to 500,000 tonnes of magnesium and operate a plant with a capacity of 10,000tpa magnesium for 50 years. LMG is working with GHD to establish a JORC Resource for the landfill fly ash. LMG is renegotiating its long-term supply ash agreement with Yallourn to take into consideration additional planning matters. For its 100,000tpa plant LMG has secured a supply agreement for 600,000tpa for 20 years (total of 12m tonnes) of ferro nickel slag (33% MgO, 9% Fe_2O_3 and 55% SiO_2) to be supplied from New Caledonia on an FOB basis by Societe Le Nickel. There is in excess of 28m tonnes of ferro nickel slag on the island and in excess of 20 smelters in the South-East Asian region that produce similar slag.

Project Status
1,000tpa Demonstration Plant: Stage 1 – Operational, Stage 2 – Construction

10,000tpa Australian Commercial Plant: No formal study completed to date. Feasibility Study being planned.

100,0000tpa International Mega Plant: Pre-Feasibility Study completed in 2023

Offtake Available
Yes (for the 100,000tpa plant)

Min Mine Life (Years)
20

IRR
N/A

Capital Cost
Stage 2 – EBITDA ~A$250m
Stage 3 – EBITDA ~A$1.3b

NPV
Stage 2 – EBITDA ~A$63m
Stage 3 – EBITDA ~$A495m

Product & Annual Production Rate

Demonstration Plant:
- Magnesium metal (99.9% purity): 1,000tpa

Australian Commercial Plant:
- Magnesium metal (99.9% purity): 10,000tpa

International Mega Plant:
- Magnesium metal (99.9% purity): 100,000tpa

Karratha Magnesium Recovery Project

Magnesium

EcoMag Ltd
Unlisted Public Company

Commodity(ies):
Magnesium (Magnesium Oxide)

Investment summary

EcoMag's Magnesium Recovery Project located in Karratha, WA, extracts magnesium from Dampier Salt Limited's (DSL) waste bitterns stream containing 4% magnesium currently discharged to the ocean. Using EcoMag's zero-discharge process, all components in the waste stream are recovered and converted into valuable products, including high-purity Magnesium Oxide (MgO), Magnesium Dihydroxide, Sodium Chloride, Potassium Chloride, Caustic Soda, and Hydrochloric Acid. The project will operate as a world-first closed loop system, regenerating and recycling reagents, eliminating imported chemicals, and achieving total zero gas and liquid discharge. Excess chemicals are supplied to local lithium projects. An EPA Part 5 approval is required for the Project. Native Title has been extinguished, however EcoMag remains committed to working with the Ngarluma Nation, collaborating on joint business opportunities and local employment initiatives.

Project description

A Feasibility Study completed in November 2024 demonstrated attractive economics for the Project based on 20,000tpa MgO production via a simple precipitation, filtering and calcination process. A long-term access agreement is in place to access the DSL waste stream and the land is secured under a long-term lease. FEED is underway, long-lead equipment has been ordered, and site preparation is targeted to commence in early 2026. The project benefits from proximity to gas, power, and transport, and produces water onsite through desalination integrated into the recovery process. The project has received over A$8m in Federal and State grants to date. EcoMag is investment-ready and in negotiations with the Federal Government for 55% debt funding through NAIF or NRF.

Mineral Inventory

EcoMag recovers waste magnesium that is currently discharged into the ocean by Dampier Salt Limited (DSL). Under a long-term agreement with DSL, we have access to their waste stream, which exceeds 5,000,000 cubic meters per year, containing 4% magnesium (metal equivalent). This represents an inexhaustible supply, as long as DSL continues operations – a scenario that is highly likely given the increasing demand for high-purity salt and the growing difficulty in obtaining approvals for new solar salt fields.

Project Status
Feasibility Study on 20,000tpa MgO Production (Nov 2024)

Offtake Available
Targeting 80% long-term offtake. Currently have Expressions of Interest for 50%.

Min Mine Life (Years)
20 to 40, depending on DSL operations.

Post tax IRR
22%

Capital Cost
A$90m

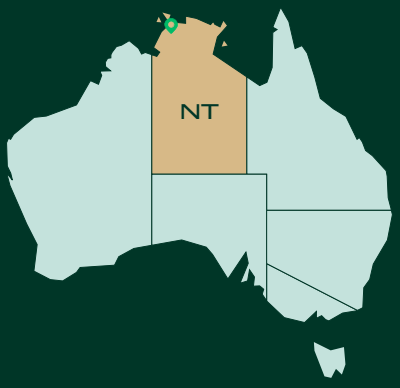
Post Tax NPV$_{10\%}$
A$80m

Product & Annual Production Rate

- Magnesium oxide (99% purity): 20,000tpa
- Magnesium dihydroxide: 12,000tpa
- Potassium Chloride: 5,500tpa
- Pure Salt (99.5%): 55,000tpa
- Caustic Soda: 34,000tpa
- Hydrochloric Acid: 97,000tpa

Magnesium

Korab Resources Ltd
ASX-listed (KOR)



Commodity(ies):
Magnesium Metal, Magnesium Oxide, Magnesium Carbonate

Winchester

Investment summary

In March 2022, Korab announced results of its Winchester Project Scoping Study on production of 50ktpa magnesium metal from magnesium carbonate ore mined which showed a pre-tax $NPV_{12\%}$ of ~A$1b. Environmental approvals are yet to be secured for the Project which is located within freehold land, extinguishing Native Title. Korab will protect any heritage sites. A ground gravity survey completed in 2024 and LiDAR, electromagnetic and magnetic surveys planned in 2025 primarily aim to extend the mineral resource and identify additional targets. Once completed, resource infill, extension and exploration drilling will be planned. Updates to the Scoping and Feasibility Study work programs including mine planning and site infrastructure and preparing a mining management plan are ongoing along with offtake and financing discussions. Korab welcomes discussions on additional offtake, partnerships or financing.

Project description

A March 2018 Feasibility Study confirmed the viability of the initial stage of the Winchester Project development as a quarry producing magnesium carbonate DSO rock via crushing, screening, and sorting on-site, prior to transport to the Darwin Port for export. A September 2018 Feasibility Study confirmed the viability of Stage 2 of development, with part of the production to be sold as magnesium carbonate DSO, and part to be processed off-site into magnesium oxide in the form of caustic calcined magnesia (CCM), and dead burned magnesia (DBM). Off-site processing is expected to be undertaken via toll-treatment in third party owned kilns, which would not require additional capital investment. A Scoping Study completed in 2022 further highlighted the potential to build a plant to produce 50ktpa of high purity magnesium metal.

Mineral Resources as at Jul-07 (40% MgO cut-off):

Resource Category	Tonnes (Mt)	MgO (%)
Indicated	12.2	43.10
Inferred	4.4	43.60
Total	**16.6**	**43.23**
Contained (kt)		**7,177**

No Ore Reserves Available

Project Status
Stage 1: Feasibility Study – Production of Magnesium carbonate DSO (Mar 2018)
Stage 2: Feasibility Study – Production of Magnesium oxide (Sept 2018)
Stage 3: Scoping Study – Production of Magnesium metal (Mar 2022)

Offtake Available
90%

Min Mine Life (Years)
14 (can be extended)

IRR
Stage 1: 160% post-tax;
Stage 2: N/A Stage 3: ~55% pre-tax

Capital Cost
Stage 1: A$2.4m – A$2.5m
Stage 2: N/A (third party processing)
Stage 3: A$410m

$NPV_{12\%}$
Stage 1: A$184m post-tax 12%
Stage 2: N/A
Stage 3: A$1b pre-tax 12%

Product & Annual Production Rate

Stage 1:
- Magnesium carbonate DSO: 0.6-1.0Mtpa

Stage 2:
- DBM: 75-150ktpa, CCM: 150-300ktpa, Magnesium carbonate DSO: 0.3-0.6Mtpa.

Stage 3:
- Magnesium metal: 50ktpa, DBM: 75-100ktpa, CCM: 50-75ktpa, Magnesium carbonate DSO: 0.15-0.30Mtpa.

Baker and Foster Nickel Project

Nickel

Lunnon Metals Ltd
ASX Listed

Commodity(ies):
Nickel, Copper, Cobalt, and Palladium/Platinum

Investment summary

The Baker and Foster nickel sulphide deposits are the most advanced assets within Lunnon's broader Kambalda Gold & Nickel Project (KGNP) which has a global MRE of 4.2Mt @ 2.7% Ni (113Kt contained Nickel). The high-grade of these assets makes the Project (assuming processing ore at BHP's Kambalda Concentrator) robust at current nickel prices. All nickel deposits are located on granted mining leases and the Baker Mining Proposal is now approved by the WA government. A Land Access Agreement is in place with the Ngadju People. BHP's Kambalda Concentrator was placed on care/maintenance in 2024, so no current processing facility is available for the project. Lunnon is open to a strategic collaboration or partnership to monetise its nickel interests.

Project description

The KGNP is located in Kambalda, Australia's best endowed nickel sulphide belt, serviced by excellent transport links. Following completion of a PFS on the Baker deposit only in May 2023, a Scoping Study was completed in July 2025 on underground mining and third-party processing of the Baker and Foster deposits. The July 2025 Scoping Study is based on underground mining of ~210,000tpa high-grade ore from each of the two deposits and third-party processing at BHP's Kambalda Concentrator, to produce up to~45-50,000ktpa nickel concentrate at 11.9% to 15.1% Ni (~7,000tpa payable contained nickel). Metallurgical test work demonstrates a clean, high-grade sulphide concentrate, with excellent by-product credits and characteristics for downstream smelters (high Fe:MgO ratio), minimal deleterious elements and low carbon intensities. Underground mining in an area already rich in surface infrastructure after 60 years of historical production results in limited environmental disturbance.

Mineral Resources as at Jun-25 (>1.0% Ni cut-off):

Resource Category	Tonnes (Mt)	Ni (%)	Cu (%)	Co (%)	As (ppm)
BAKER					
Measured	0.110	3.4	0.28	0.07	9
Indicated	0.622	3.7	0.31	0.07	81
Inferred	**0.298**	**2.4**	**0.15**	**0.05**	**8**
Total	**1.030**	**3.3**	**0.26**	**0.06**	**53**
Contained (Kt)		**33.7**	**2.6**	**0.66**	
FOSTER 85H					
Indicated	0.395	3.2			
Inferred	0.294	1.2			
Total	**0.689**	**2.4**			
Contained (Kt)		**16.4**			
FOSTER SOUTH					
Indicated	0.264	4.7	0.41	0.1	17
Inferred	0.111	4.7	0.50	0.1	22
Total	**0.375**	**4.7**	**0.44**	**0.1**	**18**
Contained (Kt)		**17.6**	**1.65**	**0.375**	

Project Status
Scoping Study – Baker & Foster, assumes 3rd party concentrator (July 2025)

Offtake Available
100%, subject to BHP Nickel West's right of first refusal. In light of closure of Nickel West, considered likely that BHP will not pre-empt and will elect to receive 1% NSR.

Min Mine Life (Years)
3-4 years (mining both deposits simultaneously) If Baker is mined first, then Foster, LoM is up to 7 years.

Pre-tax IRR
Baker 78.8% to 150.6%
Foster 9.7% to 30.7%

Capital Cost
Baker: A$27m
Foster: A$57m

Pre-tax $NPV_{8\%}$
Baker: A$53m to A$108m
Foster: A$4m to A$60m

Product & Annual Production Rate

- Nickel concentrate (Baker 14.6% Ni, Foster 85H 11.9% Ni, Foster South 15.1% Ni):
  - Baker 33.5ktpa (~4,900tpa contained Ni)
    Foster 40.2ktpa (~5,400tpa contained Ni)

(NPV & IRR ranges based on A$23,000/t to A$27,600/t nickel prices.)

Browns Range Heavy Rare Earths (HRE)

Rare Earth Elements

Northern Minerals Ltd
ASX-listed (NTU)

Commodity(ies):
Rare Earth Elements
(Dysprosium and Terbium)

Investment summary

Northern Minerals is focused on becoming a principal supplier of ethically produced dysprosium and terbium. All primary approvals required to progress through to FID are in place along with a co-existence agreement with the Jaru Traditional Owners. Northern Minerals has entered into a supply agreement with Iluka Resources covering 100% of planned production over the initial 8+ year mine life. Iluka is also providing a conditional funding package through a series of proposed investments in Northern Minerals. The Company is progressing towards FID and welcomes discussions regarding further financing for project construction.

Project description

The Browns Range HRE Project is set to be the first significant producer of dysprosium and terbium-containing REE concentrate outside of China and is understood to be the highest-grade dysprosium and terbium resource in Australia. The Project is located ~160km southeast of Halls Creek in the east Kimberley region of WA. An updated Feasibility Study is underway targeting completion in Q2 2025 based on mining the Wolverine deposit, delivering ore to a beneficiation plant at Browns Range to produce a concentrate containing ~25% TREO for supply to Iluka. The processing flowsheet is well-understood and validated by comprehensive bench and pilot scale test work. Exceptionally high-grade assays returned from drilling completed in 2024 increased the Wolverine Indicated Mineral Resource targeting a Probable Ore Reserve. Significant exploration scope exists to develop adjacent deposits also abundant in HREs.

Wolverine Deposit Mineral Resources as at Jan-25 (0.15% TREO cut-off grade):

Resource Category	Tonnes (Mt)	TREO (%)	Dy_2O_3 (kg/t)	Y_2O_3 (kg/t)	Tb_4O_7 (kg/t)	HREO (%)
Measured	0.1	0.91	0.84	5.4	0.12	92
Indicated	4.9	1.13	1.00	6.72	0.14	91
Inferred	2.4	0.63	0.54	3.6	0.08	87
Total	**7.3**	**0.96**	**0.85**	**5.68**	**0.12**	**89**
Contained (kt)		**70**	**6**	**41**	**1**	**62**

Wolverine is the largest of the Browns Range deposits which have a Total Mineral Resource of 11.7Mt @ 0.77% TREO.

Project Status
Feasibility Study (March 2015). Based on production of RE carbonate.

Offtake Available
Supply agreement in place with Iluka covering the initial 8+ year mine life up to 5,500 tpa TREO in xenotime concentrate and 30,500 t TREO in total.

Min Mine Life (Years)
8

IRR
N/A until completion of updated FS.

Capital Cost
A$617M (as at Q1 2024)

NPV
N/A until completion of updated FS.

Product & Annual Production Rate

- REE concentrate (c.25% TREO): 18,800tpa (containing 4,700tpa TREO and 400tpa Dy_2O_3)

(Approximate average life of mine production)

Donald Rare Earth & Mineral Sands Project

Rare Earth Elements

Astron Corporation Ltd
ASX-listed (ATR)

Commodity(ies):
Rare Earth Elements, Zirconium, Titanium

Investment summary

The Donald Rare Earth and Mineral Sands Project (Donald) is a Tier 1 critical minerals project, comprising the world's largest zircon resource and the fourth largest rare-earth resource outside of China. Donald is significantly advanced with a Phase 1 Definitive Feasibility Study completed in 2023 demonstrating attractive economics. The Project has a positively assessed EES, mining license and a federal EPBC license. Rare earth minerals from Donald are planned to be processed into oxides at JV partner Energy Fuels Inc's White Mesa Mill in Utah. Energy Fuels will fund A$180m of project development costs to earn a 49% interest in the project. Heavy mineral concentrate (HMC) offtake negotiations are ongoing.

Project description

Mining operations will consist of conventional open-pit dry-mining methods. Phase 1 will produce 229ktpa of HMC containing zircon and titanium feedstock, and 7ktpa of rare earth element concentrate (REEC) bearing rare earth minerals of monazite and xenotime. Phase 2 will double mining throughput and add on-site processing of HMC to final zircon and titania products. Extensive metallurgical test work has produced a flowsheet with high recoveries, proven at a pilot-plant scale. The Company is targeting a Final Investment Decision (FID) for Phase 1 during 2025 which includes updated project economics. Key work streams to be completed prior to FID include engineering and design, mining contract tender preparation, equipment supply negotiations, geotechnical assessment, updated mine plan and optimisation studies. Donald has an attractive mineral assemblage, a large proportion of the zircon resource is premium grade, and a significant heavy rare earth component crucial for permanent magnets.

Mineral Resources as at Dec-22:
(where VHM data is available reported above a 1% total HM cut-off grade)

Resource Category	Tonnes (Mt)	Total HM (%)	Zircon (%)	Rutile/ Anatase (%)	Ilmenite (%)	Leuco-xene (%)	Mona-zite (%)
Measured	579	4.6	18	8	25	22	1.9
Indicated	1,232	4.5	17	8	31	18	2.0
Inferred	822	4.7	18	9	33	17	2.0
Total	**2,634**	**4.6**	**18**	**8**	**31**	**18**	**2.0**
Contained (kt)		**121,164**	**21,810**	**9,693**	**37,561**	**21,810**	**2,423**

Ore Reserves as at Jun-23:

Reserve Category	Tonnes (Mt)	Total HM (%)	Zircon (%)	Rutile/ Anatase (%)	Ilmenite (%)	Leuco-xene (%)	Mona-zite (%)
Proved	415	4.8	18.6	7.2	25.7	22.6	1.8
Probable	410	4.1	16.9	7.3	31.5	19.4	1.6
Total	**825**	**4.5**	**17.8**	**7.2**	**28.4**	**21.2**	**1.7**
Contained (kt)		**37,125**	**6,608**	**2,673**	**10,544**	**7,871**	**631**

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

Project Status
Feasibility Study.
Phase 1: Feasibility Study (Apr 2023)
Phase 2: Pre Feasibility Study (June 2023)

Offtake Available
REEC: No – 100% REEC offtake agreed withEnergy Fuels in June 2024. HMC: Yes – Discussions underway. Production expected to commence in 2027.

Min Mine Life (Years)
Phase 1 – 41 years
Phase 2 – 58 years

Post-tax IRR
30.3%* (June 2023)
**Note: Phases 1 and 2*

Capital Cost
Phase 1: A$480m (Dec 2024);
Phase 2: A$566m (June 2023)

Post-tax NPV$_{8\%}$
A$2.2b (June 2023)

Product & Annual Production Rate

Phase 1:
- Heavy mineral concentrate (HMC) (95% THM, 37% TiO_2, 20% ZrO_2): 228.7ktpa
- Rare earth element concentrate (REEC) (>60% TREO, NdPr 20%, TyDb 2%): 7.2ktpa

Phase 2:
- REEC: 13.0ktpa
- Premium zircon (>66% $Zr(Hf)O_2$): 84.6ktpa
- Standard zircon (<66%): 8.9ktpa
- Titania (>66% TiO_2): 260.2ktpa

Dubbo Project

Rare Earth Elements

Australian Strategic Materials Ltd
ASX-listed (ASM)

Commodity(ies):
Rare Earth Elements (Neodymium, Praseodymium, Dysprosium, Terbium), Zirconium, Niobium and Hafnium

Investment summary

ASM is a vertically integrated producer of critical metals. The cornerstone of ASM's 'mine to metals' strategy is the Dubbo Project, a globally significant resource of light and heavy rare earths, zirconium, niobium and hafnium. The project has all major approvals and permits in place and is targeting a project financing strategy based on a mix of equity and debt, supported by export credit agencies (ECAs) and bankable offtakes. ASM has received conditional letters of support from Australian, US and Canadian ECAs, offering combined debt funding packages of >A$1.5b. ASM is continuing discussions with potential strategic investors, offtake partners and financial institutions. Following completion of an Optimisation Feasibility Study in 2021 on an advanced flowsheet, in an effort to identify a lower capital and shorter implementation pathway to rare earth production at Dubbo, ASM undertook a Rare Earth Options Assessment and completed a Heap Leach Scoping Study in July 2025 – providing a potentially transformative, phased approach to developing the project.

Project description

The Dubbo Project is located 25km from Dubbo, NSW, close to established infrastructure and within the Orana Renewable Energy Zone. The project will extract, separate, and refine a range of critical mineral oxides, including neodymium, praseodymium, terbium and dysprosium for sale to global customers or for processing into metals at ASM's offshore metallisation plants. The Heap Leach Scoping Study, released in July 2025, focuses on rare earth oxide production using a heap leach purification, separation and refining flowsheet. This option delivers major capital and operating cost reductions, de-risks project execution and accelerates the Dubbo Project's pathway to production.

Mineral Resources as at Sep-17:

Resource Category	Tonnes (Mt)	ZrO_2 (%)	HfO_2 (%)	Nb_2O5 (%)	Ta_2O_5 (%)	TREO (%)
Measured	42.81	1.89	0.04	0.45	0.03	0.88
Inferred	32.37	1.90	0.04	0.44	0.03	0.88
Total	**75.18**	**1.89**	**0.04**	**0.44**	**0.03**	**0.88**
Contained (kt)		**1,421**	**30**	**331**	**23**	**662**

Ore Reserves as at Sep-17:

Reserve Category	Tonnes (Mt)	ZrO_2 (%)	HfO_2 (%)	Nb_2O5 (%)	Ta_2O_5 (%)	TREO (%)
Proved	18.9	1.85	0.04	0.44	0.03	0.87
Total	**18.9**	**1.85**	**0.04**	**0.44**	**0.03**	**0.87**
Contained (kt)		**350**	**8**	**83**	**5**	**165**

Project Status
Optimisation Feasibility Study, Dec 2021 (OFS Case)
Heap Leach Scoping Study, July 2026 (HL Case)
Heap Leach Pre-Feasibility Study underway targeting completion in Q1 2026.

Offtake Available
Yes

Min Mine Life (Years)
OFS Case: >20
HL Case: >20

Pre-tax IRR
OFS Case: Pre-tax IRR: 23.5%
HL Case: Pre-tax IRR: 22.9%

Capital Cost
OFS Case: A$1,678m including contingency
HL Case: A$740m including contingency

$NPV_{8\%}$
OFS Case:
Pre-tax $NPV_{8\%}$: A$2,361m
Post-tax $NPV_{8\%}$: A$1,581m
HL Case:
Pre-tax $NPV_{8\%}$: A$1,468m
Post-tax $NPV_{8\%}$: A$921m

Product & Annual Production Rate
OFS Case:
- Rare earth oxides: 1,506tp (including NdPr oxide – 1,342tpa, Tb oxide – 22tpa, Dy oxide – 142tpa)
- Zirconia: 16,000tpa
- Ferroniobium: 2,650tpa
- Hafnium oxide: 30tpa

HL Case:
- Rare Earth Oxides: 1,242tpa (including): NdPr Oxide – 1,157tpa Tb Oxide – 13tpa Dy Oxide – 72tpa

Rare Earth Elements

Gippsland Critical Minerals Pty Ltd
Unlisted Private Company

Commodity(ies):
Rare Earth Elements, Zirconium, Titanium

Fingerboards

Investment summary

The Fingerboards mineral sands project stands out for its high heavy rare earths content and will produce a heavy minerals concentrate (HMC) containing;

- 200tpa of heavy rare earths, dysprosium and terbium (DyTb) used in high temperature magnets, representing 7.1% of global supply.
- 1,800tpa of light rare earths, neodymium and praseodymium (NdPr) used in ultra-strong magnets, representing 1.4% of global supply
- 75ktpa of zircon, representing 7.2% of global supply.

GCM is currently rescoping the project to align with community and regulatory expectations, and is targeting EES referral in December 2025. With modifications to the mining area, and methods, water usage, sustainable sourcing and tailings management, GCM is on track to fulfill its potential as a leading supplier of REE, Zircon and Titanium and delivering supply chain security of these critical minerals. There is no Native Title over the project, however GCM is working closely with traditional owners.

Project description

The Fingerboards Project located in East Gippsland has a very large resource with exceptionally high REE (in particular heavy rare earths DyTb) and zircon grade. The rescoped project DFS underway is based on 7.2 Mtpa shallow open pit mining via dozer operation with 2 on-site mining units. There will be no surface tailings, and mine rehabilitation will be progressive with extraction. Ore will be slurry pumped to an on-site wet concentration plant using ground water to produce ~280ktpa HMC via traditional gravity separation. Ore will be railed to Geelong or Melbourne ports via an existing line. HMC will be shipped onshore for downstream processing. Completion of the rescoped project DFS is targeted for mid-2026.

Mineral Resources as at Aug-22 (economic cut-off of A$5/t mine gate value):

Resource Category	Tonnes (Mt)	Zircon (%)	TiO_2 (%)	TREO + Y_2O_3 (%)
Measured	98.6	0.95	1.52	0.084
Indicated	387.2	0.66	1.15	0.061
Inferred	690	0.4	0.8	0.04
Total	**1,170**	**0.5**	**1.0**	**0.05**
Contained (kt)		**6,269**	**11,572**	**580**

Ore Reserves as at Aug-18:

Reserve Category	Tonnes (Mt)	Zircon (%)	TiO_2 (%)	TREO + Y_2O_3 (%)
Proved	73	1.2	1.8	0.11
Probable	100	1.2	1.9	0.11
Total	**173**	**1.2**	**1.9**	**0.11**
Contained (kt)		**2,110**	**3,230**	**191**

Project Status
Feasibility Study – completed in 2021 and updated several times, most recently in Feb 2025 (Feb 2025).

Offtake Available
100%

Min Mine Life (Years)
22

Post-tax IRR
49%

Capital Cost
A$295m

Post-tax $NPV_{8\%}$
A$1,132m

Product & Annual Production Rate

- HMC (2.6% TREO in monazite and xenotime, 18.0% ZrO_2+HfO_2, 25.2% TiO_2 in ilmenite; 7.5% TiO_2 in rutile): 280ktpa

Rare Earth Elements

VHM Ltd
ASX-listed (VHM)

Commodity(ies):
Rare Earth Elements (neodymium, praseodymium, terbium, and dysprosium), Zirconium and Titanium

Goschen

Investment summary

VHM Limited is advancing the Goschen Rare Earths and Mineral Sands Project, located in northwest Victoria's emerging critical minerals province. The project hosts a globally significant deposit of rare earth elements – neodymium, praseodymium, terbium, and dysprosium – essential for clean energy and advanced technologies. It also contains substantial zircon and titania resources. The Goschen Project has achieved key regulatory milestones, including endorsement of its Environment Effects Statement (December 2024), granting of a Mining Licence (April 2025), and federal environmental approval under the EPBC Act (September 2025). No Native Title or Aboriginal Cultural Heritage values have been identified. VHM continues to progress secondary approvals, strategic partnerships, and financing arrangements (including FID).

Project description

In February 2025, VHM updated the project scope to reflect a staged development approach. Initial production will commence at 1.5 million tonnes per annum (Mtpa), scaling up to 5 Mtpa. The 22-year mine life will use dry strip, open-pit mining methods with progressive rehabilitation. Ore will be processed on-site via a Wet Concentrator Plant using a series of spirals to produce a heavy mineral concentrate (HMC). This will be further refined through a flotation circuit to yield two key products: a rare earth mineral concentrate (REMC) and a zircon-titania HMC. VHM has secured a mining services partnership and selected contractors for processing and infrastructure delivery, positioning Goschen as a cornerstone project in Australia's critical minerals supply chain.

Goschen Mineral Resource as Apr-24 (Cut-off grade of 1.0% Total Heavy Mineral):

Resource Category	Tonnes (Mt)	THM (%)	Zircon (%)	Rutile (%)	Leuco-xene (%)	Ilme-nite (%)	Mona-zite (%)	Xeno-time (%)
Measured	30.7	5.7	29.9	10.8	9.0	24.7	4.3	0.8
Indicated	359.8	3.2	20.4	10.2	8.6	24.5	3.4	0.7
Inferred	293.5	2.3	17.2	8.7	7.5	22.7	2.9	0.5
Total	**684**	**2.9**	**20.1**	**9.8**	**8.3**	**23.9**	**3.3**	**0.6**
Contained (Kt)		**20,100**	**4,060**	**2,000**	**1,660**	**4,800**	**660**	**130**

Goschen Ore Reserve as at Sep-23 (Cut-off grade of 1.0% Total Heavy Mineral):

Reserve Category	Tonnes (Mt)	THM (%)	Zircon (%)	Rutile (%)	Leuco-xene (%)	Ilme-nite (%)	Mona-zite (%)	Xeno-time (%)
Proved	24.5	5.4	29.9	10.8	9.0	24.7	4.3	0.8
Probable	185.7	3.6	20.9	9.8	8.4	25.7	3.4	0.6
Total	**210.2**	**3.8**	**22.4**	**10.0**	**8.5**	**25.5**	**3.6**	**0.7**
Contained (kt)		**8,040**	**1,800**	**800**	**680**	**2,050**	**290**	**53**

Note: Valuable Heavy Mineral grades are reported as a percentage of THM in MRE and Ore Reserves.

Project Status
Feasibility Study completed March 2023 with Staged Development Update completed in Feb 2025

Offtake Available
Yes

Min Mine Life (Years)
21

Pre-tax IRR
65% (Stages 1 and 2 combined)

Capital Cost
Stage 1 (Years 1-3): A$160m
Stage 2 (Years 4-22): A$85-$90m

Pre-tax NPV$_{8\%}$
A$1.64b (Stage 1 and 2 combined)

Product & Annual Production Rate

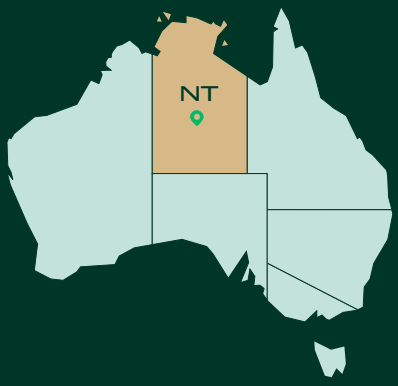
Stage 1 (Years 1-3):
- Rare earth mineral concentrate (REMC): 4.3ktpa
- Zircon/titania heavy mineral concentrate (HMC): 69ktpa

Stage 2 (Years 4-22):
- REMC: 9ktpa
- HMC: 134ktpa

Nolans Rare Earths Project

Rare Earth Elements

Arafura Rare Earths Ltd
ASX-listed (ARU)



Commodity(ies):
Rare Earth Elements (Neodymium and Praseodymium (NdPr) and SEG/HRE)

Investment summary

Nolans is a fully integrated mine-to-oxide rare earths project that will recover radionuclide-free rare earth elements (NdPr and SEG/HRE oxides) and phosphoric acid from a mine and on-site processing facility comprising beneficiation, extraction, and separation plants. Nolans is key to meeting global NdPr demand for high-performance magnets and future facing technologies. The 2019 DFS and subsequent studies (2022, 2024) confirm attractive project economics, with CRU forecasting operations in first quartile of the global cost curve. Environmental permitting, Mining Authorisation, and Native Title Agreements are in place. In July 2024, Arafura announced completion of its debt funding strategy after securing conditional approvals >US$1b from Australian and international export credit agencies and commercial lenders. Project funding activities are now focused on strategic equity investment with a A$200m convertible note from the Australian Government secured in January 2024. EFA and the German Raw Materials Fund are completing due diligence. The Company has binding offtake agreements with Siemens, Hyundai, Kia, and Traxys. Further equity and offtake negotiations are advanced. On the 21st October 2025, the Australian government announced a USD$100m equity investment in the project.

Project description

Nolans is one of the most advanced rare earths ore-to-oxide projects globally. Located 135km north of Alice Springs, the Nolans Project is an Australian construction-ready single-site ore-to-oxide project which will operate in accordance with leading ESG practices. Current project activities focus on critical path work programs, compliance, and optimisation activities to mitigate capital and construction risks, in preparation for FID and construction commencement. As a long life, scalable project, Nolans will make a meaningful multigenerational contribution to the region's economy and communities through job creation, training initiatives, new industry development, capability building, and business opportunities.

Mineral Resources as at Jun-17 (1% TREO cut-off):

Resource Category	Tonnes (Mt)	TREO (%)	P_2O_5 (%)	NdPr Enrichment (%)
Measured	4.9	3.2	13	26.1
Indicated	30	2.7	12	26.4
Inferred	21	2.3	10	26.5
Total	**56**	**2.6**	**11**	**26.4**
Contained (kt)		**1,456**	**6,160**	**384**

Ore Reserves as at Mar-20:

Reserve Category	Tonnes (Mt)	TREO (%)	P_2O_5 (%)	NdPr Enrichment (%)
Proved	5.0	3.0	13	26.2
Probable	24.6	2.8	13	26.5
Total	**29.5**	**2.9**	**13**	**26.4**
Contained (kt)		**856**	**3,835**	**226**

Project Status
Pre Construction.Feasibility Study completed Feb 2019 and results last updated in July 2024 (July 2024).

Offtake Available
44% of the 80% targeted offtake remains available.

Min Mine Life (Years)
38

Post-tax IRR
17.2%(base case)

Capital Cost
US$1,226m

Post-tax $NPV_{8\%}$
US$1.7b (Base case)

Product & Annual Production Rate
- NdPr oxide: 4,400tpa
- SEG/HRE oxide: 573tpa (containing 28tpa Dy and 8tpa Tb)
- Phosphoric acid (fertilizer-grade, 54% P_2O_5): 144,393tpa

Yangibana Rare Earths & Niobium Project

Rare Earth Elements

Hastings Technology Metals Ltd
ASX-listed (HAS)
(Feb 2025, agreement to form unincorporated JV 60% owned by Wyloo and 40% owned by HAS and managed by Wyloo).

Commodity(ies):
Rare Earth Elements (Neodymium and Praseodymium (NdPr)), Niobium

Investment summary

Located 250km NE of Carnarvon in WA's Gascoyne region, the Yangibana Project is underpinned by one of the world's most highly valued deposits of neodymium and praseodymium (NdPr), with an average life of mine NdPr to total rare earth oxides (TREO) ratio of 37%. With an initial mine life of 17 years, Yangibana will become a globally significant source of NdPr, a critical component in permanent magnets used in advanced technology products, including EVs and wind turbines. Stage 1 of the Project is fully permitted and Hastings has a development agreement in place with the TMWTJ people. Hastings is committed to developing and operating in a sustainable manner, with its strong ESG credentials subject to independent third-party ratings.

Project description

Hastings is focused on the development of Stage 1 of the Yangibana Project, including the construction of the mine and beneficiation plant to produce up to 37,000tpa of rare earth concentrate. Project execution workstreams have been significantly de-risked with A$158m invested to date, overall construction 33% complete and procurement of long lead critical path equipment. An Engineering, Procurement and Construction (EPC) contract is in place with GR Engineering Services (GRES) and detailed design and engineering for the beneficiation plant is 81% complete. Hastings continues to assess downstream processing opportunities including the development of a hydrometallurgical plant at various sites, including Onslow in Western Australia, Estonia and in KSA (MOU with MISA). In Sep-24, Hastings released a maiden niobium MRE of 6.7mt at 2,305ppm. This will provide a multi-commodity recovery process stream and by-product income.

REE Mineral Resources as at Oct-22 (0.24% TREO cut-off (6 deposits), 0.2% Nd_2O_3+Pr_6O_{11} cut off (4 deposits)):

Resource Category	Tonnes (Mt)	TREO (%)	$Nd_2O_3 + Pr_6O_{11}$ (%)
Measured	4.97	0.96	0.37
Indicated	19.51	0.88	0.32
Inferred	5.45	1.05	0.31
Total	**29.93**	**0.93**	**0.32**
Contained (kt)		**277**	**96**

Niobium Mineral Resources as at Sep-24 (0.24% TREO cut-off (2 deposits):

Resource Category	Tonnes (Mt)	Nb_2O_5 (ppm)
Measured	2.37	1,035
Indicated	4.36	2,995
Inferred	0.01	1,435
Total	**6.74**	**2,305**
Contained (kt)		**15.2**

Ore Reserves as at Feb-23:

Reserve Category	Tonnes (Mt)	TREO (%)	$Nd_2O_3 + Pr_6O_{11}$ (%)
Proved	4.89	0.95	0.37
Probable	16.03	0.88	0.32
Total	**20.93**	**0.90**	**0.33**
Contained (kt)		**188**	**69**

Project Status
Pre Construction. Stage 1 Feasibility. Study initially completed in 2017 with multiple updates. Economics last updated in February 2024 and capex updated in October 2024.

Offtake Available
Two-thirds of annual production under offtake with thyssenkrupp Materials Trading – negotiations with potential customers to pursue processing and offtake arrangements are underway in conjunction with thyssenkrupp in respect of this offtake.

Min Mine Life (Years)
17

Post-tax IRR
31.28%

Capital Cost
A$474m updated total capex. A$158m spent, A$289m remaining (excluding contingency)

Post-tax (ungeared) $NPV_{11\%}$
A$865m

Product & Annual Production Rate
- Rare earth concentrate: 27% TREO – 37,000tpa (containing around 3,400tpa NdPr oxide)

Scandium

Rio Tinto Ltd
ASX-listed (RIO)

Commodity(ies):
Scandium, Cobalt, Nickel

Burra Scandium Project

Investment summary

The Burra Scandium Project (BSP) seeks to produce a high-quality scandium oxide product and has the potential to produce a scandium master alloy. It has the potential to establish itself as a leading, globally significant scandium operation with a multi-generational mine life. The previous owners of the Project, Platina Resources Ltd, completed a successful DFS on the Project in December 2018. RIO is updating the Feasibility Study targeting completion in late-2026. To date, we have completed several specialist environmental studies, and we are working toward submitting our EIS. Formal approval applications to regulators have commenced and are ongoing. We continue to work with the Wiradjuri Traditional Owners ensuring that heritage is well managed and prospective economic opportunities are maximised locally. The BSP adds to Rio Tinto's existing scandium production operation located in Quebec, where scandium is extracted from titanium refining wastes.

Project description

The BSP is located in the Orana/Central West district of New South Wales approximately 350km west of Sydney. The proposed mine, near Tullamore, New South Wales, will be a shallow, open-cut operation with a minimum footprint and no blasting mining <100ktpa ore. Ore will be trucked ~100km to a processing plant to be constructed in an existing industrial location, close to workforce which minimises greenfield land disturbance, whilst maximising logistics, and energy and water infrastructure currently in place. Ore will be processed using proven high pressure acid leach and solvent extraction technology. Processed solids will be neutralized and returned to the mined pit which will be progressively rehabilitated – there is no tailings storage facility. The BSP will produce finished products for Australian and global markets – scandium oxide and potentially a master alloy for downstream value add activity.

Mineral Resources as at Aug-18 (300ppm Sc cut-off), Platina Resources Ltd:

Resource Category	Tonnes (Mt)	Sc (ppm)	Co (%)	Ni (%)	Pt (g/t)
Measured	7.8	435	0.07	0.13	0.42
Indicated	12.5	410	0.06	0.11	0.26
Inferred	15.3	380	0.05	0.08	0.22
Total	**35.6**	**405**	**0.06**	**0.10**	**0.28**
Contained (kt)		**22.0 kt Sc_2O_3**	**20.5 kt**	**35.7 kt**	**317 Koz**

Mineral Resources and anticipated production capacity were reported by the previous owners, Platina Resources Ltd, in their 13-Dec-18 Platina Scandium Project DFS announcement. Rio Tinto is yet to verify this Mineral Resource or the anticipated capacity estimates, and will provide updated estimates if required in due course. Scandium is typically sold as scandia or scandium oxide (Sc_2O_3) product and is calculated from scandium metal content and a 1.53 factor to convert to the oxide form.

Project Status
Feasibility Study completed by previous owners Platina Resources in Dec 2018. Updated Feasibility Study Underway targeting completion in late-2026.

Offtake Available
100%

Min Mine Life (Years)
30 (initial permit). Potential for an extensive mine life based on current endowment understanding.

IRR
Under Evaluation in Updated FS underway.

Capital Cost
Under Evaluation in Updated FS underway.

NPV
Under Evaluation in Updated FS underway.

Product & Annual Production Rate
- Scandium oxide (99.99% purity): ~40tpa

Nyngan Scandium

Scandium

Scandium International Mining Corp.
TSX-V listed (SCY)

Commodity(ies):
Scandium

Investment summary

Scandium International Mining welcomes discussion regarding financing and offtake for the Nyngan Scandium project. The Company is actively progressing offtake agreements focusing on solid-oxide fuel cells, 3D printing, and aluminium-scandium master alloy sales. Early on-site construction works commenced in October 2023 including surveying of the site, removal and stockpiling of topsoil from the construction site, and construction of a temporary site office. The Company has completed its EIS and has development approval and Aboriginal Heritage clearances. The next step is to update the Feasibility Study program.

Project description

The Nyngan Scandium Project is based on a shallow and surface-mineable lateritic clay deposit with an attractive scandium enrichment. Annual mining activity will be conducted in short campaigns lasting 4-6 weeks each. Mining and ore sizing will produce feedstock for a continuous high-pressure acid leach autoclave system (HPAL), followed by a solvent extraction (SX) concentration of scandium. Final scandium oxide product is made through an oxalate stage, calcine finish, and packaging. All processing, refining and packaging will be undertaken on-site, to produce a saleable scandium oxide product (Sc_2O_3 or scandia). Considerable bench scale and small pilot metallurgical test work has been conducted with third party laboratories to finalise the flowsheet and SX specifics. A pilot testwork program completed in 2020 assessed production of aluminium-scandium master alloy (aluminium alloys containing 2% scandium) from scandium oxide using SCY's proprietary process. A patent was awarded to SCY in 2021 for this process. Resource extension drilling undertaken in 2024 provided encouraging results, demonstrating the potential to increase the mineral resource with further infill drilling.

Mineral Resources as at May–16 (100ppm Sc cut-off):

Resource Category	Tonnes (Mt)	Sc (ppm)
Measured	5.7	256
Indicated	11.2	225
Total	**16.9**	**235**
Contained (kt)		**4.0**

Ore Reserves as at May–16:

Reserve Category	Tonnes (Mt)	Sc (ppm)
Proved	0.8	394
Probable	0.6	428
Total	**1.4**	**409**
Contained (kt)		**0.6**

Project Status
Feasibility Study (May 2016)

Offtake Available
Yes

Min Mine Life (Years)
20

Post-tax IRR
33%

Capital Cost
US$87m

Post-tax $NPV_{8\%}$
US$225m

Product & Annual Production Rate

- Scandium Oxide (Sc203): 38.3tpa

(Also potential to further refine scandium oxide to produce aluminium-scandium master alloys)

Silicon

VRX Silica Ltd
ASX-listed (VRX)

Commodity(ies):
Silica Sand

Arrowsmith North Silica Sand

Investment summary

VRX Silica (ASX: VRX) has five high-grade, low impurity silica sand projects in WA boasting multi-decade scale deposits with a combined +1.38 billion tonne Mineral Resource of 99.6% to 99.9% SiO_2 grade silica sand. The Arrowsmith North Project is the first project to be developed. Mining Leases have been granted with Native Title and Aboriginal Heritage agreements in place. Environment Ministerial Consent, Mining Proposal approval and Works approval were received September 2025. VRX is targeting having finance in place by late-2025, with construction commencing early-2026 and production commencing in late-2026. Silica sand is the raw material required to produce critical silicon components to meet global decarbonisation commitments with global supplies of silica sand dwindling rapidly, particularly in Asia. Arrowsmith North Silica Sand's range of uses includes; glassmaking, foundry products, solar panel backing plate glass, lithium battery thermal protection sponge "blades" and high tensile fiberglass yarn that covers wind turbine blades. Offtakes have been agreed for export with indicative pricing for South Korean and Japanese foundry markets and Taiwanese and Philippine glass markets subject to final approvals and commencing production.

Project description

Arrowsmith North is located 270km north of Perth adjacent to highway and rail connections to Geraldton Port. Exploration, metallurgical testwork, process circuit design and detailed engineering have been completed. Loose sand will be mined from the surface to 8-12m deep with loaders feeding a mobile feed trommel, on-site processing by screening, attritioning, flotation and classification to produce a range of silica products. Mining will include rehabilitation by a unique progressive Vegetation Direct Transfer to maximise restoration to native vegetation.

Mineral Resources as at Jun-24:

Resource Category	Tonnes (Mt)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	TiO_2 (%)	LOI (%)
Measured	10	95.9	1.90	0.70	0.30	0.70
Indicated	237	97.7	1.00	0.40	0.20	0.50
Inferred	266	98.4	0.69	0.29	0.23	0.36
Total	**513**	**98.0**	**0.86**	**0.35**	**0.22**	**0.43**

Ore Reserves as at Jun-24:

Reserve Category	Product	Tonnes (Mt)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	TiO_2 (%)	LOI (%)
Proved	AFS20	0.8	99.5	0.25	0.07	0.05	0.1
	AFS35	3.9	99.5	0.5	0.06	0.05	0.1
	AFS55	2.7	99.2	0.5	0.1	0.05	0.1
	Local	1.8					
Proved	**Total**	**9.2**					
Probable	AFS20	24.2	99.5	0.25	0.07	0.05	0.1
	AFS35	102.5	99.5	0.5	0.06	0.05	0.1
	AFS55	51.1	99.2	0.5	0.1	0.05	0.1
	Local	34.1					
Total Probable	**Total**	**212**					
Total		**221**					

Project Status
Feasibility Study (March 2024)

Offtake Available
Yes, subject to final approvals, from early 2026 (estimated)

Min Mine Life (Years)
25

Post-tax IRR
35% (ungeared)

Capital Cost
~A$67m (inc. 20% contingency)

Post-tax $NPV_{10\%}$
A$167m (ungeared)

Product & Annual Production Rate

- Silica sand (99.7% SiO_2 and 500ppm Fe_2O_3 – foundry and glassmaking sand): 2Mtpa

See tech data on Reserve products: vrxsilica.com.au/resources/tech sheets

Silicon

Perpetual Resources Ltd
ASX-listed (PEC)

Commodity(ies):
Silica Sand

Beharra

Investment summary

Beharra is the lowest known impurity silica sand project in WA's Mid-West. Metallurgical testing has improved product quality, advancing offtake discussions for processed and unprocessed sand. Environmental studies and approvals have been placed on hold and can be progressed again when project funding is in place. A Heritage Agreement is in place with the Yamatji Southern Regional Corporation (Yamatji), with whom Perpetual has a strong relationship. Native Title discussions are yet to commence with the Yamatji regarding the project. Perpetual is open to investment in the Company and/or Project, as well as debt funding options.

Project description

The Beharra project, 96km south of Geraldton, underwent a 2021 Pre Feasibility Study based on +1.5mtpa of >99.5% SiO_2 purity silica sand production targeting high-end Asian glass markets including solar PV cells, cover glass and other specialty glasses. The orebody will be mined using dozers and loaders, with simple gravity and magnetic separation processing. Product will be trucked to Geraldton port. Beharra has a small environmental footprint, with progressive mining and rehabilitation. Only 40% of the Exploration License is explored, offering significant upside. The Project was placed on hold in early 2024 due to low silica sand prices, with development to resume when prices improve.

Mineral Resources as at Dec-22 (no cut-off grade applied):

Resource Category	Tonnes (Mt)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	TiO_2 (%)	LOI (%)
Measured – In-situ	44.7	98.6	0.45	0.18	0.33	0.23
Indicated – In-situ	93.1	98.6	0.41	0.26	0.35	0.24
Total	**137.8**	**98.6**	**0.42**	**0.24**	**0.34**	**0.24**

Ore Reserves as at Mar-21 (no cut-off grade applied):

Reserve Category	Tonnes (Mt)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	TiO_2 (%)	LOI (%)
Probable – In-situ	64.1	98.6	0.42	0.20	0.35	0.24
Probable – Saleable Product	47.6	99.6	0.18	0.028	0.035	0.10

Note: The Saleable Products Ore Reserve shown above is the saleable product reserve recoverable from the in-situ ore reserve. The saleable product ore reserve is a subset of the in-situ reserve and they are not additive.

Project Status
Pre Feasibility Study (April 2021)

Offtake Available
Yes

Min Mine Life (Years)
32

Post-tax IRR
55%

Capital Cost
A$39m

Post-tax ungeared $NPV_{10\%}$
A$231m

Product & Annual Production Rate

- High-grade silica sand (>99.5% SiO_2 with low impurities <200ppm Fe_2O_3): >1.5Mtpa

Note: Impurity profile achieved in recent representative metallurgical test work is superior to that reported in the March 2021 Reserve calculation.

Silicon

Diatreme Resources Ltd
ASX-listed (DRX)

Commodity(ies):
Silica Sand

Cape Flattery Silica Sand

Investment summary

Following acquisition of the Cape Flattery Silica Project (CFSP) in 2024, Diatreme Resources is reviewing the CFSP with a view to capturing synergies between it and Diatreme's flagship Northern Silica Project (NSP) to facilitate shared infrastructure and lower capital expenditure. The CFSP has been designated a Coordinated Project which will help streamline project approvals. Environmental approvals and negotiations with Traditional Owners are ongoing. Diatreme welcomes queries from potential offtake partners interested in securing a low iron, high-purity silica sand product from this project or its flagship NSP.

Project description

The CFSP is located on the eastern coastline of Cape York Peninsula, 220km north of Cairns and 55km from Cooktown. The Project is adjacent to the world's largest silica sand mining operation at Cape Flattery owned by Mitsubishi Corporation and in close proximity to Diatreme's other projects. Completed in November 2023, an updated DFS confirmed CFSP's potential as a long-life, low-cost producer of high-purity silica sand suitable for use in manufacture of high-quality glass, in particular solar photovoltaic (PV) glass used in solar modules. The 2023 updated DFS was based on dry mining of sand and slurry pumping to an on-site processing plant to reduce iron levels via screening, spirals, attritioning, classification and magnetic separation to produce a low iron, high purity silica product. Export by ship was planned from Cape Flattery to glass manufacturing companies, most likely in Asia. Diatreme is reviewing the project to determine its optimal development pathway, which may include shared infrastructure and export solutions with the NSP.

Mineral Resources as at Jul-23:

Resource Category	Tonnes (Mt)	SiO_2 (%)	Fe_2O_3 (%)	Al_2O_3 (%)	LOI (%)
Measured	16.1	99.20	0.08	0.22	0.13
Indicated	33.2	99.05	0.10	0.25	0.15
Inferred	0.2	99.00	0.12	0.28	0.13
Total	**49.5**	**99.10**	**0.09**	**0.24**	**0.14**

Ore Reserves as at Jul-23:

Reserve Category	Tonnes (Mt)	SiO_2 (%)	Fe_2O_3 (%)	Al_2O_3 (%)	LOI (%)
Probable	47.0	99.11	0.09	0.15	0.24
Total	**47.0**	**99.11**	**0.09**	**0.15**	**0.24**

Note 1: Ore Reserves are on an In-Situ basis.

Note 2: Diatreme's CFSP, NSP, Galalar and Western Resource Area projects have an estimated combined global silica sand resource of 463.7 million tonnes @ 99.26% SiO_2 (refer to ASX announcement 14-Nov-24).

Project Status
Updated Feasibility Study (Nov 2023)

Offtake Available
Yes

Min Mine Life (Years)
15

Pre-tax IRR
32.19%

Capital Cost
A$237m

Pre-tax $NPV_{10\%}$
A$702.4m

Product & Annual Production Rate

- High-purity silica sand (99.9% SiO_2, 100ppm Fe_2O_3): ~3Mtpa

Muchea Silica Sand Project

Silicon

VRX Silica Ltd
ASX-listed (VRX)

Commodity(ies):
Silica Sand and Flour

Investment summary

VRX has five high-grade, low impurity silica sand projects in WA boasting multi-decade scale deposits with a combined Mineral Resource ofs +1.38Bt of 99.6% to 99.9% SiO_2 silica sand. The high-grade Muchea Silica Sand Project will be the second project to be developed following the Arrowsmith North project. One Mining Lease is granted with Native Title and Aboriginal Heritage and mining agreements in place. Environmental studies are complete with WA EPA referral targeted mid-2025. Muchea's high-grade silica sand is the quality required to manufacture ultra-clear solar panel glass. Burgeoning uptake of solar panels is expected to drive exponential growth in demand for high-quality silica sand. VRX also intends to develop high-purity quartz flour used in LCD/LED/strengthened glass, utilising Muchea's coarse silica sand as feedstock. A lab-scale pilot plant has produced the required particle size for high-purity quartz flour using a process of drying, milling, air classification and screening. Samples sent to major global producers of LCDs have received positive feedback.

Project description

Muchea is located 50km north of Perth, adjacent to highway and rail connections to Kwinana Port and adjacent energy infrastructure. It is one of a few world-class silica sand projects with an outstanding Resource of +200 million tonnes of high-grade silica sand with 99.9% SiO_2 and <100ppm Fe_2O_3. Exploration, metallurgy and process circuit design and engineering have been completed. Processing on-site will include screening, attritioning, flotation and classification to produce high-grade, low-iron sand for export and potential local ultra-clear glass production. VRX has lodged an application for Muchea to be recognised as a Project of State Significance.

Mineral Resources as at Jun-24:

Resource Category	Tonnes (Mt)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	TiO_2 (%)	LOI (%)
Indicated	29	99.6	0.09	0.03	0.07	0.22
Inferred	179	99.6	0.05	0.02	0.10	0.23
Total	**208**	**99.6**	**0.06**	**0.02**	**0.10**	**0.23**

Ore Reserves as at Jun-24:

Reserve Category	Product	Tonnes (Mt)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	TiO_2 (%)	LOI (%)
	F80	10.2	99.9	0.02	0.008	0.03	0.1
Probable	F80C	4.25					
	F150	4.25	99.8	0.07	0.015	0.035	0.1
Probable	**Total**	**18.7**					
Total		**18.7**					

See tech data on Reserve products vrxsilica.com.au/resources/tech sheets/

Project Status
Feasibility Study (Oct 2019)

Offtake Available
Yes. Up to 2 million tonnes per year, following Environmental Approval and Processing Plant Construction (estimated 2026).

Min Mine Life (Years)
25

Post-tax IRR
Ungeared: 96%

Capital Cost
A$50m

Post-tax (ungeared) $NPV_{10\%}$
A$338m

Product & Annual Production Rate
- High grade silica sand (99.9% SiO_2 and <100ppm Fe_2O_3): 2Mtpa

Avonbank Mineral Sands Project

Titanium

WIM Resource Pty Ltd
Unlisted Private Company

Commodity(ies):
Zircon, Titanium (Ilmenite), Rare Earth by-product minerals

Investment summary

Avonbank is a Tier 1 world-class zircon-rich heavy mineral sands project located near Horsham, Victoria with Ore Reserves underpinning a 36-year operation. WIM has completed successful phases of trial mining and trial demonstration-scale processing and rehabilitation. The Avonbank Project Definitive Feasibility Study completed in 2021 demonstrated attractive economics for the Project. A favourable EES assessment decision was provided in 2024, and Avonbank secondary approvals and engineering studies are on track to bring the project to a shovel-ready stage by late 2025. The Project will support nearly 1000 FTE jobs, generate A$15b in gross revenue and A$3.5b to the Gross State Product. WIM welcomes discussions regarding product offtake or financing of Avonbank.

Project description

When developed, Avonbank will be the single largest zircon mine in Victoria, and will be a Tier 1 zircon mine globally, based on its mine life, exceptional revenue to cost ratio, and return on investment. 10Mtpa of ore will be mined from a shallow, low strip ratio, open pit mine using dry mining with a rapid rehabilitation method, that will return land back to its pre-mining state within four years. A Trial Mine & Demonstration Scale Wet Concentration Plant has successfully confirmed that the ore is amenable to conventional mineral sands gravity separation to produce ~500ktpa heavy mineral concentrate containing zircon, titanium and REE. Detailed downstream demonstration and product quality assessment trials have also been successfully completed. WIM has built a strong social and environmental license, having successfully rehabilitated the Avonbank Trial Mine within two years of mining, back to a productive broad acre agricultural crop.

Mineral Resources as at Dec-17 (1% THM cut-off):

Resource Category	Tonnes (mt)	Total HM (%)	Zircon %	Rutile %	Leuco-xene %	Ilme-nite %	Mona-zite %	Xeno-time %
Measured	300	4.3	20	15	8.5	26	2.0	0.6
Indicated	150	3.6	19	17	9.3	28	1.9	0.6
Inferred	40	3.0	21	16	9.0	27	2.3	0.6
Total	**490**	**4.0**	**20**	**16**	**8.8**	**27**	**2.0**	**0.6**
Contained (kt)		**19,600**	**3,920**	**3,136**	**1,725**	**5,292**	**392**	**118**

Ore Reserves as at Jun-18 (1% THM cut-off):

Reserve Category	Tonnes (mt)	Total HM (%)	Zircon %	Rutile %	Leuco-xene %	Ilme-nite %	Mona-zite %	Xeno-time %
Proved	220.4	4.4	20.2	14.9	8.4	26.4	2.0	0.6
Probable	91.4	4.0	19.3	16.9	9.1	285	2.0	0.6
Total	**311.8**	**4.3**	**19.9**	**15.4**	**8.6**	**27.0**	**2.0**	**0.6**
Contained (kt)		**13,407**	**2,668**	**2,065**	**1,153**	**3,620**	**268**	**80**

Note: Valuable heavy mineral grades are reported as a percentage of THM

Project Status
Pre-Construction

Offtake Available
100% of product offtake is available to any suitable and qualified party globally.

Min Mine Life (Years)
36

IRR
Please contact WIM for further information.

Capital Cost
Please contact WIM for further information.

NPV
Please contact WIM for further information.

Product & Annual Production Rate

- Heavy mineral concentrate (30% zircon, 55% titanium and <2.5% rare earths by-products): 500,000 tpa

Copi

Titanium

RZ Resources Ltd
Unlisted Public Company,
100% Australian owned

Commodity(ies):
Titanium (Ilmenite, Rutile, Leucoxene), Zirconium (Zircon), Rare Earth Elements (Monazite and Xenotime)

Investment summary

RZ is developing the world-class Copi critical minerals project in southwest NSW, along with an upgrade of its downstream mineral separation and processing plant (MSP) in Brisbane. Non-magnetic concentrate will be upgraded at the MSP to produce high-value products for export. With a resource of over 3Bt, Copi is one of the world's largest critical mineral deposits and will produce globally significant volumes of critical minerals for over 46 years. RZ's strategic resource, combined with its integrated final-product processing capabilities provide a competitive advantage over industry peers. Attractive returns are demonstrated by the Copi DFS completed in January 2024, with enhancements expected by Q1 2026. Preliminary path modelling for the enhanced DFS demonstrates a 46-year life of mine, a pre-tax IRR and $NPV_{8\%}$ of 24% and A$1,805m respectively. Environmental approvals are expected by Q4 2025 (EIS lodged with no significant environmental issues) and no Native Title issues identified. RZ has a large proportion of production under MoU and is exploring offtake and strategic opportunities.

Project description

Located in a Tier-1 mining jurisdiction in the Murray Basin, south-west NSW, the Copi Project will use proven dredge mining of ~24Mtpa ore with on-site processing using gravity separation to produce a heavy mineral concentrate with certain separated minerals (ilmenite (primary), ilmenite (secondary) and rare earths) ready for direct export and other minerals being transported to RZ's MSP, which is being prepared for early recommissioning using third-party feedstock. The MSP (previously owned/operated by Sibelco and CRL) will be upgraded to produce high-grade titanium and zircon products for export. Continuous rehabilitation of dredged areas ensures long-term sustainability. The NSW government expects the Copi project to be fully funded and under construction by the end of 2028, with production targeted for late 2028.

Mineral Resources as at Jul-24 (0.3% HM cut-off):

Resource Category	Tonnes (%)	Total HM (%)	Ilme-nite (%)	Leuco-xene (%)	Rutile95 & HiTi92 (%)	Zircon (%)	Monazite (%)	Xenotime (%)
Indicated	2,600	1.4	47	8.0	15	15	1.01	0.13
Inferred	400	1.0	46	8.2	16	12	0.84	0.11
Total	**3,000**	**1.4**	**47**	**8.0**	**15**	**15**	**0.99**	**0.12**
Contained (kt)		**42,000**	**19,740**	**3,360**	**6,300**	**6,300**	**42,000**	**19,740**

Ore Reserves as at Jul-24:

Reserve Category	Tonnes (%)	Total HM (%)	Ilme-nite (%)	Leuco-xene (%)	Rutile95 & HiTi92 (%)	Zircon (%)	Monazite (%)	Xenotime (%)
Probable	428	1.7	47	9.9	14	17	1.3	0.14
Total	**428**	**1.7**	**47**	**9.9**	**14**	**17**	**1.3**	**0.14**
Contained (kt)	**7,276**	**3,420**	**720**	**1,018**	**1,237**	**7,276**	**3,420**	**19,740**

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

Project Status
Bankable Feasibility Study – Copi Mine and MSP Upgrade DFS (January 2024)

Offtake Available
MOUs in place for ~80% of production, subject to formal offtake agreements being finalised. The remainder of volume is subject to discussion with potential customers.

Min Mine Life (Years)
17.5 (up to 46, based on Total JORC Resource)

Pre-tax IRR
21%

Capital Cost
~A$977m

Pre-tax $NPV_{8\%}$
A$1,185m

Product & Annual Production Rate
During years 1 to 10:

- Zircon: 77,000tpa
- Zircon concentrate: 43,000tpa
- Rutile: 30,000tpa
- HiTi92 (leucoxene): 25,000tpa
- Ilmenite: 232,000tpa
- Monazite and xenotime: 6,000tpa

Cyclone Zircon Project

Titanium

Diatreme Resources Ltd
ASX-listed (DRX)

Commodity(ies):
Titanium, Zirconium, Hafnium

Investment summary

Cyclone is an attractive investment opportunity amid the lack of suitable high-grade zircon supply. Following completion of a Feasibility Study on the Cyclone Zircon project in 2018, metallurgical test work using the latest processing technologies is underway using bulk samples from recent drilling. The Project is well advanced with primary approvals and permitting in place, including environmental and First Nations approvals. Diatreme is engaging in discussions with a range of potential project partners including offtakers and technical partners, with the aim of either selling the project or funding development of this high-grade zircon project located in Western Australia's zircon-rich Eucla Basin. With shrinking zircon supply and rising demand, Cyclone is an attractive opportunity for a development partner to advance Australia's zircon production for the global market, supporting the growth of this critical mineral industry.

Project description

Cyclone has the potential to become a significant global supplier of zircon, accounting for an estimated 6% of global zircon supply. The Project also contains titanium minerals such as leucoxene, rutile and ilmenite and has potential for supply of the rare critical mineral hafnium within the zircon component of heavy mineral concentrate (HMC). The 2018 Feasibility Study was based on shallow free-dig mining using a bulldozer and dozer trap and progressive rehabilitation, with sand processed in an on-site Wet Concentrator via several stages of gravity concentration to produce a life of mine production of 1.94Mt of HMC, containing 936kt of zircon and including 772kt of final zircon product. The Project is currently being re-evaluated based on the production and export of HMC.

Mineral Resources as at Dec-21 (1% HM cut-off grade):

Resource Category	Tonnes (Mt)	Total HM (%)	Zircon (%)	Rutile (%)	Leuco-xene (%)	HiTi (%)	Altered Ilmenite (%)	Siliceous Ti-oxide (%)
Measured	156	2.4	28	3	6	24	12	22
Indicated	48	1.9	21	2	5	33	16	18
Total	**203**	**2.3**	**27**	**3**	**6**	**26**	**13**	**21**
Contained (kt)		**4,669**	**1,262**	**140**	**280**	**1,214**	**607**	**980**

Ore Reserves as at Dec-21:

Reserve Category	Tonnes (Mt)	Total HM (%)	Zircon (%)	Rutile (%)	Leuco-xene (%)	HiTi (%)	Altered Ilmenite (%)	Siliceous Ti-oxide (%)
Probable	138	2.6	28	3	7	23	13	22
Total	**138**	**2.6**	**28**	**3**	**7**	**23**	**13**	**22**
Contained (kt)		**3,588**	**1,005**	**108**	**251**	**825**	**466**	**789**

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

Project Status
Feasibility Study (November 2018)

Offtake Available
Yes

Min Mine Life (Years)
13.2

Post-tax IRR
27.2%

Capital Cost
A$135m

Post-tax $NPV_{10\%}$
A$113m

Product & Annual Production Rate

- HMC: 147ktpa (containing 59ktpa zircon, 9ktpa HiTi87, 49ktpa HiTi67)

Titanium

Audalia Resources Ltd
ASX-listed (ACP)

Commodity(ies):
Titanium, Vanadium, Iron

Medcalf

Investment summary

Audalia is developing the Medcalf Project located 470km east of Perth, WA. A PFS completed in July 2022, demonstrated attractive economics for the Project, with start-up capex <A$40m, producing high grade titanium lump ore (HTLO) for use as a hearth liner in blast furnaces. Work is underway on updating the PFS to include high grade titanium fine ore (HTFO) production. Medcalf HTLO & HTFO sample products have been sent to potential customers for testing and offtake discussions have commenced for both products. The Project has a granted mining lease, environmental approval granted by the WA EPA in July 2024 and an agreement in place with the Traditional Owners.

Project description

The July 2022 PFS on the Medcalf Project was based on mining ~1.5Mtpa ore from 3 shallow (<50m depth) open-pit mines over an initial 6-year life, with no dewatering requirements. Ore will be crushed and screened to produce ~975ktpa HTLO (10-60mm sizing) at 12.4% TiO_2, 0.7% V_2O_5, and 59.2% Fe_2O_3, with a ~65%. lump recovery. HTLO product will be trucked 220km to Esperance Port for export to Asian markets. In late-2024, a step out drilling program was completed, increasing strike length by ~250m with results pending. An infill drilling program focused on conversion of Inferred to Indicated Mineral Resources is planned for 2025, along with geotechnical drilling. The next step will be defining a maidan Ore Reserve targeting a 10-year mine life to support the updated PFS which is targeting production of ~975ktpa HTLO and ~250ktpa of HTFO (3-10mm sizing, same grade as HTLO and ~35% fines recovery).

Mineral Resources as at Mar-22 (6% TiO_2 cut-off):

Resource Category	Tonnes (Mt)	V_2O_5 (%)	TiO_2 (%)	Fe_2O_3 (%)	Al_2O_3 (%)	SiO_2 (%)
Indicated	15.0	0.60	11.01	56.4	8.5	15.3
Inferred	10.6	0.40	8.54	43.0	9.6	27.3
Total	**25.7**	**0.52**	**9.98**	**50.9**	**9.0**	**20.2**
Contained (kt)		**134**	**2,565**	**13,081**		

No Ore Reserves Available

Project Status
Pre Feasibility Study (July 2022)

Offtake Available
100%
(Lump and Fines)

Min Mine Life (Years)
6+

Pre-tax IRR
146.3%

Capital Cost
A$32.8m

Pre-tax $NPV_{8\%}$
A$177.9m

Product & Annual Production Rate

- High titanium lump ore (HTLO) (12.4% TiO_2, 0.7% V_2O_5 and 59.2% Fe_2O_3): 975kpta

Molyhil Tungsten

Tungsten

Investigator Resources Ltd (25%)
Thor Energy PLC (75%), being 100% acquired by Tivian Limited.
ASX-listed (IVR)
ASX&AIM-listed (THR), being acquired by ASX-listed (TVN)

Commodity(ies):
Tungsten, Molybdenum

Investment summary

Tivan Limited entered into a binding term sheet to acquire the Molyhil Tungsten–Molybdenum Project from Investigator Resources Limited and Thor Energy PLC in September 2025. Completion of the acquisition is progressing through the required regulatory and transfer processes. The Project is located ~220km north-east of Alice Springs and recognised as a Northern Territory Major Project under the previous government. Both tungsten and molybdenum are globally recognised as critical, underpinning defence, semiconductor, clean energy, and aerospace industries. Molyhil will be advanced by Tivan through a Pre-Feasibility Study. Concurrently, Tivan will progress with First Nations, regulatory, and environmental approvals. The Project is located adjacent to Tivan's 100% owned Sandover Fluorite Project, enabling potential development synergies.

Project description

Small scale open pit mining of the Project's tungsten and molybdenum deposit was undertaken between 1978 and 1982. A Definitive Feasibility Study on the Project was published by the previous owners in August 2018. An Updated Mineral Resource Estimate was published in May 2024 (pre-acquisition). Post-acquisition, Tivan is advancing a PFS based on the existing Mineral Resource Estimate. In parallel, Tivan will progress a metallurgical testwork program for the Project, in support of flowsheet development and to expedite project development. As a previously disturbed site, the project development impact footprint will be materially reduced, aiding the approvals process. Project development will be optimised in coordination with Tivan's Sandover Fluorite Project. Taken together, the Projects anchor the proposed development of a Central Australian high value critical mineral precinct.

Mineral Resources as at May-24 (0.05% WO_3 cut-off):

Resource Category as at 31 March 2021	Tonnes (Mt)	WO_3 (%)	Mo (%)	Cu (%)
Measured	1.16	0.34	0.11	0.06
Indicated	1.66	0.27	0.10	0.05
Inferred	1.82	0.20	0.08	0.03
Total	**4.65**	**0.26**	**0.09**	**0.04**
Contained (kt)		**12.1**	**4.4**	**2.1**

No Ore Reserves Available

Project Status
Feasibility Study completed in Aug 2018. New PFS Underway

Offtake Available
100%

Min Mine Life (Years)
N/A

Post-tax IRR
N/A

Capital Cost
N/A

NPV
N/A

Product & Annual Production Rate
- Tungsten concentrate: Production rate TBD in PFS
- Molybdenum concentrate: Production rate TBD in PFS

Tungsten

EQ Resources Ltd
ASX-listed (EQR)

Commodity(ies):
Tungsten

Mt Carbine Tungsten Mine

Investment summary

EQR's Mt Carbine tungsten mine, Australia's leading tungsten producer, boasts low-cost operations, tech integration, and a favourable commodity outlook. Ownership of tungsten producer, Saloro S.L.U / Spain (Barruecopardo Open Pit Tungsten Mine), and an exploration permit (EPM) covering 488km2 over the Wolfram Camp tin-tungsten field in northern QLD positions EQR as the leading Western tungsten producer. The 2023 Mount Carbine Bankable Feasibility Study demonstrates significant growth potential with only 17% of the JORC-compliant Mineral Resource utilised in current open-pit mine plan. Backed by Australian Government Critical Minerals Accelerator Initiative, EQR's strong ESG commitment, fast-growing supply, and planned downstream growth path make it an attractive globally-balanced investment.

Project description

Acknowledged for its commitment to sustainability winning the 2022 AMEC Environment Award, Mt Carbine is a fully permitted brownfield operation currently in production, undergoing a three-phase expansion initiated in 2019. Phase 1 included mining ore from the historic low-grade stockpile (LGS) and early works upgrades. Phase 2 is in operation and includes open pit mining and processing plant upgrades to expand capacity. Open pit mining from the 5.93Mt in-situ Ore Reserves commenced in Q2 2023 and efficiency and capacity enhancements are progressing. The 2023 BFS (Phases 1 & 2) is based on the currently defined reserves feeding an average of 2Mtpa open pit and historic LGS ore to the processing plant producing an average of 5.3ktpa 50% WO_3 tungsten concentrate for ~10 years. Phase 3 includes a scoped, 10-year underground mine with drilling and trial mining planned for 2026. Queensland Government co-funded the ongoing sampling and ore sorter trials at the Wolfram Camp prospect.

Mt Carbine Mineral Resources as at Jun-24:

Low Grade Stockpile + In-Situ Low Grade (0.05% WO_3 cut-off):

Resource Category	Tonnes (Mt)	WO_3 (%)
Indicated	12.5	0.08
Inferred	0.83	0.06
Total	**13.33**	**0.07**
Contained (kt)		**9.37**

In-Situ (0.08% WO_3 cut-off):

Resource Category	Tonnes (Mt)	Nickel (%)
Indicated	17.35	0.30
Inferred	10.68	0.30
Total	**28.03**	**0.30**
Contained (kt)		**84.11**

Mt Carbine Ore Reserves as at Jun-25:

Low-Grade Stockpile:

Reserve Category	Tonnes (Mt)	WO_3 (%)
Probable	9.59	0.075
Total	**9.59**	**0.075**
Contained (kt)		**7.19**

Open Cut:

Reserve Category	Tonnes (Mt)	WO_3 (%)
Probable	5.21	0.28
Total	**5.21**	**0.28**
Contained (kt)		**14.60**

For Barruecopardo Mineral Resources and Ore Reserves, please see EQR's website.

Project Status
Updated Feasibility Study. Phases 1 and 2 only. (May 2023).
Phase 1 (LGS): Operating.
Phase 2: Open Pit – Operating (commenced Q2 2023).
Expansion: Construction (planned 2026).
Phase 3 (UG): Internal scoping studies completed.

Offtake Available
First 25,000t WO_3 concentrate under offtake agreement with CRONIMET.

Min Mine Life (Years)
9 (LGS, Open Pit & UG trial-mining phase)

Pre-tax IRR
477%

Capital Cost
A$24.9m (Dec 24) (Remaining Phase 2 & 3, with UG Development and trial mining)

Pre-tax $NPV_{8\%}$
A$307.1m

Product & Annual Production Rate
- Tungsten concentrate (50% WO_3): 5,300tpa

Mt Mulgine

Tungsten

Tungsten Mining NL
ASX-listed (TGN)

Commodity(ies):
Tungsten, Molybdenum, Gold, Silver, Copper

Investment summary

Tungsten Mining is focused on the development of tungsten projects in Australia. A PFS completed in January 2021, confirmed the technical and financial viability of the Company's flagship Mt Mulgine Tungsten Project. Since completion of the PFS, work has focused on streamlining the Project, now expected to produce significant volumes of tungsten and molybdenum, along with a by-product concentrate of copper-gold-silver. Further metallurgical test work and resource development has supported a recently completed Strategic Engineering Study, defining several positive development options for the Project based on processing and extraction of both tungsten and molybdenum. A revised flowsheet and updated cost estimates have been completed reinforcing the strong value proposition of the Project as a long-term, low-cost producer of several key critical minerals including the only primary production of molybdenum in Australia, and one of several active tungsten producers. There is no Native Title or Native Title claims, and archaeological and ethnographic surveys have not identified any significant heritage issues over the project area. The Company is progressing regulatory approvals and environmental studies with the intention of submitting an EPA referral in 2025.

Project description

Tungsten Mining's flagship Mt Mulgine Tungsten Project sits on three granted mining leases, located approximately 350km NNE of Perth in the Murchison region of Western Australia. The Project will include open-pit mining and processing of material via gravity concentration and flotation to produce tungsten, molybdenum and by-product concentrates. TGN continues to progress the project, with further engineering work planned, underpinned by ongoing test work and resource development.

Mineral Resources as at May-20 (0.05% WO_3 cut-off):

Resource Category	Tonnes (Mt)	WO_3 (%)	Mo ppm	Au g/t	Ag g/t	Cu (%)
Indicated	183	0.11	290	0.13	5	0.04
Inferred	76	0.11	240	0.09	5	0.04
Total	**259**	**0.11**	**270**	**0.12**	**5**	**0.03**
Contained		**290 kt**	**71 kt**	**1,000 Koz**	**44 Moz**	**92 kt**

Ore Reserves as at Jan-21 (0.074% WO_3 cut-off):

Reserve Category	Tonnes (Mt)	WO_3 (%)	Mo ppm	Au g/t	Ag g/t	Cu (%)
Probable	140	0.10	288	0.12	5.9	0.03
Total	**140**	**0.10**	**288**	**0.12**	**5.9**	**0.03**
Contained		**145 kt**	**40 kt**	**542 Koz**	**27 Moz**	**48 kt**

Project Status
Pre Feasibility Study (2021)

Offtake Available
Yes

Min Mine Life (Years)
20+

IRR
N/A

Capital Cost
N/A

NPV
N/A

Product & Annual Production Rate
N/A

Australian Vanadium Project

Vanadium

Australian Vanadium Ltd
ASX-listed (AVL)

Commodity(ies):
Vanadium, Iron Concentrate

Investment summary

The Australian Vanadium Project (the Project) is a world-class asset located in Western Australia. AVL is undertaking an Optimised Feasibility Study (OFS), with the aim of improving the Project's technical and economic results by integrating the northern and southern parts of the deposit. AVL continues to progress its approvals, and the WA Minister for Environment has granted approval for the implementation of the Gabanintha Vanadium Project, now part of the Project. Development Approval has been received for the processing plant near Geraldton. Engagement with the Traditional Owners of the project minesite, the Yugunga-Nya People, is underway, exploring and further defining the basis for an enduring partnership. The Project has recently been selected as a lead agency project by WA Government. AVL's strategy extends beyond its upstream operations, with its Wangara (Perth) industrial-scale Electryolyte Facility successfully commisioned in 2024, and a long-term plan to establish expanded electrolyte production and downstream deployment of vanadium flow batteries to support renewable energy integration. AVL is seeking offtake, debt, and equity investment to support the Project development.

Project description

The Project is based on an open-pit mine with on-site crushing, milling and beneficiation located near Meekatharra and a processing plant located near Geraldton for conversion to high-quality vanadium pentoxide (V2O5). The processing plant will use an alkaline roast leach and ammonium metavanadate extraction process to produce high-purity V_2O_5 and iron concentrate. The OFS currently underway is designed to optimise the Project to include the southern tenements (Gabanintha) following the 2024 merger with Technology Metals Australia, where metallurgical testwork has confirmed the trend of higher vanadium and iron concentrate grades.

Mineral Resources as at May-24:

Resource Category	Tonnes (Mt)	V_2O_5 (%)	Fe (%)	TiO_2 (%)
Measured	30.6	1.13	46.3	12.9
Indicated	136.6	0.85	37.8	10.1
Inferred	228.2	0.66	31.4	8.3
Total	**395.4**	**0.77**	**34.8**	**9.3**
Contained (kt)		**3,045**	**137,599**	

No Ore Reserves Available

Project Status
Feasibility Study.
Previous Feasibility Studies completed in 2022. Optimised Feasibility Study underway.

Offtake Available
100%

Min Mine Life (Years)
25

IRR
Not yet available. Awaiting results of Optimised Feasibility Study.

Capital Cost
Not yet available. Awaiting results of Optimised Feasibility Study.

NPV
Not yet available. Awaiting results of Optimised Feasibility Study.

Product & Annual Production Rate
- V_2O_5 as mix of flake or powder: 11,200tpa
- Iron concentrate (60% Fe): 900 ktpa

Richmond-Julia Creek Vanadium

Vanadium

Richmond Vanadium Technology Ltd
ASX-listed (RVT)

Commodity(ies):
Vanadium

Investment summary

The world cannot achieve its energy transition targets without utility scale, long duration battery storage. Adoption of vanadium flow batteries (VFBs) is increasing, due to safety, battery life, recyclability and capability for longer duration energy storage. Following a successful PFS completed in 2021, a BFS is now well underway examining production of vanadium electrolyte for use in VFBs, in addition to vanadium concentrate production from the Project. The draft EIS was submitted in 2024 and is currently being updated to address Government agency comments prior to public review. Application was lodged in 2024 for the Mining Lease. Native Title has been extinguished over the Project area, however, RVT has signed a Cultural Heritage Management Agreement with the Wanamarra people. Discussions are welcomed on financing or offtake.

Project description

The Project is based on shallow (2-25m) open-cut, free-dig mining of 4.2Mtpa ore which will be processed on site via a conventional flotation process to produce 790,000tpa vanadium concentrate, over an initial 25-year life. Mined areas will be progressively rehabilitated. Metallurgical testwork and flow sheet design is underway aimed at delivering an innovative process for production of ~12,700tpa of vanadium electrolyte from vanadium concentrate. RVT's vision is to be mining, concentrating and producing high-purity vanadium in Australia, over the fence from electrolyte and battery makers. This is aligned with our recent collaboration agreement with world leading battery and renewable energy manufacturers, and the Queensland Government who are building a common user facility and funding construction of the CopperString 2032 electricity transmission line. RVT has adopted the World Economic Forum's ESG framework to guide progress.

Mineral Resources as at Dec-19 (0.30% V_2O_5 cut-off):

Resource Category	Tonnes (Mt)	V_2O_5 (%)
Indicated – Lilyvale	430	0.50
Inferred – Lilyvale	130	0.41
Inferred – Rothbury	1,202	0.31
Inferred – Manfred	76	0.35
Total	**1,838**	**0.36**
Contained (kt)		**6,650**

Ore Reserves as at Jan-20 (0.30% V_2O_5 cut-off):

Reserve Category	Tonnes (Mt)	V_2O_5 (%)
Probable	459	0.49
Total	459	0.49
Contained (kt)		**2,250**

Project Status
Pre Feasibility Study (August 2021)

Offtake Available
100%

Min Mine Life (Years)
25 with potential for 100+

Post-tax IRR
38%

Capital Cost
US$176.8m

Post-tax $NPV_{10\%}$
US$448m

Product & Annual Production Rate

- Vanadium concentrate (1.82% V_2O_5): 790,000tpa (12,700tpa contained vanadium pentoxide flake (V_2O_5)

Vecco Critical Minerals Project

Vanadium

Vecco Group Pty Ltd
Unlisted Private Company
(51% owned by Idemitsu)

Commodity(ies):
Vanadium Pentoxide, Vanadium Electrolyte, High Purity Alumina, Molybdenum

Investment summary

Vecco is developing an integrated mining and downstream vanadium processing supply chain through the Vecco Critical Minerals Project, located in north-west Queensland. The operation will mine and refine high-purity vanadium in Julia Creek, with refined feedstock transported to Vecco-owned battery electrolyte manufacturing facilities in Townsville and the USA. Vecco has qualified its electrolyte product with leading global battery OEMs via its operational demonstration facility in Townsville. Supported by a significant, shallow, high-quality vanadium resource, the Project positions Vecco as a key supplier of vanadium electrolyte for the growing long-duration energy storage market. The DFS is underway, and the Project is advancing towards FID, with strong equity support from strategic shareholders (Idemitsu & Coeclerici Group). Recently declared a Coordinated Project by the Queensland Government, Vecco is targeting approvals by mid-2026. No Native Title exists over the project area. Vecco has engaged with Traditional Owners in relation to cultural heritage. As Vecco progresses toward FID in 2026, the Company is actively seeking offtake agreements and welcomes discussions with strategic investors and financing partners to support project development.

Project description

The PFS completed in May 2024 confirmed attractive economics for the Vecco Critical Minerals Project based on open-pit mining, processing and refining at Julia Creek via beneficiation, flotation, roasting, leaching, solvent extraction, molybdenum ion exchange, purification and high purity alumina (HPA) processing to produce ~8,700tpa high-purity vanadium pentoxide, and valuable by-products, HPA and molybdenum. Vanadium pentoxide will be supplied to Vecco-owned electrolyte manufacturing facilities in Townsville and the USA to collectively produce ~56 million litres p.a of vanadium electrolyte.

Mineral Resources as at Mar-25:

Resource Category	Tonnes (Mt)	V_2O_5 (%)	Al_2O_3 (%)	Mo (ppm)
Measured	37	0.35	3.7	168
Indicated	540	0.35	3.6	178
Inferred	353	0.30	3.6	119
Total	**930**	**0.30**	**3.6**	**170**
Contained (kt)		**3,069**	**33,480**	**158**

No Ore Reserves Available

Project Status
Pre Feasibility Study – Integrated Mine to Electrolyte Project (May 2024)

Offtake Available
Yes, for all products.

Min Mine Life (Years)
28

Pre-tax IRR
22.5%

Capital Cost
A$598m

Pre-tax $NPV_{8\%}$
$1.9b

Product & Annual Production Rate

- High-purity vanadium pentoxide (99.4% V_2O_5): 8.7ktpa
- Vanadium electrolyte: 56 million litres pa (24ML produced in Australia, 32ML in United States)
- High purity alumina (4N5): 4ktpa
- Molybdenum: 0.7ktpa

Victory Bore

Vanadium

Surefire Resources NL
ASX-listed (SRN)

Commodity(ies):
Vanadium, Titanium, Iron, Aluminum, Vanadium Pentoxide, Vanadium Electrolyte, Iron Oxide, Pig Iron, Titanium Concentrate

Investment summary

The Company seeks investment, offtake and development partners for its Victory Bore Vanadium-Titanium Project in Australia and the Kingdom of Saudi Arabia (KSA). The Project Pre-Feasibility Study was completed in December 2023 with attractive economics. DRA Global have been appointed in 2024 to lead the Project Bankable Feasibility Study which will be commenced once funding is in place. A bulk sample of concentrate has been prepared for customer testing and the Company has an MoU with the Saudi Arabian government for final products processing in KSA. A mining license application is in place. Environmental and Native Title surveys have been completed and discussion with Traditional Owners commenced, with no impediments identified.

Project description

The Victory Bore Project contains a world class vanadium-titanium magnetite resource, located near existing utilities and infrastructure in the mid-west of WA. The mineralisation extends for 20km along strike with significant exploration potential to extend the current 465Mt Total Mineral Resource. Open-cut mining and on-site beneficiation will produce a magnetite-vanadium-titanium concentrate to be shipped from Geraldton Port for final products processing in KSA. Lower power and reagent costs in KSA will reduce operating costs. A key objective of the Project is to produce high-purity electrolyte-grade vanadium pentoxide (V_2O_5) for production of battery-grade vanadium electrolyte used in vanadium redox batteries. A new leach process for vanadium extraction is in development by the Company to reduce carbon emissions for the Project. The Project will have significant social and economic benefits for the region and state, and in KSA.

Mineral Resources as at Dec-23 (0.15% V_2O_5 cut-off):

Resource Category	Tonnes (Mt)	V_2O_5 (%)	TiO_2 (%)	Fe (%)
Measured	25.3	0.35	4.96	19.20
Indicated	113.2	0.32	4.7	18.19
Inferred	326.1	0.28	5.28	17.41
Total	**464.6**	**0.30**	**5.12**	**17.70**
Contained (kt)		**1,394**	**23,793**	**82,223**

Vanadium-Titanium-Iron Ore Reserve as at Dec-23 (0.15% V_2O_5 cut-off):

Reserve Category	Tonnes (Mt)	V_2O_5 (%)	TiO_2 (%)	Fe (%)
Probable	93.1	0.35	5.2	19.8
Total	**93.1**	**0.35**	**5.2**	**19.8**
Contained (kt)		**326**	**4,841**	**18,434**

Project Status
Pre Feasibility Study (Dec 2023)

Offtake Available
100%

Min Mine Life (Years)
24

Pre-tax IRR
42%

Capital Cost
US$498m

Pre-tax $NPV_{10\%}$
US$1.2b

Product & Annual Production Rate

- Vanadium-titanium magnetite concentrate: 1.25Mtpa to produce:
  - High-purity vanadium pentoxide (V_2O_5): 2,580tpa
  - Ferrovanadium (FeV): 5,760tpa
  - Titanium (TiO_2) slag: 192,880tpa
  - Pig iron (Fe): 364,480tpa
  - High-purity iron oxide pigment (Fe_2O_3): 245,480tpa
  - High-grade iron ore (Fe_2O_3): 245,480tpa

Vanadium

Australian Vanadium Ltd
Private Company

Commodity(ies):
Vanadium

Windimurra

Investment summary

Atlantic Vanadium Pty Ltd (AVPL) owns 100% of the world-class Windimurra vanadium mine. AVPL is completing an updated DFS for the Windimurra project redevelopment and expects to make FID for the project redevelopment in mid-2026. Windimurra has all development approvals and Traditional Owner agreements in place. AVPL is currently in discussions with prospective project financiers and strategic offtake partners for the Windimurra project, however the company welcomes interest from prospective project financiers and offtake partners.

Project description

Windimurra is expected to be the world's next major primary vanadium producer leveraging significant existing infrastructure at the project site. In particular, Windimurra enjoys the following competitive advantages:

- Significant historic investment, making it the lowest capital intensity primary vanadium project development in the world.
- Redevelopment works consisting of a new milling and beneficiation plant, and the recommissioning of existing infrastructure, plant and equipment.
- All critical infrastructure (roads, mine pit, gas pipeline, kiln, power station, village) already constructed and under care and maintenance.
- Completion of electrolyte production study for both onsite and offsite (Perth area) options.
- Integration of mining updates into financial model, updated DFS is pending final drafting.
- VRFB Demonstration Project at Windimurra announced (AVESS and Atlantic MOU).
- Ore Reserves deliver an initial 31-year mine life with upside through additional large mineral resources.

The Windimurra project will produce a high-purity V_2O_5 flake product utilising proven open-cut mining and vanadium production processes including ore milling, magnetic separation, salt roasting, leaching, and vanadium recovery to produce the final product. AVPL continues to investigate and develop downstream processing options in anticipation of becoming a vertically integrated vanadium flow battery producer.

Mineral Resources as at Dec-19 (0.28% V_2O_5 cut-off):

Resource Category	Tonnes (Mt)	V_2O_5 (%)
Measured	34.6	0.49
Indicated	123.5	0.50
Inferred	51.6	0.50
Total	**209.7**	**0.50**
Contained (kt)		**1,048**

Ore Reserves as at Dec-19 (0.28% V_2O_5 cut-off):

Reserve Category	Tonnes (Mt)	V_2O_5 (%)
Proved		
Probable	87.5	0.49
Total	**87.5**	**0.49**
Contained (kt)		**429**

Project Status
Care and Maintenance. Feasibility Study completed in March 2020.

Offtake Available
100%

Min Mine Life (Years)
31

IRR
Expected mid-2025

Capital Cost
Expected mid-2025

NPV
Expected mid-2025

Product & Annual Production Rate

- High-purity V_2O_5 flake(99.5%): 7,600tpa

(Updated Definitive Feasibility Study underway targeting completion in mid-2025)

Midstream summaries

This is a non-exhaustive list of advanced Australian critical minerals projects. There are more projects than those listed here. Austrade is able to facilitate introductions to other projects according to your specific needs.

For further information, please contact your local Austrade representative or email criticalminerals@austrade.gov.au

Midstream summary

Australian Antimony Metal Refining Project

Project overview

Company Name:	Nyrstar
Critical Minerals:	Antimony
State or Territory:	SA
Company Ownership:	Trafigura Group Pte Ltd (Singapore)

nyrstar.com

Midstream Project Description

Nyrstar is developing an Australian Antimony Metal Refining Project, integrated into its multi-metals refinery at Port Pirie in South Australia. The Project is recovering antimony metal in refinery feedstocks as a by-product of lead refining. This unique Project uses Port Pirie's established refining circuits, including smelting, fume capture, decanting and residue handling, followed by antimony extraction, purification and casting. An Antimony Pilot Plant has been constructed and produced first metal in November 2025, with commercial batches targeted for the first half of 2026. Pilot operations will support optimisation, product qualification and engineering definition for scale-up to around 2,000tpa through 2026. This would provide a globally-significant supply for defence, electronics, energy and consumer-goods sectors.

Plans are being developed for a larger plant for production of up to 5,000tpa of refined antimony metal by 2028. A Preliminary Feasibility Study is underway to assess scale-up options and integration with metal recovery, including bismuth, tellurium, germanium and indium.

The Project was named as a Pipeline Project as part of the United States–Australia Critical Minerals and Rare Earths Framework and has a non-binding, conditional letter of support from Export Finance Australia. Commonwealth, South Australian and Tasmanian Governments are providing funding support to make refinery reliability improvements and critical-metal readiness across Port Pirie and Hobart.

Midstream Products & Annual Production Rate

Current Capacity:

- **Refined Antimony metal:** 2,000tpa of refined Antimony metal in 2026
- Potential to scale up to 5,000tpa by 2028

Midstream summary

Australian Vanadium Project

Project overview

Company Name:	Australian Vanadium Ltd
Critical Minerals:	Vanadium
State or Territory:	WA
Company Ownership:	ASX-listed (AVL)

avl.au

Midstream Project Description

As part of the integrated Australian Vanadium Project, AVL has developed a midstream facility at Wangara (Perth), WA to produce high-quality vanadium electrolyte for use in vanadium flow batteries (VFBs). The industrial-scale Wangara Electrolyte Facility was successfully commissioned during 2024, producing electrolyte for customer qualification and supporting deployment of commercial VFBs in Australia, demonstrating the capability to scale production for utility-scale and industrial customers.

The processing flowsheet converts high-purity vanadium pentoxide (V_2O_5) from AVL's upstream operations in northwest WA, or third-party sources, into ready-to-use vanadium electrolyte via a proprietary dissolution and formulation process. This integrated approach positions AVL as a secure domestic supplier of electrolyte to support expansion of long-duration energy storage solutions in Australia. Electrolyte production capacity is planned to be expanded in staged developments to meet forecast demand. AVL has secured the necessary regulatory approvals for the existing facility and is progressing approvals and technical studies to support future scale-up. AVL welcomes offtake discussions, joint development opportunities, and investment in electrolyte production to enable the growth of Australia's renewable energy storage market, with a pathway to expand capacity in line with demand growth.

Midstream Products & Annual Production Rate

Current Capacity:

- **Vanadium electrolyte:** 2.3 Million litres (36MWh) per annum

Target Capacity:

- **Vanadium electrolyte:** 17 Million litres (266MWh) per annum

Midstream summary

BAM Manufacturing Facility

Project overview

Company Name:	Renascor Resources Ltd
Critical Minerals:	Graphite
State or Territory:	SA
Company Ownership:	ASX-listed (RNU)

renascor.com.au

Midstream Project Description

Renascor's proposed Battery Anode Material (BAM) Project is a South Australia-based, vertically-integrated graphite project to produce sustainably sourced purified spherical graphite (PSG) for use in lithium-ion batteries. Its upstream mine and concentrator are located on the Eyre Peninsular, SA will supply graphite concentrate for processing into PSG at its BAM Manufacturing Facility located in Bolivar, SA.

The BAM Definitive Feasibility Study completed in 2023 is based on mining and processing using flotation to produce a graphite concentrate at the mine site for transport to the BAM Manufacturing Facility at Bolivar which will produce 50ktpa PSG in Stage 1, expanding to 100ktpa in Stage 2. PSG will be produced via shaping and purification using Renascor's HF Free Purification Process that avoids hydrofluoric acid use and lowers reagent and water usage. A PSG Demonstration Facility is under construction, with commissioning expected in Q4 2025. Learnings from the Demonstration Facility will be applied in detailed design of the full-scale commercial plant. Renascor has been granted provisional development authorisation for the full-scale BAM plant. Renascor has non-binding offtake commitments for all of Stage 1 production which it is seeking to convert into binding agreements to enable its A$185m conditional loan facility from the Australian Government to be accessed.

Midstream Products & Annual Production Rate

Stage 1:

- **Purified Spherical Graphite (PSG):** 50ktpa

Stage 2 (commencing in year 4 of production):

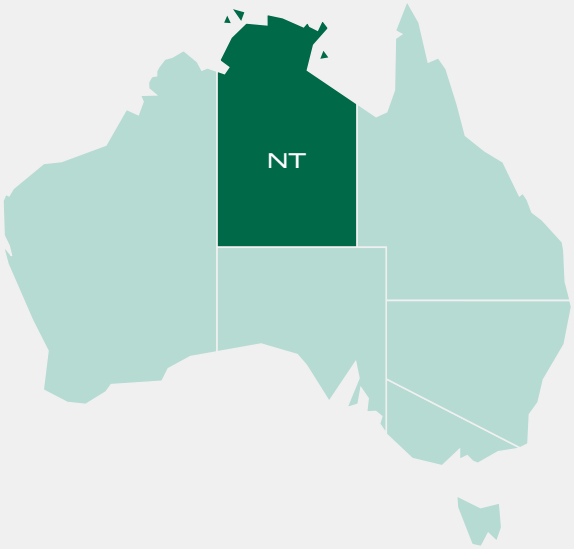
- **Purified Spherical Graphite (PSG):** 100ktpa

Midstream summary

Castile Resources Middle Arm Refinery

Project overview

Company Name:	Castile Resources Ltd
Critical Minerals:	Cobalt, Bismuth
State or Territory:	NT
Company Ownership:	ASX-listed (CST)



castile.com.au

Midstream Project Description

As part of its integrated Rover 1 project, Castile plans to build the Middle Arm Refinery located near Darwin, NT, which will process flotation concentrate produced at the Rover 1 mine site (67km SW of Tennant Creek), to produce gold doré, copper, cobalt sulphate, and bismuth. High-grade magnetite concentrate will also be produced via magnetic separation at the mine site. High purity (99.75%) copper and cobalt sulphate produced will be sold to EV and battery manufacturers. The Middle Arm Refinery may also be able to treat third party ores.

The Rover 1 Pre-Feasibility Study was completed in November 2022, with the Bankable Feasibility Study nearing completion. The Middle Arm Refinery will process flotation concentrate transported from the Rover 1 mine site via oxidization, with the solids treated using conventional carbon-in-leach to recover gold doré and the pregnant liquor treated using EMEW technology to extract copper then cobalt sulphate. Metallurgical testwork has been completed with pilot plant testing to begin. Under the previous government, Rover 1 was awarded Major Project Status by the NT and has EIS Terms of Reference approved by the NT EPA. Castile is open to development funding proposals at either project or corporate level in addition to debt and offtake financing agreements.

Midstream Products & Annual Production Rate

- **Cobalt sulphate:** 0.3ktpa
- **Cu Metal (99%):** 6.9ktpa
- **Au Doré:** 28.7kozpa
- **Bismuth Concentrate:** TBA
- **High Grade Magnetite Concentrate (96.5% magnetite:** 75.3ktpa)

Midstream summary

Collie Graphite Processing Hub

Project overview

Company Name:	International Graphite Ltd
Critical Minerals:	Graphite
State or Territory:	WA
Company Ownership:	ASX-Listed (IG6) Frankfurt-Listed (FRA:H99)

internationalgraphite.com.au

Midstream Project Description

International Graphite is developing a vertically integrated global graphite supply chain with concentrate feed from its planned Springdale mine. This will supply downstream processing facilities in Collie, WA and an Expandable Graphite Facility in Europe, in partnership with Arctic Graphite AS. Stage 1 of the Collie commercial micronising facility is in Pre-Construction. Detailed design and equipment procurement is underway targeting commencement of ~4,000tpa micronised graphite production by 2027 with planned scaling to ~7,500tpa in Stage 2. The facility will produce micronised graphite for global industrial, energy, and defence applications. Following commissioning of a pilot plant in 2022, the Company has successfully produced micronised and spheroidised products for customer qualification. Feasibility assessments are progressing for a second plant at Collie to produce other graphite products for energy storge and advanced manufacturing applications.

A Scoping Study for the integrated development of Springdale and Collie midstream processing facilities was completed in January 2024. The process flowsheet involves micronisation, spheroidisation, purification, and coating of Springdale concentrates. Feasibility work on the later stages of the flowsheet are progressing with the support of technology partners from Germany and Japan. The Australian government have contributed $17.2M. The company welcomes discussions on offtake and investment.

Midstream Products & Annual Production Rate

Collie Micronising Facility – Stage 1

- **Micronised graphite:** ~4ktpa

Collie Micronising Facility – Stage 2

- **Micronised graphite:** ~7.5ktpa

Collie Advanced Graphite Products Facility

- **Coated Spherical Purified Graphite:** ~18.6ktpa

Midstream summary

Collie Magnesium Refinery

Project overview

Company Name:	Magnium Australia Pty Ltd
Critical Minerals:	Magnesium
State or Territory:	WA
Company Ownership:	Private Company

magnium.com.au

Midstream Project Description

Magnium's Collie Magnesium Project in Western Australia aims to build the world's greenest Magnesium Metal refinery, producing 99.98% pure magnesium initially from imported Magnesium Oxide and Biochar feedstocks, with potential future feedstocks including local ore, tailings, desalination and green waste. Magnesium metal is vital for lightweight alloys in green steel, automotive, aerospace, and battery markets. Utilising a CSIRO-patented carbothermic process with enhanced heating and rapid quenching, the project achieves up to 85% lower emissions than traditional methods, incorporating high-temperature heating, gas management, and inert quenching in the flowsheet for energy efficiency.

A Pre-Feasibility study completed in September 2023 and pilot trials have confirmed viability of the project with a post-tax IRR >20%. Staged for growth, the project commences with an initial module (4ktpa) targeting first production in 2027. A commercial expansion to 40ktpa and a full scale 100ktpa plant are planned, aiming for 5% of the US$6.5-7.5b global magnesium market by 2031. The Definitive Feasibility Study being finalised will confirm capex and financial results. Backed by A$15.75M in Australian Government grants, land access in Collie is secured in principle, with environmental approvals advancing. Magnium has advanced offtake discussions with global customers and is seeking investors/strategic partners to participate in funding.

Midstream Products & Annual Production Rate

Stage 1 – Initial Module:

- **Magnesium metal (99.98% purity):** 4ktpa

Stage 2 – Commercial Expansion:

- **Magnesium metal (99.98% purity):** 40ktpa

Stage 3 – Full Scale:

- **Magnesium metal (99.98% purity):** 100ktpa

Midstream summary

Dubbo

Project overview

Company Name:	Australian Strategic Materials Ltd
Critical Minerals:	Rare Earth Elements, Zirconium, Niobium Hafnium
State or Territory:	NSW
Company Ownership:	ASX-listed (ASM)

asm-au.com

Midstream Project Description

The Dubbo Project is the upstream foundational asset of ASM's vertically integrated mine to metals strategy. It is a globally significant resource of light and heavy rare earths, zirconium, niobium and hafnium. The Dubbo Project will separate and refine mined resources on site to produce high-purity separated rare earth oxides and mixed chlorides. ASM has worked in partnership with ANSTO to develop its advanced separation and refining flowsheet and the project has all major approvals and permits in place. This mid-stream capability will create products that can be sold directly to global customers or sent to ASM's offshore facilities for metal and alloy processing.

Through its Heap Leach Scoping Study released in July 2025, ASM is exploring a phased development approach. The first phase would use a heap leach purification, separation and refining process to extract rare earth elements. Heap leaching uses dilute hydrochloric acid to dissolve valuable minerals from crushed ore stacked on engineered pads, eliminating the need for energy-intensive roasting infrastructure and significantly reducing initial capital costs. ASM is currently delivering a Pre-Feasibility Study, designed to deliver investment-grade technical and economic assessments on this approach. This is being accelerated by leveraging extensive prior technical and engineering work.

Midstream Products & Annual Production Rate

- **Rare Earth Oxides production based on current Heap Leach Case:** 1,242tpa, including:
  - NdPr Oxide: 1,157tpa
  - Tb Oxide: 13tpa
  - Dy Oxide: 72tpa

Midstream summary

Eneabba Rare Earths Refinery

Project overview

Company Name:	Iluka Resources Ltd
Critical Minerals:	Rare Earth Elements
State or Territory:	WA
Company Ownership:	ASX-listed (ILU)

iluka.com.au

Midstream Project Description

Iluka is currently building Australia's first fully integrated rare earths refinery at Eneabba in WA. Once commissioned, the refinery will produce both light and heavy separated rare earth oxides, including highly valuable dysprosium and terbium. Construction is underway and commissioning of the refinery is expected in 2027. The refinery is being developed in partnership with the Australian Government, who are providing a A$1.65b non-recourse loan.

The Eneabba refinery will initially be fed by concentrate produced from Iluka's unique 1Mt stockpile of rare earth minerals, located at Eneabba. Beyond that, the refinery has been designed with the size and capability to process a broad range of feedstocks, including from within Iluka's portfolio (Balranald and Wimmera) and a range of potential third-party feedstocks from Australia and overseas. In October 2022, Iluka agreed on a partnership with Northern Minerals for the supply of rare earths concentrate from its Browns Range project. The refinery will utilise roasting, leaching, purification, solvent extraction and product finishing to produce 17.5-23ktpa of rare earth oxide. The refinery provides a foundation to take further steps along the rare earth value chain, including production of rare earth metals which are essential for manufacture of permanent magnets, on which Iluka is progressing feasibility work.

Midstream Products & Annual Production Rate

- **Rare earth oxides:** 17.5–23ktpa subject to feedstock used. Product range will include neodymium (Nd) oxide; praesedymium (Pr) oxide, didymium (NdPr) oxide; dysprosium (Dy) oxide; terbium (Tb) oxide.

Midstream summary

Gallium Project

Project overview

Company Name:	Alcoa Corp., Sojitz Corp., JOGMEC (Japanese Government) JV
Critical Minerals:	Gallium
State or Territory:	WA
Company Ownership:	NYSE-listed (AA) / ASX-listed (AAI) /, Tokyo Stock

alcoa.com/global/en/home

Midstream Project Description

Alcoa, in partnership with Sojitzand the Japan Organization for Metals and Energy Security (JOGMEC), plans to develop a gallium plant to extract high purity 4N (>99.99%) gallium from the company's Wagerup Alumina Refinery (WA) process stream. Gallium is used in semiconductors, defence, LEDs and photovoltaic cells and is recognized as vital to national security by the United States, Australia and Japan. Strategically, the project helps diversify away from a market where China has ~98% of primary gallium output, creating an allied, FEOC-clean route sized to meet a meaningful share of current U.S. 4N demand and reinforcing supply resilience.

A joint Feasibility Study is underway on the Project targeting completion and FID in early-2026. Gallium will be extracted from the Wagerup refinery Bayer Liquor using ion-exchange (IX) followed by electrolysis. Five 20tpa trains with a total nameplate capacity of 100tpa gallium metal are planned, with first production targeted in Q4 2026. The Wagerup refinery provides the gallium-bearing process stream, existing utilities and land needed for a fast, brownfield build. The flowsheet leverages Sumitomo Chemical IX know-how to compress schedule and capex risk. Industrial practice supports IX as the established method for recovering gallium from alumina refinery liquors. The 4N gallium metal produced can be further upgraded through Japan's midstream processing ecosystem to 6N-7N specs demanded by semiconductor customers. Non-binding financing from the US and Australian governments for the Project was announced in October 2025.

Midstream Products & Annual Production Rate

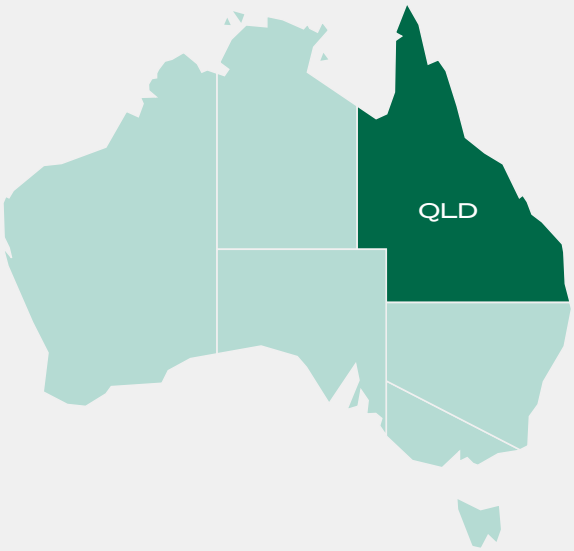
- **Gallium metal (99.99%):** 100tpa (full capacity)

Midstream summary

HPA First Project

Project overview

Company Name:	Alpha HPA Ltd
Critical Minerals:	High Purity Alumina
State or Territory:	QLD
Company Ownership:	ASX-Listed (A4N)



alphaHPA.com.au

Midstream Project Description

Alpha HPA is commercialising a world's first process technology to deliver ultra-high purity aluminium materials to market, for use in semiconductor, lithium-ion battery, Direct Lithium Extraction (DLE), LED lighting, and synthetic sapphire industries. Its HPA First Project, located in Gladstone, Qld, processes feedstock from Rio Tinto's Yarwun alumina refinery (2.5km away) to produce a range of High Purity Alumina (HPA) products including; high purity aluminium oxides, hydroxides and nitrates. Synthetic sapphire is also produced on-site from HPA feedstock.

The Stage One HPA First Project, a small-scale commercial production facility (~400tpa), commenced operation in May 2024 producing the full HPA product range. Stage One HPA products have enabled customer qualification and options are under evaluation to expand production. Construction of Stage Two HPA First Project, a large-scale commercial production facility (~10,000tpa), commenced late-2024 with bulk earthworks completed and civil works, detail design, and long lead equipment fabrication underway, targeting commissioning in 2027. Alpha HPA's novel Smart SX purification process represents the world's first application of solvent extraction purification technology for aluminium. The project has secured up to A$67m in grants and up to A$400m in loans from the Australian Government. All key approvals in place. Alpha is now accepting individual offtake contracts.

Midstream Products & Annual Production Rate

Stage One

- **Al-Nitrate:** +350tpa
- **High purity alumina + high purity alumina hydrates:** 20-25tpa

Stage Two

- **Combination of:** Al-nitrates, high purity alumina + high purity alumina hydrates: ~10,000tpa

Alpha Sapphire

- **Ultra Sapphire (Al_2O_3)™:** 7tpa low-carbon synthetic sapphire

Midstream summary

HPA Project

Project overview

Company Name:	Cadoux Ltd
Critical Minerals:	High Purity Alumina
State or Territory:	WA
Company Ownership:	ASX: CCM FSE: SLD OTC: FYIRF

cadoux.com.au

Midstream Project Description

Cadoux aims to be a significant producer of high-quality critical minerals for the rapidly developing EV market, LEDs and high-tech applications such as microchips and semi-conductors. Cadoux is developing an integrated high purity alumina business based on optimised feedstock sourced from our kaolin deposit which will be processed at Kwinana into premium quality High Purity Alumina (HPA). Through a comprehensive, end-to-end business model from mining to market, we ensure premium quality and complete traceability of our high quality HPA.

Cadoux completed the HPA project Feasibility Study in 2021 based on a staged development. Cadoux will commence a Stage 1 Small-Scale demonstration and production Plant (SSP) with initial capacity of approximately ~1,000tpa. This will be expanded in further stages to achieve final commercial production of 10,000tpa of premium quality (>99.99% Al_2O_3) HPA. The SSP will utilise Cadoux's innovative hydrochloric acid leach and precipitation production process using feedstock sourced from our 100% owned kaolin deposit. The SSP is undertaking FEED studies, detailed design as well as ongoing pilot plant testwork. Project permitting has been completed. Cadoux is also commencing a customer service and innovation centre (CSI) to continue developing bespoke HPA and alumina products and to further customer qualifications.

Midstream Products & Annual Production Rate

Stage 1

- **Premium quality High Purity Alumina (>99.995% Al_2O_3):** 1,000tpa

Final Commercial Production

- **Premium quality High Purity Alumina (>99.995% Al_2O_3):** 10,000tpa

Midstream summary

Karratha Processing Plant

Project overview

Company Name:	EcoMag Ltd
Critical Minerals:	Magnesium
State or Territory:	WA
Company Ownership:	Unlisted Company

ecomagnesium.com

Midstream Project Description

EcoMag's Magnesium Recovery Project in Karratha, Western Australia, extracts magnesium from Dampier Salt Limited's (DSL) waste bitterns stream containing 4% magnesium currently discharged to the ocean. Using EcoMag's zero-discharge process, all components in the waste stream are recovered and converted into valuable products, including high-purity Magnesium Oxide (MgO), Magnesium Dihydroxide (MDH), Sodium Chloride, Potassium Chloride, Caustic Soda, and Hydrochloric Acid. The project will operate as a world-first closed loop system, regenerating and recycling reagents, eliminating imported chemicals, and achieving total zero gas and liquid discharge. Excess chemicals are supplied to local lithium projects.

The Feasibility Study, completed in November 2024, demonstrated attractive economics for the project based on production of 20,000tpa MgO via a simple precipitation, filtering and calcination process. FEED is underway long-lead equipment has been ordered, and site preparation is targeted to commence in early 2026. A long-term access agreement with DSL and a land lease are secured. The project benefits from proximity to gas, power, and transport, and produces water onsite through desalination integrated into the recovery process. The project has received over A$8m in Federal and State grants to date. EcoMag is investment-ready and in negotiations with the Federal Government for 55% debt funding through NAIF or NRF.

Midstream Products & Annual Production Rate

- **Magnesium oxide (99% purity):** 20,000tpa
- **Magnesium dihydroxide:** 12,000tpa
- **Potassium Chloride:** 5,500tpa
- **Pure Salt 99.5%:** 55,000tpa
- **Caustic Soda:** 34,000tpa
- **Hydrochloric Acid:** 97,000tpa

Midstream summary

Kemerton Lithium Hydroxide Processing Plant

Project overview

Company Name:	Albemarle Corporation
Critical Minerals:	Lithium
State or Territory:	WA
Company Ownership:	NYSE-listed (ALB)

albemarle.com

Midstream Project Description

Kemerton Strategic Industrial Area, WA in 2022 with an initial nameplate capacity of 50ktpa battery-grade lithium hydroxide monohydrate production from two production trains. Commissioning commenced using spodumene concentrate from the Talison Lithium mine at Greenbushes, WA (51% owned by Tianqi Lithium Energy Australia (TLEA) and 49% owned by Albemarle Corp.) as feedstock via a complex process including calcination, acid roasting, leaching, chemical extraction and crystallisation. The process also produces sodium sulphate anhydrous (SSA) and delithiated beta spodumene (DBS) coproducts.

The Plant's Definitive Feasibility Study (2018) included expansion of the initial two production trains to four, increasing production capacity to ~100ktpa. Construction of trains 3 and 4 commenced in 2023. In July 2024, Albemarle announced that due to ongoing commodity price headwinds, it would cease construction of trains 3 & 4 and place train 2 into care and maintenance. Albemarle is now focusing its efforts on production at train 1 only. Due to sustained low global commodity pricing, train 1 has not been fully ramped to nameplate and is not anticipated to increase production further until global commodity pricing improves.

Midstream Products & Annual Production Rate

Current Operation

- **Battery-grade Lithium Hydroxide Monohydrate:** nameplate 25ktpa (current production from train 1 only). Train 2 is in Care and Maintenance.
- Coproducts include Sodium Sulphate Anhydrous (SSA) and Delithiated Beta Spodumene (DBS).

Expansion

- **Battery-grade Lithium Hydroxide Monohydrate:** 100ktpa (Full scale expanded plant based on construction and operation of 4 production trains)

Midstream summary

Kwinana Cobalt Refinery

Project overview

Company Name:	Cobalt Blue Holdings Ltd
Critical Minerals:	Cobalt
State or Territory:	WA
Company Ownership:	ASX-listed (COB)

cobaltblueholdings.com

Midstream Project Description

The Kwinana Cobalt Refinery (KCR) being developed by COB, in partnership with Iwatani Australia, will process a range of imported and Australian third-party feedstocks to produce battery-grade cobalt sulphate to be sold to global battery, industrial, and defense markets.

KCR Feasibility Study was completed in November 2023 and updated in October 2024. COB is undertaking value engineering and flowsheet optimisation targeting financial closure and FID at the end of 2025. KCR will produce cobalt sulphate via leaching, trace metal recovery, cobalt-nickel separation by solvent extraction, and product recovery by crystallisation and/or electrowinning. The project will have a capacity of up to 6,000tpa contained cobalt. A range of feedstocks have been successfully tested at the Broken Hill Technology Centre including cobalt hydroxides, cobalt sulphides, nickel-cobalt intermediates, and NCM and LCO battery black mass. COB has a supply agreement with Glencore for up to 50% of the KCR feedstock for the first 3 years from Glencore's operations in DRC. The KCR project Works Approval was obtained in September 2025 and COB is evaluating equity, debt, and offtake partnerships to finance the Refinery.

Midstream Products & Annual Production Rate

- **Cobalt sulphate:** ~34,000tpa (containing ~6,000tpa Cobalt metal)

Midstream summary

Kwinana Lithium Hydroxide Refinery

Project overview

Company Name:	Tianqi Lithium Energy Australia
Critical Minerals:	Lithium
State or Territory:	WA
Company Ownership:	Tianqi Lithium Corp 51% / IGO Ltd. 49% JV (IGO)

tlea.com.au

Midstream Project Description

Tianqi Lithium Energy Australia (TLEA) is a joint venture between Tianqi Lithium Corporation (51%) and IGO Ltd (49%). TLEA owns and operates Australia's first lithium hydroxide processing plant, strategically located in the Kwinana Industrial Area. The company also holds a 51% majority share in Talison Lithium – the world's largest and highest-quality lithium deposit with U.S-based Albemarle (49%). Through its vertically integrated lithium supply chain, TLEA produces premium battery-grade lithium hydroxide, exported to Europe, India, and Asia for use in electric vehicle (EV) batteries and energy storage systems.

Spodumene is mined and concentrated at Greenbushes, then transported to Kwinana, where it undergoes a complex conversion process into lithium hydroxide monohydrate. This process includes calcination, acid roasting, leaching, neutralisation, impurity removal, crystallisation, drying, and packaging. Construction of the Kwinana Refinery began in 2016. After a two-year pause, commissioning resumed, and the first battery-grade product was achieved in May 2022. The refinery is currently focused on ramping up to its nameplate capacity of 24ktpa. Plans for a second processing train were placed on permanent hold in January 2025 in response to market conditions.

Midstream Products & Annual Production Rate

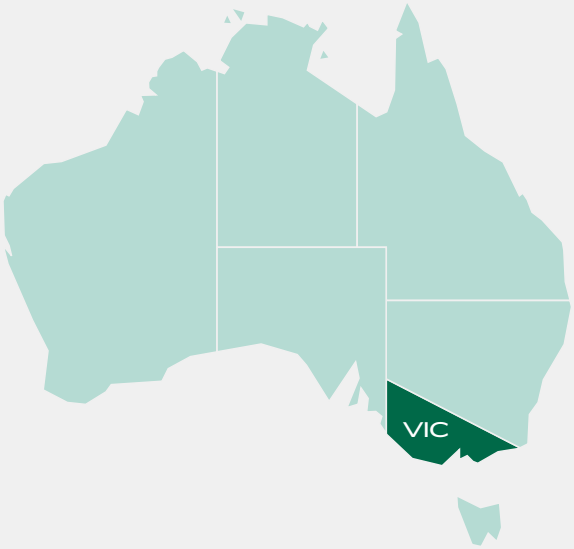
- **Battery-grade lithium hydroxide Monohydrate:** 24ktpa

Midstream summary

Latrobe Magnesium Project

Project overview

Company Name:	Latrobe Magnesium Ltd
Critical Minerals:	Magnesium
State or Territory:	VIC
Company Ownership:	ASX-listed (LMG)



latrobemagnesium.com

Midstream Project Description

LMG is processing brown coal fly ash to produce magnesium metal and magnesium alloys at its Latrobe Magnesium Project. The hydromet section of the 1,000tpa Demonstration Plant processing Yallourn Power Station brown coal fly ash has been constructed, and the magnesium section will be finished in February 2026 in the Latrobe Valley, VIC. LMG plans to build an Australian 10,000tpa magnesium Commercial Plant in the Latrobe Valley by the end of December 2027.

The Project will produce magnesium metal and alloys, char, silica, hematite, and supplementary cement material. The next stage (Australian Commercial Plant) will commence once the Demonstration Plant becomes fully operational and has operated in a steady state for a reasonable period of time. LMG will commence the necessary approvals process for the 10,000tpa Australian Commercial Plant in late 2025. A Feasibility Study on the 10,000tpa Australian Commercial Plant will then be completed in 2026, targeting commencement of construction in 2026/2027 and production commencing at the beginning of 2028. LMG has a 100% offtake agreement on the 11,000tpa of magnesium produced by both its plants. LMG welcomes discussions with parties interested to invest in these projects and its Stage 3 100,000tpa magnesium plant presently proposed for Sarawak, Malaysia.

Midstream Products & Annual Production Rate

Demonstration Plant

- **Magnesium metal (99.9% purity):** 1,000tpa

Australian Commercial Plant

- **Magnesium metal (99.9% purity):** 10,000tpa
- **Coproducts expected to be produced are:**
  - 2,394tpa char, 2,220tpa silica,
  - 1,297tpa hematite, 5,850tpa supplementary cementitious material

International Mega Plant

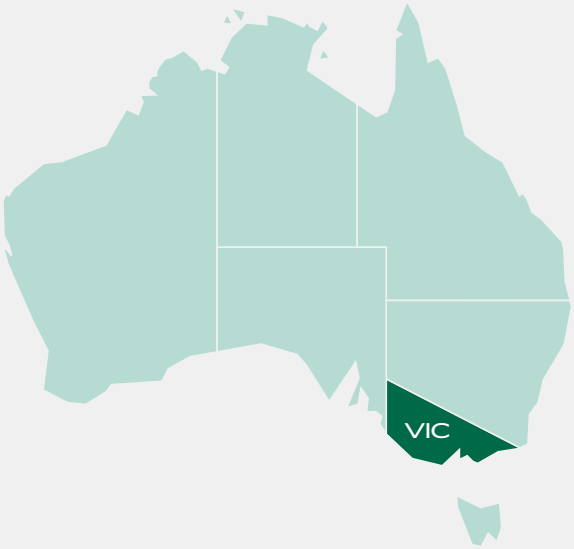
- **Magnesium metal (99.9% purity):** 100,000tpa
- **Coproducts expected to be produced are:**
  - 780,000tpa amorphous silica,
  - 66,000tpa hematite, 534,000tpa supplementary cementitious material

Midstream summary

Livium Lithium Projects

Project overview

Company Name:	Livium Ltd
Critical Minerals:	Lithium
State or Territory:	VIC
Company Ownership:	ASX-listed (LIT)



liviumcorp.com

Midstream Project Description

Livium is an Australian company focused on solutions for the lithium-ion circular battery materials industry.

Battery Recycling: via wholly owned subsidiary, Envirostream

Envirostream, Australia's leading lithium-ion battery recycler, collects, discharges, dismantles, and shreds batteries across its EPA-licensed facilities in Melbourne. Its patented process recovers valuable materials, including black mass which is then sold to partners in Asia to further process into battery materials. Livium is seeking partners to scale through a new Victorian "Hub" facility and "Spokes" in other States. The pursuit of rare earth magnet and solar panel recycling has commenced.

Lithium Chemicals: via LieNA®, a 50:50 JV with Mineral Resources Ltd (ASX:MIN)

Livium has developed patented lithium extraction technology, LieNA®, to recover lithium from waste or low grade spodumene, without the need for roasting. Pilot trials have been successfully completed with Livium and MinRes working on the next phase of commercialisation.

Battery Materials: via wholly owned subsidiary VSPC

Livium has developed patented processes, through its Brisbane pilot plant, related to Lithium Ferro Phosphate (LFP) and Lithium Manganese Ferro Phosphate (LMFP) cathode active materials. Development of a Demonstration Plant is being pursued with a $30M grant secured from the Australian Government and matched funding being sought.

Midstream Products & Annual Production Rate

Current Envirostream Battery Recycling Plant

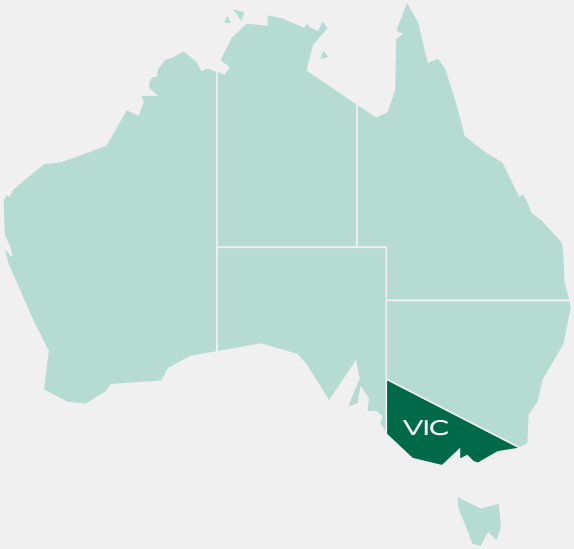
- **FY25:** 822 tonnes of Li-ion batteries collected
- **FY25:** >400 tonnes of black mass sold

Midstream summary

Lithium Metal Foil Line

Project overview

Company Name:	Li-S Energy Ltd
Critical Minerals:	Lithium
State or Territory:	VIC
Company Ownership:	ASX-listed (LIS)



Li-S Energy

Midstream Project Description

Li-S Energy Ltd (ASX: LIS) is an Australian company advancing next-generation battery technologies, developing lithium-sulphur and lithium-metal cells that deliver more than twice the energy density of conventional lithium-ion batteries. Leveraging proprietary nanomaterials, including boron nitride nanotubes (BNNTs) and Li-Nanomesh™, Li-S Energy's designs enhance performance, safety, and cycle life for demanding applications in aviation, drones, and defence.

In July 2025, Li-S Energy successfully produced 100-micron lithium-metal foils to commercial specification from its integrated Lithium Metal Foil Line at the Geelong Battery Facility, with an installed nameplate capacity of 1tpa – the first of its kind in Australia. Delivered ahead of schedule under a $1.76 million matched-funding grant from the Australian Government, the facility enables domestic production of high-tolerance lithium foils, reducing reliance on imports and lowering input costs for advanced battery manufacturing. We are currently commissioning the foil rolling, laminating, and coating capabilities, expanding the product range and supporting scale-up of proprietary nanomaterial coating technologies to 5mtpa of an expanded product range by 2027. Furter scale up is planned in the commercial expansion phase targeting 25tpa production subject to funding.

During 2025, Li-S Energy also completed pilot-scale production of 10 Ah and 20 Ah Li-S pouch cells at its Geelong facility, Australia's largest battery cell production line.

Midstream Products & Annual Production Rate

Lithium-metal Foils Production Facility

- **High-purity lithium-metal foils:** up to 5tpa in 2027.

Commercial expansion phase

- **Expaned lithium-metal foils product range:** 25tpa in 2026 of the following products:
  - High-purity lithium-metal foils (10–150 micron)
  - Lithium-laminated copper foils
  - Lithium foils with proprietary BNNT and Li-Nanomesh™ coatings

Full-scale Production

- Expansion of the above lithium-metal foil product range production subject to demand.

Midstream summary

Lynas Rare Earths processing facilities

Project overview

Company Name:	Lynas Rare Earths Ltd
Critical Minerals:	Rare Earth Elements
State or Territory:	WA
Company Ownership:	ASX-listed (LYC)

lynasrareearths.com

Midstream Project Description

Lynas Rare Earths Ltd (ASX:LYC) is an ethical and responsible rare earths supplier and the only commercial producer of separated Light and Heavy Rare Earths outside of the PRC. Lynas' rare earth products are traceable from mine to finished product.

Lynas operates the high-grade, long-life Mt Weld rare earths mine and concentrator near Laverton in Western Australia and undertakes initial processing at the Kalgoorlie Rare Earths Processing Facility in Kalgoorlie, Western Australia. The Mt Weld concentrator was commissioned in 2011 and the Kalgoorlie Facility, Australia's first downstream rare earths processing facility, commenced production in 2024 and is in the ramp-up phase.

At the Kalgoorlie Facility, rare earths concentrate moves through a cracking and leaching process to produce a Mixed Rare Earths Carbonate (MREC). The MREC and concentrate from Mt Weld is shipped to the Lynas Malaysia advanced materials plant in Gebeng, Malaysia, where the company separates rare earths into the individual rare earth oxide products sought after by manufacturing supply chains in east Asia, Europe, and North America. Lynas Malaysia has been operating since 2012.

Lynas' final product range includes Light and Heavy Rare Earth oxides: Neodymium and Praseodymium (NdPr) used in magnets, Lanthanum (La), Cerium (Ce), Dysprosium (Dy), Terbium (Tb), unseparated Samarium/Europium/Gadolinium; Holmium concentrate; and unseparated SEGH.

Midstream Products & Annual Production Rate

Mt Weld Operation

- **Rare Earths Concentrate:** Production capacity to support 12ktpa NdPr oxide finished product

Kalgoorlie Rare Earths Facility

- **Mixed Rare Earths Carbonate (MREC):** Production capacity to support 9ktpa NdPr oxide finished product

Lynas Malaysia advanced materials plant

- **NdPr oxide finished product:** 10.5ktpa nameplate production capacity
- Other separated Rare Earth oxides

Midstream summary

NiWest Nickel Cobalt Project

Project overview

Company Name:	Alliance Nickel Ltd
Critical Minerals:	Nickel, Cobalt
State or Territory:	WA
Company Ownership:	ASX-listed (AXN)

alliancenickel.au

Midstream Project Description

AXN is an emerging battery chemicals producer focussed on developing its high-grade NiWest Nickel-Cobalt Project, located in WA. The project will produce nickel and cobalt sulphates used to produce precursor material which are used to produce cathode materials for MNC chemistry batteries. The DFS confirmed NiWest as a high-margin, long-life project. The Nyalpa Pirniku People are the Native Title Claimant group and EPA referral has been submitted. In May 2023, the Company announced a strategic partnership with Stellantis NV, comprising an equity investment and an offtake agreement for 40% of future production. The company has also signed a non-binding offtake term sheet with Samsung SDI. Major Project Status was awarded May 2024.

NiWest will be a low strip, open-pit mine, with approximately 2.3Mtpa of ore mined at average grades of 1.06% Ni and 0.07% Co for the first 27 years. Ore will be crushed, agglomerated then heap leached, with pregnant liquor solution recovered from leaching and then neutralised prior to recovery of nickel and cobalt. Recovery will be via direct solvent extraction and crystallisation to produce high-purity (+99.95%) nickel and cobalt sulphates. Planned annual production is approximately 90,000 tonnes nickel sulphate and 7,000 tonnes cobalt sulphate.

Midstream Products & Annual Production Rate

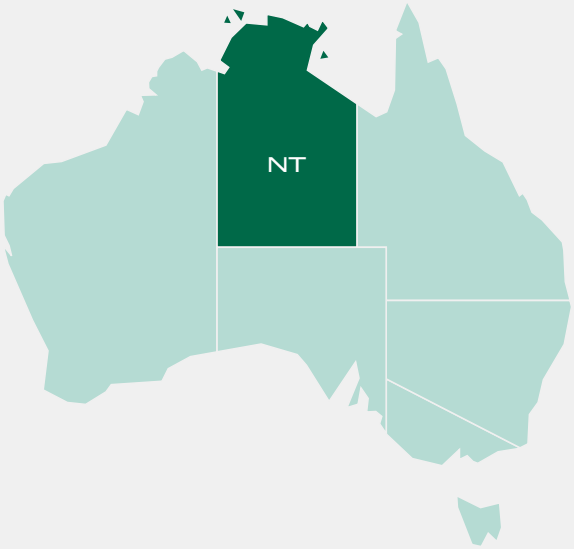
- **Nickel sulphate (hexahydrate 99.95% purity):** 87.8ktpa (containing ~20ktpa nickel)
- **Cobalt sulphate (heptahydrate >99.9% purity):** 7.2ktpa (containing ~1.5ktpa cobalt)

Midstream summary

Nolans Rare Earths Project

Project overview

Company Name:	Arafura Rare Earths Ltd
Critical Minerals:	Rare Earth Elements
State or Territory:	NT
Company Ownership:	ASX-listed (ARU)



arultd.com

Midstream Project Description

Nolans is a long life, scalable, fully integrated rare earths project that will recover rare earth elements (NdPr and SEG/HRE oxides, containing Dy and Tb), located 135km north of Alice Springs. Nolans is one of the most advanced rare earths ore-to-oxide projects globally and is key to meeting global NdPr demand, used in high-performance magnets for future facing technologies.

Feasibility Studies, optimisation studies, FEED and all major project approvals have been completed, along with early earthworks in 2024. Integrated on-site processing including; Beneficiation (flotation), Extraction (leaching, cracking and purification) and Separation (calcination (cracking) and solvent extraction) plants will produce radionuclide-free NdPr oxides, SEG/HRE oxides, and high-grade phosphoric acid. Conditional approvals for >US$1b debt funding have been secured from the Australian Government, international export agencies and commercial banks, along with a A$200m convertible note. Securing the final equity funding required to support FID is well advanced. Critical path work programs, compliance, and optimisation activities to mitigate capital and construction risks are progressing, in preparation for FID and construction commencement. Post FID, the company anticipates a four month ramp-up period with construction activities scheduled over 37 months. Arafura has binding offtake agreements with Siemens, Hyundai, Kia and Traxys with further offtake negotiations well advanced.

Midstream Products & Annual Production Rate

- **NdPr oxide:** 4,440tpa
- **SEG/HRE oxide:** 573tpa (containing 28tpa Dy and 8tpa Tb)
- **Phosphoric acid (fertilizer-grade, 54% P2O5):** 144,393tpa

Midstream summary

Nanoporous Silicon Project

Project overview

Company Name:	Vytas Ltd
Critical Minerals:	Silicon
State or Territory:	WA
Company Ownership:	Unlisted

vytas.com.au

Midstream Project Description

Vytas is producing low-carbon, low-cost Nanoporous Silicon (NPS) for customer testing, scaling up to 30tpa from the demonstration scale facility in Perth, WA. Construction of a full-scale NPS production facility is planned targeting ~3,000tpa production commencing in 2027. NPS is used as a battery material for the lithium-ion battery sector, oriented to a range of silicon anode battery technologies from carbon–silicon composites to 100% silicon anodes. Secondary applications are silane (polysilicon) and hydrogen generation through silicon–water hydrolysis.

The process includes extraction of silica feedstock and screening, followed by proprietary metallothermic reduction and post-processing to optimise particle size and morphology. Metallothermic reduction provides a low-carbon, low-cost production pathway compared with industry-standard carbothermic methods. This approach enables fit-for-purpose, more straightforward production aligned to the needs of the battery sector. Development is progressing for the 3,000tpa full-scale plant. Feedstock is expected to be from Vytas' exploration tenements covering 3,000km^2. Mining approvals process has commenced. Vytas is seeking offtake agreements and welcomes discussions with potential investment partners to support the project.

Midstream Products & Annual Production Rate

Demonstration Facility

- **Nanoporous Silicon:** 30tpa (in 2026)

Full-scale production

- **Nanoporous Silicon:** ~3,000tpa (from 2027)

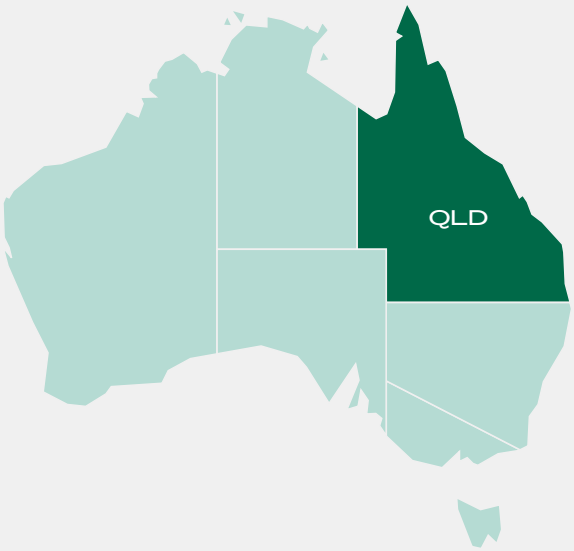
Midstream summary

Townsville Battery Anode Facility

Project overview

Company Name:	Graphinex Pty Ltd
Critical Minerals:	Graphite
State or Territory:	QLD
Company Ownership:	Privately owned, Idemitsu Australia is a strategic investor

graphinex.com.au



Midstream Project Description

Graphinex is developing Australia's first vertically integrated mine-to-anode material graphite business. The graphite concentrate is supplied from its Esmeralda mine located near Croydon, Qld which will be processed in Townsville, Qld to produce high performance Coated Spherical Purified Graphite (CSPG) used for Battery Anode Material in lithium-ion batteries. Esmeralda is the world's largest graphite reserve in a developed country. The Queensland Government has fast-tracked the project by granting Coordinated Project status.

The Pre-Feasibility Study completed in March 2025 is based on mining and processing using flotation to produce a graphite concentrate at the Esmeralda mine site for transport to the Townsville Battery Anode Facility. There it will undergo processing via micronisation, spheroidisation, thermal purification, and coating to produce high performance CSPG. A Bankable Feasibility Study is underway along with permitting and financing discussions targeting FID in 2026. The CSPG plant, located in the Low Impact Industry Precinct of the Townsville State Development Area, will be assessed under the SDA Development Scheme. Graphinex commenced production of CSPG from its 300tpa Townsville Demonstration Facility in July 2025 allowing product qualification with battery manufacturers to commence. Graphinex is actively seeking offtake partners, welcomes investment discussions, and is progressing funding opportunities including government-backed grants and loans.

Midstream Products & Annual Production Rate

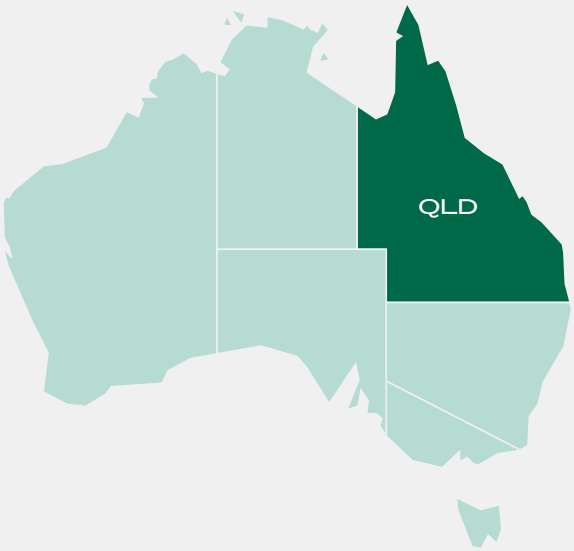
- **High performance Coated Spherical Purified Graphite (CSPG):**
  - Stage 1: 30ktpa
  - Stage 2: 100ktpa

Midstream summary

Townsville Energy Chemicals Hub

Project overview

Company Name:	QPM Energy LImited
Critical Minerals:	Cobalt, Nickel, HPA, Magnesium
State or Territory:	QLD
Company Ownership:	ASX-listed (QPM)



techproject.com.au

Midstream Project Description

QPM plans to develop the Townsville Energy Chemicals Hub ("TECH") project, a modern and sustainable battery materials refinery processing imported, high-grade laterite ore from New Caledonia to produce nickel sulphate and cobalt sulphate, High Purity Alumina (HPA), Hematite pellets and other valuable co-products.

The TECH project Feasibility Study completed in 2022 is based on a state of the art processing facility incorporating; (a) Extraction Plant which processes ore utilizing nitric acid to leach all metals into solution (b) Sulphate Refinery to produce cobalt and nickel sulphate (involving sulphuric acid re-leach and solvent extraction), (c) HPA Refinery, and (d) Hematite Pellet Plant. QPM is currently updating the Feasibility Study. The project has all Tier 1 approvals in place and QPM has binding offtake agreements with General Motors, LG Energy Solutions and POSCO for nickel and cobalt products. The project received an $8m grant in 2024 form the Australian Federal Government and a further $8m matched grant in 2025 from the Queensland Government. These grants enable QPM to complete feasibility work aimed at attracting investment required to reach FID as nickel market sentiment improves. QPM welcomes discussions with investors who may be interested in financing the project.

Midstream Products & Annual Production Rate

Primary Products:

- **Nickel sulphate:** 72ktpa (containing 16ktpa nickel)
- **Cobalt sulphate:** 5.6ktpa (containing 1.85ktpa cobalt)
- **High Purity Alumina (4/4N5):** 4ktpa

Major Coproducts:

- **Hematite pellets:** 500–600ktpa for use as a feed to blast furnaces
- **Magnesium Oxide:** 20-30ktpa for use as a refractory material, a chemical reagent or in agriculture
- **Zinc sulphate:** 0.25 to 0.35ktpa contained zinc for sale to zinc refineries

Other Coproducts:

- In addition, Ammonium Sulfate, Ammonium Nitrate, Gypsum, Engineered Fill and Aluminium/ Iron Oxide are produced as byproducts.

Midstream summary

Ultra-High Purity Quartz Project

Project overview

Company Name:	Vytas Ltd.
Critical Minerals:	Silicon
State or Territory:	WA
Company Ownership:	Unlisted

vytas.com.au

Midstream Project Description

Vytas Ltd is manufacturing Ultra-High-Purity Quartz (UHPQ), in Perth, WA to supply critical inputs for the solar and semiconductor industries. The process includes silica extraction and a proprietary purification flowsheet to produce 4N8 and 5N UHPQ products across a range of purity levels. UHPQ is the material required for crucibles used in silicon ingot growth, a key step in both solar and semiconductor manufacturing. Additional applications for UHPQ include solar glass, specialty glass, and fibre optic cables.

Current production is from a single full scale modular production line with equipment constructed for Phase 1 of the project, targeting 5,600tpa UHPQ. Full-scale production is targeting 25,000tpa UHPQ. The proprietary process eliminates traditional reagents, delivering improved safety, environmental and cost outcomes. Feedstock will be supplied from Vytas' permitted mining lease located in Moora WA, with sufficient JORC resource to support the first 20 years of operations. Customer engagement is underway with solar and semiconductor crucible manufacturing companies in Asia and Europe. Vytas's staged development approach is supported by a modular equipment design, enabling scale-up while maintaining cost efficiency and operational flexibility. Vytas is seeking offtake agreements and welcomes discussions with potential investment partners to support the project.

Midstream Products & Annual Production Rate

Phase 1

- **Ultra-High-Purity Quartz (UHPQ):** 5,600tpa, ramping up in 2026

Full-scale production

- **Ultra-High-Purity Quartz (UHPQ):** 25,000tpa

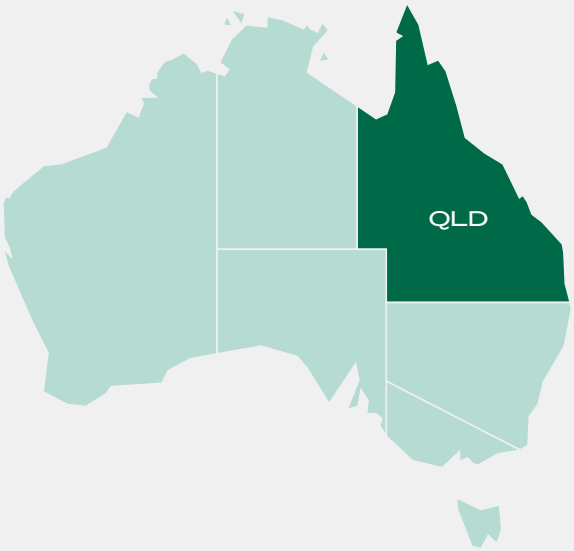
Midstream summary

Ultra High Purity Quartz Sand (UHPQS) Project

Project overview

Company Name:	High Purity Quartz Ltd (HPQ)
Critical Minerals:	Silicon
State or Territory:	QLD
Company Ownership:	Public, Unlisted Company

ultrahpq.com



Midstream Project Description

The Ultra-High Purity Quartz Sand (UHPQS) project will produce UHPQS used in the manufacture of solar PV grade crucibles to make mono-crystalline silicon for solar PV wafers. Finished UHPQS is scarce globally and may be used in Queensland for downstream manufacturing of solar PV wafers or sold into international solar PV markets.

The PFS, completed in Dec 2024 was based on mining ~100ktpa quartz ore from the Sugarbag Hill minesite to be pre-processed at the planned Mt Garnet site to produce ~50ktpa of purified sand concentrate. The concentrate will be transported to the Lansdown Eco Industrial Precinct, Townsville, for advanced processing via chemical and heat treatments (leaching and chlorination) to produce ~36ktpa finished UHPQS with total impurities <40ppm. DFS/FEED and piloting is targeted for completion Q2 2027 with production start targeted Q3 2028. Permitting is progressing.

Conditional Offtake is in place for 80% of product subject to funding for +50% of construction costs with the balance of construction funding targeting project debt facilities. Funding of ~A$25m for DFS/FEED and piloting and debt and/or equity investment interest is sought for the ~A$520m construction phase.

Midstream Products & Annual Production Rate

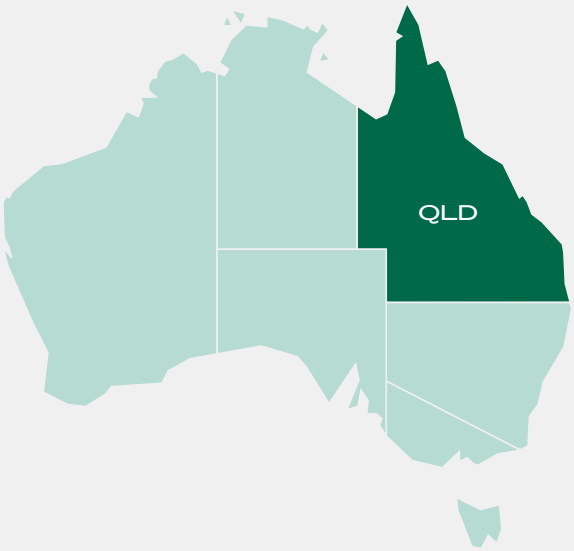
- **Ultra High Purity Quartz Sand (UHPQS), to meet or exceed market requirements :** 36ktpa (base case steady state production post ramp-up)

Midstream summary

Vanadium Electrolyte Facility

Project overview

Company Name:	Critical Minerals Group Ltd
Critical Minerals:	Vanadium, Molybdenum
State or Territory:	QLD
Company Ownership:	ASX listed (CMG)



criticalmineralsgroup.com.au

Midstream Project Description

CMG is developing an integrated mine to battery vanadium supply chain. Its Lindfield vanadium project located near Julia Creek, northern Qld includes mining and processing to produce vanadium pentoxide for transport to its Vanadium Electrolyte Manufacturing Plant being built in Logan City, SE Qld. Vanadium electrolyte will be produced for the vanadium flow battery market. CMG is evaluating a pipeline of vanadium flow battery projects with strategic partners.

The Lindfield project Scoping Study was completed in 2023 and a Pre-Feasibility Study is underway based on open-pit mining and integrated on-site processing to produce vanadium pentoxide and Molybdenum byproduct via scrubbing, cleaning, flotation, leaching, ion exchange, solvent extraction and precipitation. The Logan City Electrolyte Manufacturing Plant is a phased development commencing with Phase 1 producing up to 1 mil litres p.a vanadium electrolyte and expanding to 10mil litres p.a. in Phase 3. Phase 1 EPC and FEED are complete with construction expected to commence in late-2025 and commissioning in 2026. Development approval amendment to allow for 24/7 operations is progressing. Qualification of vanadium electrolyte with battery manufacturers has commenced using vanadium electrolyte from pilot plant test work. Offtake discussions have commenced. CMG welcomes discussions on investment in its projects.

Midstream Products & Annual Production Rate

Lindfield Midstream Project

- **Vanadium pentoxide (V2O5):** ~2 to 10ktpa (PFS evaluating 2ktpa and growth to 10ktpa)
- **Molybdenum trioxide:** ~0.1 to 0.4ktpa

Electrolyte Manufacturing Plant – Phase 1

- **Vanadium electrolyte:** Up to 1 million litres per annum

Electrolyte Manufacturing Plant – Phase 2

- **Vanadium electrolyte:** ~1 million litres per annum

Electrolyte Manufacturing Plant – Phase 3

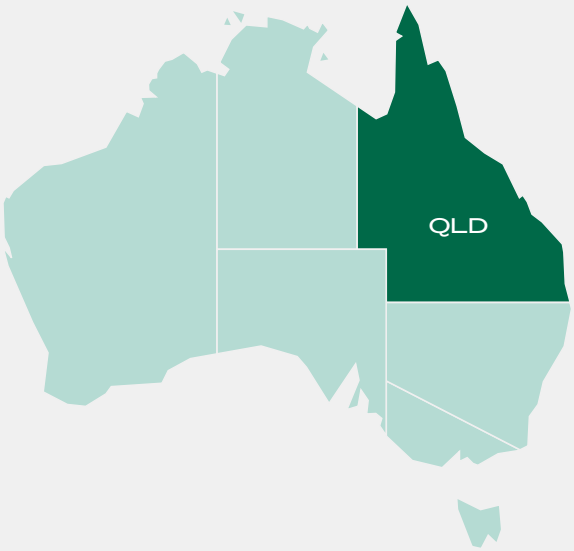
- **Vanadium electrolyte:** ~10 million litres per annum

Midstream summary

Vecco Critical Minerals Project

Project overview

Company Name:	Vecco Group Pty Ltd
Critical Minerals:	Vanadium, HPA, Molybdenum
State or Territory:	QLD
Company Ownership:	Unlisted Private Company (51% owned by Idemitsu)



veccogroup.com.au

Midstream Project Description

Vecco is developing an integrated mining and downstream vanadium supply chain through the Vecco Critical Minerals Project, located in north-west Queensland. The operation will mine and refine high-purity vanadium pentoxide in Julia Creek, Queensland with refined feedstock transported to Vecco's electrolyte manufacturing facilities in Townsville and the USA for final manufacturing of vanadium electrolyte. Vanadium electrolyte stores the energy in vanadium flow batteries - robust, non-flammable systems ideal for grid-scale long-duration energy storage, offering a 30-year lifecycle with no capacity fade and individual commercial systems now exceeding 1GWh.

A PFS was completed in May 2024 based on open-pit mining, processing and refining at Julia Creek via beneficiation, flotation, roasting, leaching, solvent extraction, molybdenum ion exchange, purification and high purity alumina (HPA) processing to produce high-purity vanadium pentoxide, and valuable by-products, HPA and molybdenum. Vanadium pentoxide will be supplied to Vecco's electrolyte manufacturing facilities for final manufacture of vanadium electrolyte. Recently declared a Coordinated Project by the Queensland Government, Vecco is targeting approvals by mid-2026. A BFS is underway, and the Project is advancing towards FID in 2026, with strong equity support from strategic shareholders (Idemitsu & Coeclerici Group). The Company is actively seeking offtake agreements and welcomes discussions with strategic investors and financing partners.

Midstream Products & Annual Production Rate

Julia Creek Mine Midstream Processing:

- **High-purity vanadium pentoxide (99.4% V_2O_5):** 8.7ktpa
- **High purity alumina (4N5):** 4ktpa
- **Molybdenum:** 0.7ktpa

Downstream Electrolyte Manufacturing Facilities:

- **Vanadium electrolyte:** 56 million litres per annum (24ML produced in Australia, 32ML in United States)

Midstream summary

Windimurra

Project overview

Company Name:	Atlantic Vanadium Pty Ltd
Critical Minerals:	Vanadium
State or Territory:	WA
Company Ownership:	Private Company

atlanticptyltd.com.au

Midstream Project Description

Atlantic Vanadium Pty Ltd (AVPL) plans to re-develop the integrated Windimurra mine and on-site processing plant located 80km south-east of Mount Magnet, WA to produce high-purity vanadium pentoxide (V_2O_5) flake for the vanadium redox flow battery market. The project leverages off significant historic investment with all critical infrastructure required for the project (roads, mine pit, gas pipeline, kiln, power station, village) already constructed and under care and maintenance, making it the lowest capital intensity primary vanadium project development in the world. AVPL continues to investigate and develop downstream processing options in anticipation of becoming a vertically integrated vanadium flow battery producer.

Following completion of a Feasibility Study in 2020, an updated Definitive Feasibility Study is nearing completion targeting FID mid-2026. The integrated on-site processing plant includes ore milling and magnetic separation to produce a magnetic vanadium concentrate which will be further processed via salt roasting, leaching and vanadium recovery to produce high-purity V_2O_5 flake. Windimurra has all development approvals and traditional owner agreements in place. AVPL is currently in discussions with prospective project financiers and strategic offtake partners, however the company welcomes interest from prospective project financiers and offtake partners.

Midstream Products & Annual Production Rate

Lindfield Midstream Project

- **High purity V_2O_5 flake (99.5%):** 7,600tpa (V_2O_5 flake or equivilant)
- **Vanadium electrolyte** can be produced as an alternative product to V_2O_5 flake.

international.austrade.gov.au/criticalminerals

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