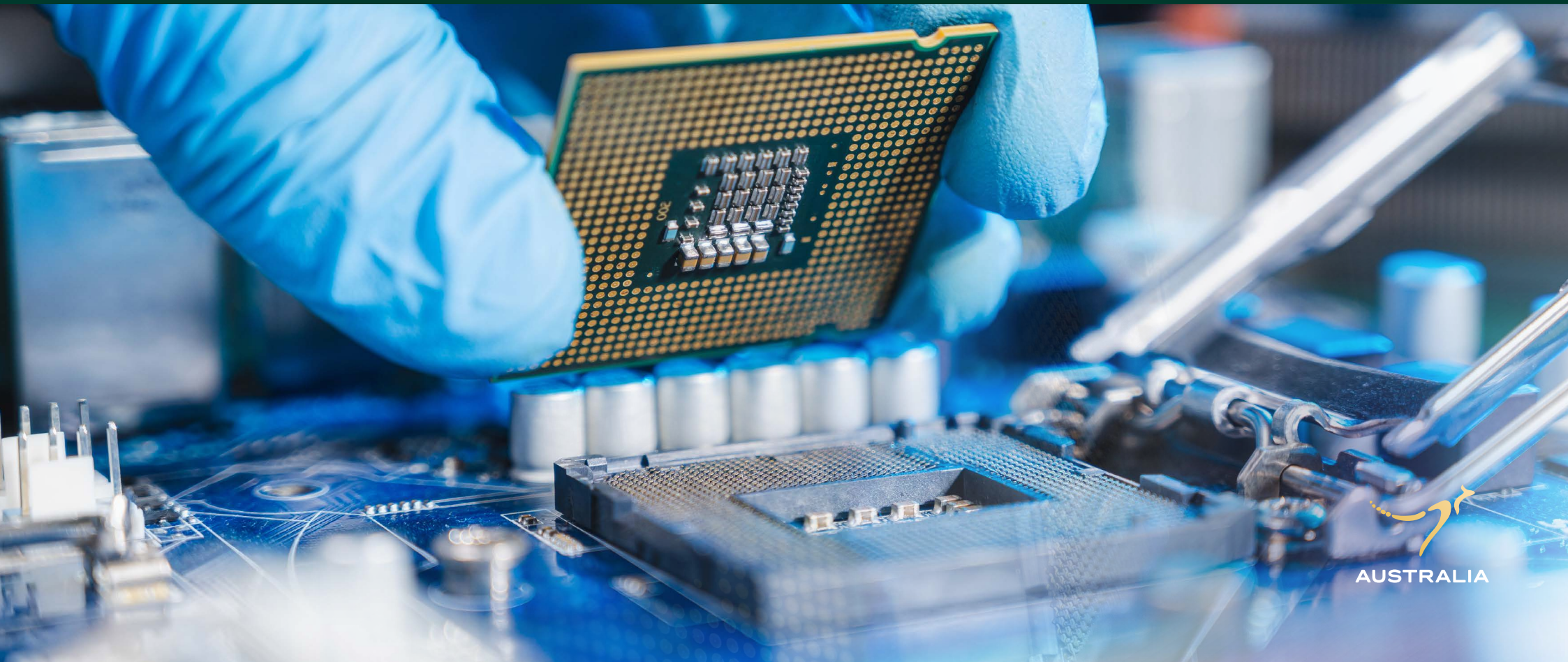
Australian Government
Australian Trade and Investment Commission

Australian Critical Minerals Prospectus

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



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.

Published April 2025.

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. Current as at April 2025, this document summarises the 49 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**.

The importance of critical minerals

Critical minerals and strategic materials are essential components of transformative technologies that will drive Australia's ambitions to become a renewable energy superpower and global energy partner of choice.

- electric vehicles
- hydrogen electrolysers
- solar panels
- wind turbines
- greener buildings
- batteries.

They are also crucial to the defence, technology, and medical sectors.

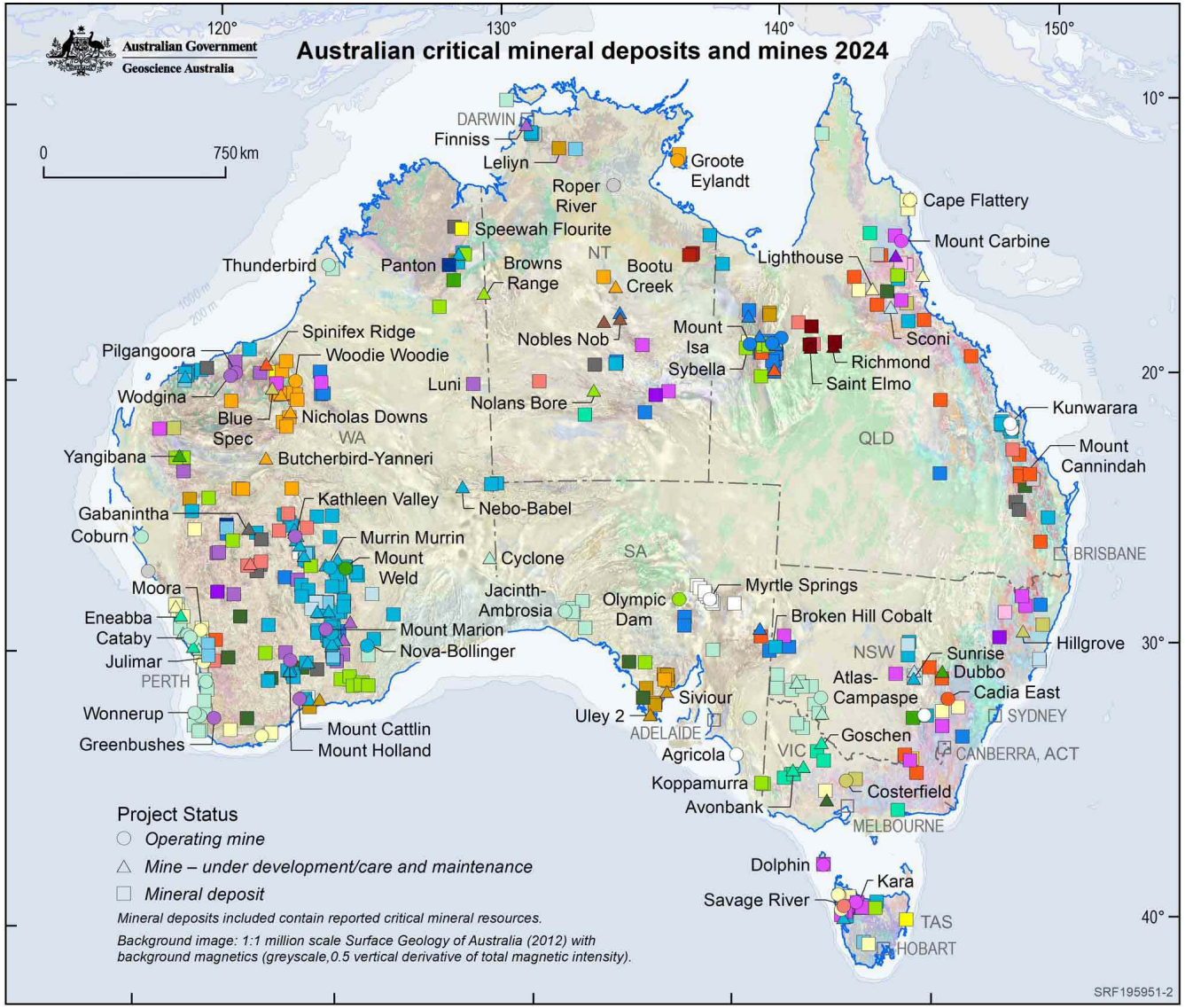
Growing global appetite for critical minerals

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

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



Map courtesy of Geoscience Australia, April 2025

Investment 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

Silicon

Titanium

Tungsten

Vanadium

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 NPV8% 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 Wogen Resources, 5,500t/pa for initial 7 years)

Min Mine Life (Years)
7

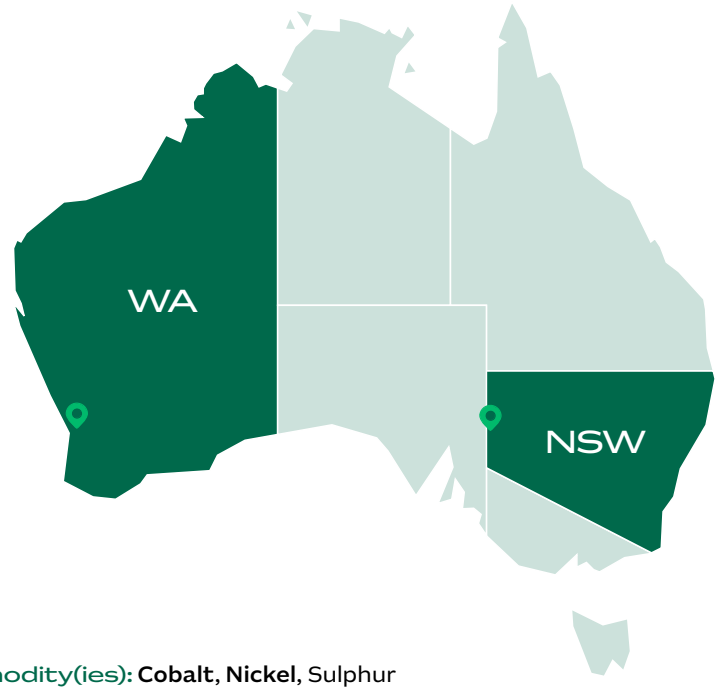
Post-tax IRR
IRR: 242%

Capital Cost
A$69m (net of pre-production revenue)[*1]

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

Cobalt Blue Holdings Ltd
ASX-listed (COB)



Commodity(ies): **Cobalt**, **Nickel**, Sulphur

Mineral Resources as at Nov-23 (275 ppm 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

Broken Hill Cobalt & Kwinana Refinery

Investment summary

Cobalt Blue (COB) is developing the Broken Hill Cobalt Project (BHCP) to produce a cobalt-rich mixed metal hydroxide (MHP) and high-purity elemental sulphur. Due to the low cobalt price environment, EIS and First Nations approvals for the BHCP have been paused. COB, in partnership with Iwatani Australia, is also developing the Kwinana Cobalt Refinery (KCR), producing US Inflation Reduction Act compliant cobalt sulphate. Works Approval permitting has been submitted. COB is evaluating equity, debt and offtake partnerships to finance the Refinery.

Project description

The BHCP will produce an intermediate mixed cobalt-nickel hydroxide (MHP) and elemental sulphur from an open-pit mine and on-site processing plant. A pilot plant was commissioned in 2021, and a larger-scale demonstration plant commenced operations in 2022, continuing with test work. In 2022, the Australian Government granted Major Project Status to BHCP and a A$15m grant was awarded through the Critical Minerals Accelerator Initiative. Largely due to the 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. The KCR will use third-party feedstock (domestic and/or imported) to produce battery-grade cobalt sulphate, which will be sold directly to cathode precursor manufacturers in Japan, South Korea, USA and the EU. KCR will double Australia's cobalt production (from 3ktpa to 6ktpa), elevating Australia to become a top five global refined cobalt producer. COB completed its Refinery Feasibility Study in November 2023, provided updated project cost estimates and revenue analysis in October 2024 and continues to progress product test work, feedstock agreements, permitting and financing.

Project Status
BHCP: Pre Feasibility Study (July 2020)*1
KCR: Feasibility Study completed in Nov 2023 and updated in Oct 2024*2

Offtake Available
Yes

Min Mine Life (Years)
BHCP: 20*1

Post-tax IRR
BHCP: 18.9%*1
KCR: 23%*2

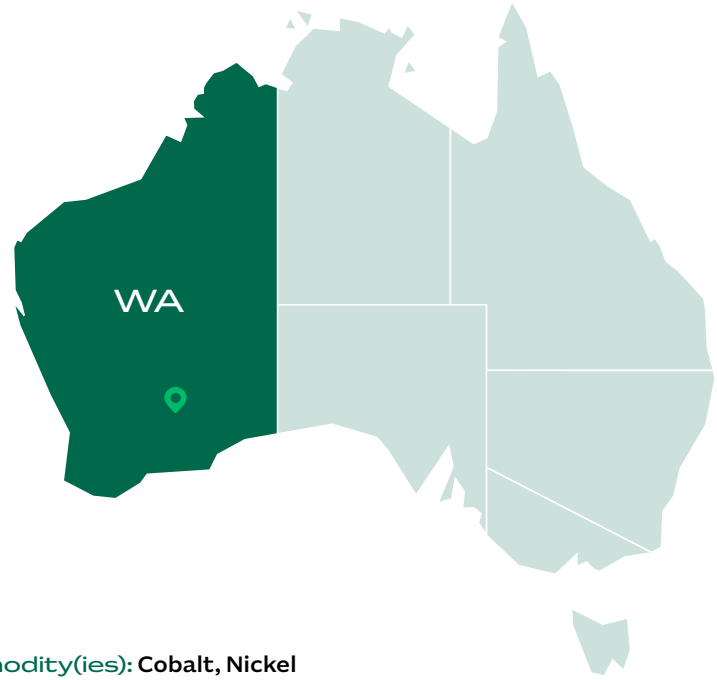
Capital Cost
BHCP: A$560m*1
KCR: A$60m*2

Post-tax NPV$_{8\%}$
BHCP: A$554m*1
KCR: $A90m*2

Product & Annual Production Rate
BHCP*1:
- Cobalt mixed hydroxide precipitate: ~10,000tpa (containing ~3,000tpa cobalt metal)
- Sulphur: ~300,000tpa

KCR*2:
- Cobalt sulphate: ~17,000tpa (containing ~3,000tpa cobalt metal)

Ardea Resources Ltd
ASX-listed (ARL)



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

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**

Kalgoorlie Nickel Project and Goongarrie Hub

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 the developed world's 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 and a 0.5Mtpa atmospheric leach circuit 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 completion in late 2025. 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.

Project Status
Pre Feasibility Study (July 2023)

Offtake Available
25%

Min Mine Life (Years)
40

Post-tax IRR
23%

Capital Cost
A$3.117b

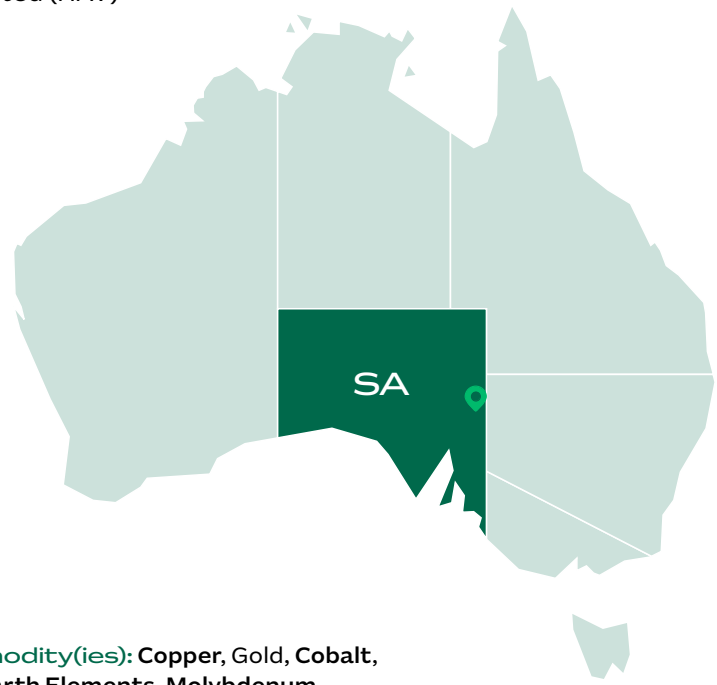
Post-tax NPV$_{7\%}$
A$4.980b

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.

Havilah Resources Ltd
ASX-listed (HAV)



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

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**

Kalkaroo

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.

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

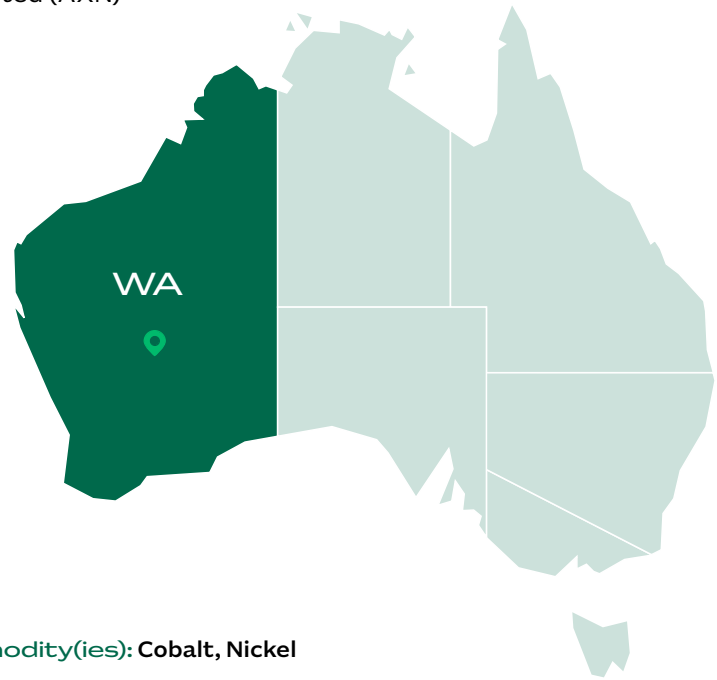
Capital Cost
Being updated

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.*

Alliance Nickel Ltd
ASX-listed (AXN)



Commodity(ies): **Cobalt, Nickel**

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**

NiWest Nickel Cobalt Project

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 and review is underway. 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. ROM 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.

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)

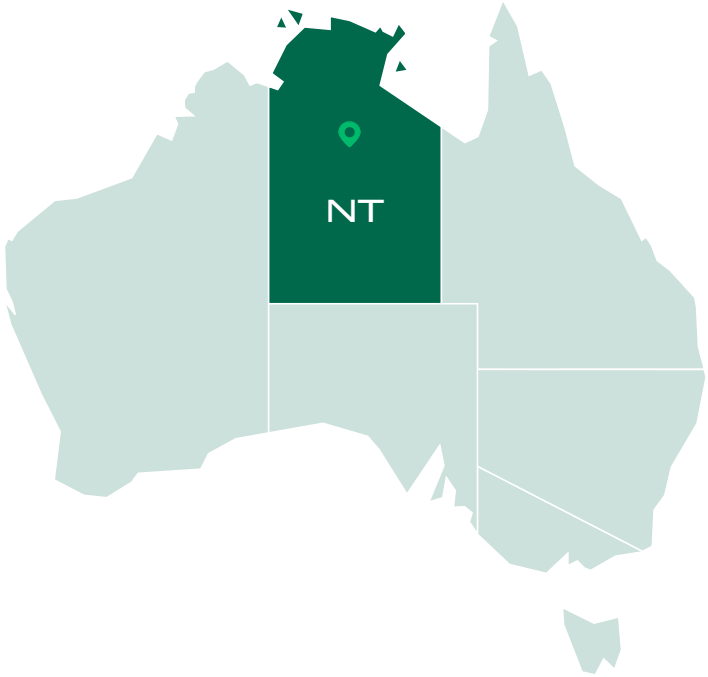
Post-tax IRR
17.64%

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)

Castile Resources Ltd
ASX-listed (CST)



Rover 1

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 96.5% 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. 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, and 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 cobalt, 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.

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

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%

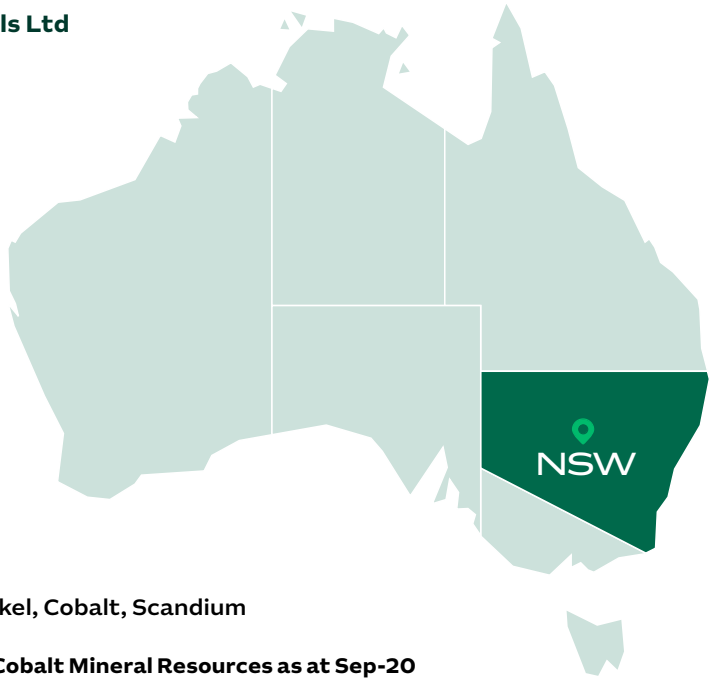
Capital Cost
A$280.2m

$NPV_{6.5\%}$
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
- Fe_3O_4 (96.5% magnetite): 75.3ktpa

(Steady state annual production rates)

Sunrise Energy Metals Ltd
ASX-listed (SRL)



Sunrise Battery Materials Complex

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.

Commodity(ies): **Nickel, Cobalt, Scandium**

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)

Nico Resources Limited
ASX-Listed (NC1)

Commodity(ies): **Cobalt, Nickel**

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**

Wingellina Nickel-Cobalt Project

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.

Project Status
Pre Feasibility Study (December 2022)

Offtake Available
100%
(Nickel and Cobalt)

Min Mine Life (Years)
42

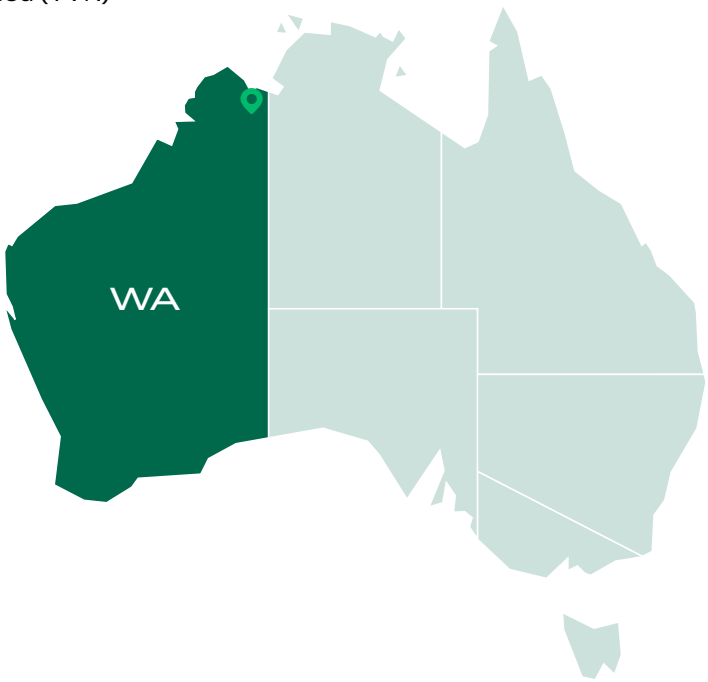
Post-tax IRR
18% ungeared

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)

Tivan Ltd
ASX-listed (TVN)



Commodity(ies): **Fluorine** (Fluorite – CaF_2)

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**

No Ore Reserves Available

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

Speewah Fluorite Project

Investment summary

The Speewah Fluorite Project (100% Tivan) hosts Australia's sole JORC-compliant fluorite resource, with a High-Grade Resource of 8.6mt @ 22.8% CaF_2 and a Total Resource of 37.3mt @ 9.1% CaF_2. Located in the East Kimberley, the Project targets production of 97% acid-grade fluorspar ("Acidspar") for Asian offtake markets, commencing Q2 2027. With Mining Leases granted, Tivan also has Heritage Protection Agreements with the Kimberley Land Council and has finalised a Resourcing Protocol to enable Indigenous Land Use Agreement (ILUA) negotiations. Regional collaboration is advanced with HOA's with Glen Hill Pastoral Aboriginal Corporation and Cambridge Gulf Limited, and an MoU with Pacific Hydro to source renewable power from Ord River Hydro. Baseline environment surveys are well advanced, targeting regulatory approvals by Q1 2026. The Project was awarded Major Project Status and secured a A$7.4 million grant under the International Partnerships in Critical Minerals program. In December 2025, Tivan signed a MoU with Sumitomo Corporation, targeting a binding Joint Venture by March 2025.

Project description

The Speewah Fluorite Project is located 100km south of the Port of Wyndham, WA. A PFS was completed in July 2024 based on open-pit mining and on-site processing of 0.8mtpa ore, using a crushing, grinding, and flotation flowsheet. The Feasibility Study is underway. Tivan aims to produce Acidspar for export; a critical feedstock in semiconductor and electric vehicle battery manufacturing. 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 committed to robust ESG practices and fostering durable stakeholder alignment.

Project Status
Pre Feasibility Study (July 2024)

Offtake Available
Upon completion of binding JV, Sumitomo Corporation will be appointed exclusive distribution agent, with 100% offtake, and prescribed tonnage reserved for customers of Japan.

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

Renascor Resources Ltd
ASX-listed (RNU)

Commodity(ies): **Graphite**

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**

Battery Anode Material Project

Investment summary

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. The Project has been granted Major Project Status and has received conditional approval for an 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 in the final development assessment stages. In 2024, Renascor commenced detailed design and long lead infrastructure procurement for the upstream project, as well as design and procurement for 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, floatation, 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.

Project Status
Feasibility Study (August 2023) (Battery Anode Material Study incluIding 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

Lincoln Minerals Ltd
ASX-listed (LML)

Commodity(ies): **Graphite**

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

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 (floatation) 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).

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)

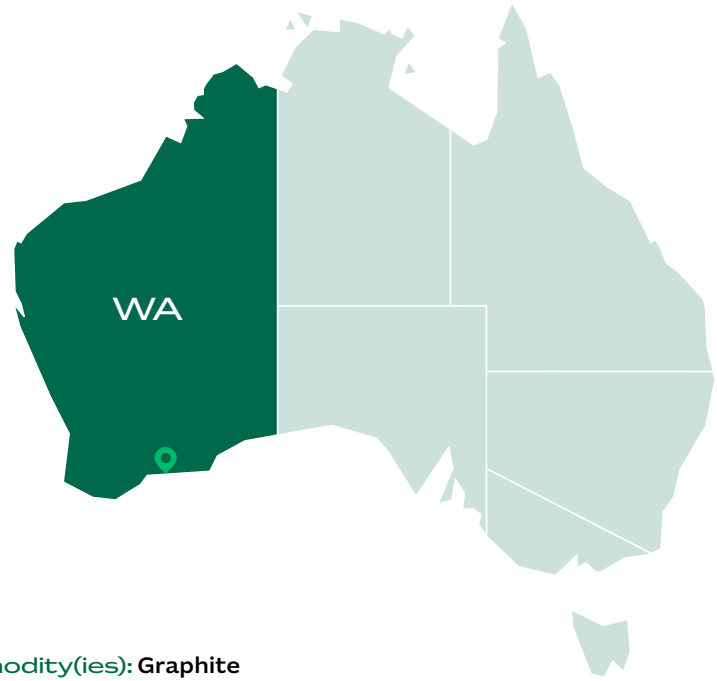
Pre-tax NPV$_{10\%}$
A$114m

Product & Annual Production Rate
Stage 1:
- Graphite concentrate (>95 TGC): 10,000tpa

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

Mineral Commodities Ltd
ASX-listed (MRC)

Gold Terrace Pty Ltd (49%)
Unlisted Private Company



Commodity(ies): **Graphite**

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**

Munglinup

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. MRC welcomes discussion regarding financing or offtake and seeks a strategic partner for project equity, joint venture, or offtake arrangements in both the concentrate and downstream businesses.

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.

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

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

Commodity(ies): **Graphite**

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**

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.

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%)

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

Commodity(ies): **Graphite**

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

Springdale Mine and Collie Graphite Processing Hub

Investment summary

International Graphite's vertical mine-to-market strategy centers on two flagship developments in WA – a downstream processing hub at Collie, with feed from a mine and concentrator at Springdale. Construction is beginning at Collie on the first stage micronising plant following completion of the FEED study in March 2025. A Feasibility Study on the Springdale mine and concentrator is well underway targeting completion in 2025 with construction start scheduled for 2026. The mine and plant are located on freehold farmland in an established industrial estate. 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 has commenced development of a commercial graphite micronising plant in Collie. Following a 2024 Feasibility Study, a FEED study completed in March 2025 defines a two-stage development with Stage 1 production of ~4ktpa using purchased graphite concentrates targeting first production in early 2026. 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, open pit operations will mine ~0.5Mtpa of ore 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.

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

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

Offtake Available
100%

Pre-Tax IRR
Stage 1: 43%[*1]
Stage 2: 30.5%[*2]

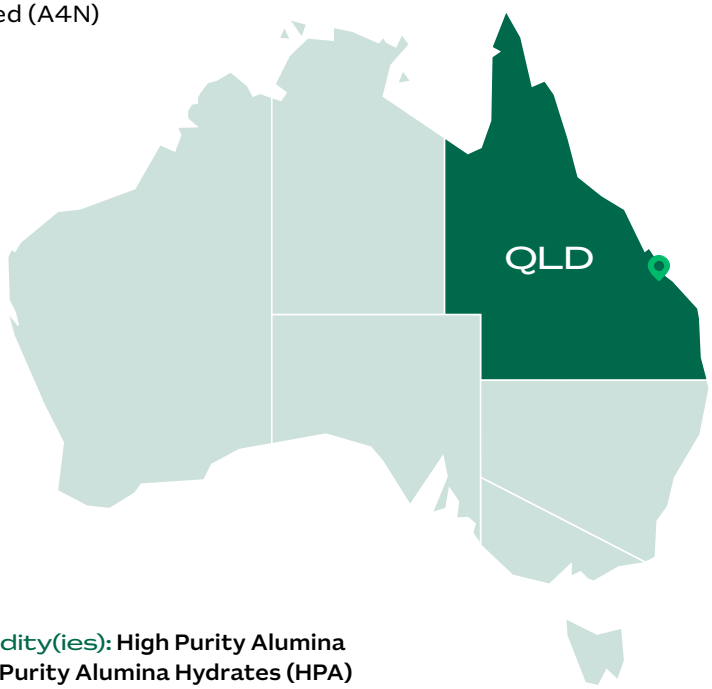
Capital Cost
Stage 1: A$6.3m inclusive of expansion infrastructure[*1]
Stage 2: A$417m Springdale Mine & Flake Concentrator A$75.7m, Collie CSPG Pant A$341m)[*2]

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

Product & Annual Production Rate
Stage 1:
- Micronised graphite: ~4ktpa

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

Alpha HPA Ltd
ASX-listed (A4N)



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

Project Status
Stage 1: Operating since Nov 22.
Alpha Sapphire: Maiden production May 24.
Stage 2: 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 First Project

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. In May 2024, Alpha HPA commenced production of synthetic sapphire from its high-purity alumina pellets under a new business arm, Alpha Sapphire. The Alpha Sapphire business is planned for FID in the 1H 2025. Construction of the Stage Two, large-scale commercial production facility (~10,000tpa) commenced in September 2024, targeting first production commencing in 2027. As at 31 December 2024 all bulk earth works were complete and all long lead time equipment was ordered and under fabrication. For Stage Two, Alpha HPA has been awarded up to A$66.7m in grants from the Commonwealth and Queensland Government and up to A$400m in loans from Government agencies (NAIF and EFA). All key approvals in place. Now accepting individual offtake contracts.

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:

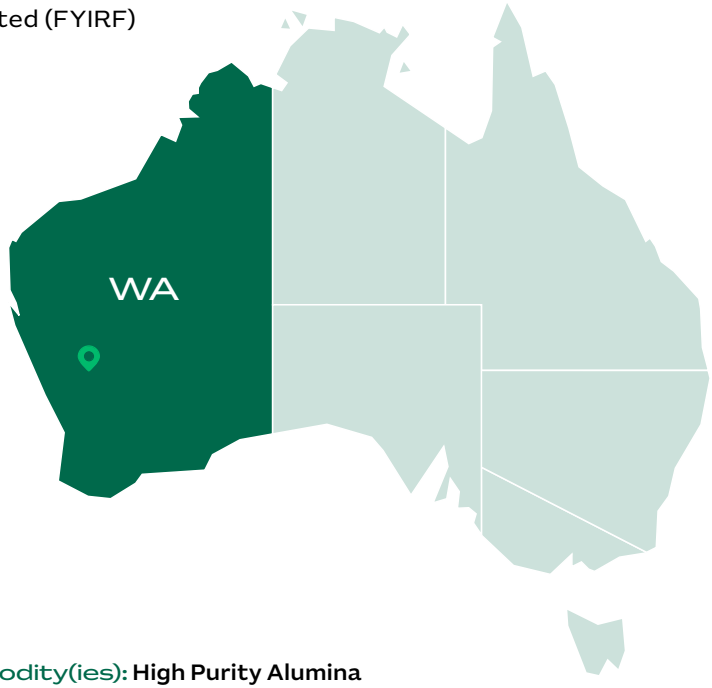
- **Low Carbon, High Purity:** By using a common industrial feedstock, recycling all reagents and using 100% renewable electricity, Alpha can manufacture ultra-high purity materials with a carbon footprint reduction of ~70% compared to other processes.
- **Low Cost:** The front end of the purification 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.

Alpha HPA's unique Smart SX purification process can deliver high-purity, low-cost, low-carbon materials by leveraging the existing industrial infrastructure in the Gladstone region:

- **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.

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



Commodity(ies): **High Purity Alumina**

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**

HPA Project

Investment summary

Cadoux aspires to be a prominent global supplier of premium critical minerals, initially prioritising high purity alumina (HPA) for the burgeoning EV industry and other advanced applications. Cadoux has a staged development approach starting with a small-scale ~1,000tpa production plant (SSP) in stage 1 that will be added to in further stages to achieve final commercial production of 10,000tpa. Our SSP, underpinned by established technology, has entered front end engineering design with the detailed feasibility study due shortly. The mining lease, environmental and heritage approvals have been granted over the Cadoux mine site that is situated on private land, where Native Title is extinguished. Cadoux's Customer Centre of Excellence will ensure product customisation, facilitating product qualification and sales to a variety of end-use applications. In Q1 2024, we initiated the permitting process for production facilities in the Kwinana-Rockingham Strategic Industrial Area. Cadoux is open to engaging with interested parties to explore our development endeavours further.

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 high-grade free-dig open pit resource in a hydrochloric acid leach and precipitation process. 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.

Project Status
Feasibility Study (April 2021)

Offtake Available
No (currently finalising offtake committments)

Min Mine Life (Years)
>50

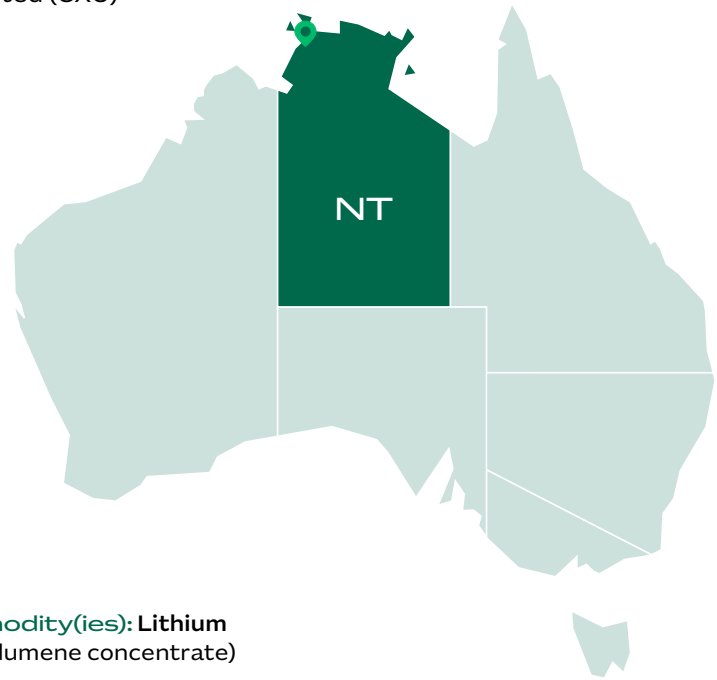
Post-tax IRR
55%

Capital Cost
US$202m

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

Product & Annual Production Rate
- Premium quality high purity alumina (>99.995% Al_2O_3): 10,000tpa

Core Lithium Ltd
ASX-listed (CXO)



Commodity(ies): **Lithium**
(in spodumene concentrate)

Finniss Lithium Operation and Regional Exploration Targets

Investment summary

Core Lithium is an Australian mining and exploration company that commenced spodumene concentrate production from its Finniss operation (Grants open pit mine and dense media separation (DMS) plant) in early 2023. The BP33 underground project, located approximately 5km from the Grants open pit mine, is the second mine proposed to be developed at Finniss. Core also holds a portfolio of tenements in the Northern Territory and South Australia which are prospective for a variety of commodities, including base metals, rare earth elements, gold and uranium. In June 2024, the Finniss operation (Grants open pit mine, DMS and BP33 project) was placed on Care and Maintenance due to a significant downturn in lithium prices. Core remains in a strong financial position with no debt.

Project description

Core's flagship asset, the Finniss Lithium Operation, is hard-rock lithium project located on the Cox Peninsula, located 88km south-west and by sealed road from the Darwin Port. Finniss is Australia's newest lithium mine, and the only Australian lithium mine outside of Western Australia. An updated BP33 Feasibility Study largely completed in late 2023, is currently being updated to incorporate updated mineral resources, alternative processing and project cost options in the context of a continuing low-price environment. This is being done in conjunction with restart studies underway for Grants which is planned for release in the June 2025 Quarter. The Finniss Operation produced 97kt of spodumene concentrate and 66kt lithium fines during FY24 and recorded record production in the June 2024 Quarter.

Total Finniss Project*1 Mineral Resources as at Apr-24 (0.5% Li_2O cut-off):

Resource Category	Tonnes (Mt)	Li_2O (ppm)
Measured	6.33	1.41
Indicated	21.6	1.30
Inferred	20.3	1.18
Total	**48.2**	**1.26**
Contained (kt)		**608**

Total Finniss Project Ore Reserves as at Jun-24:

Reserve Category	Grants Open Pit		BP33 Underground		Total (OP + UG)	
	Tonnes (Mt)	Li_2O (%)	Tonnes (%)	Li_2O (%)	Tonnes (Mt)	Li_2O (%)
Proved	0.53	1.40	2.43	1.33	2.96	1.34
Probable	0.04	1.48	6.25	1.40	6.29	1.40
Total	**0.57**	**1.40**	**8.68**	**1.38**	**9.25**	**1.38**
Contained (kt)		**8.0**		**119.6**		**127.6**

**1 Includes Grants, BP33, Carlton, Hang Gong, Lees, Booths, Ah Hoy, Sandras, Penfolds and Bilatos deposits.*

Project Status
Grants Feasibility Study (Apr 2019)
Grants & BP33 Restart Study 2025 (in progress)

Offtake Available
Yes – when mine restarts production

Min Mine Life (Years)
N/A

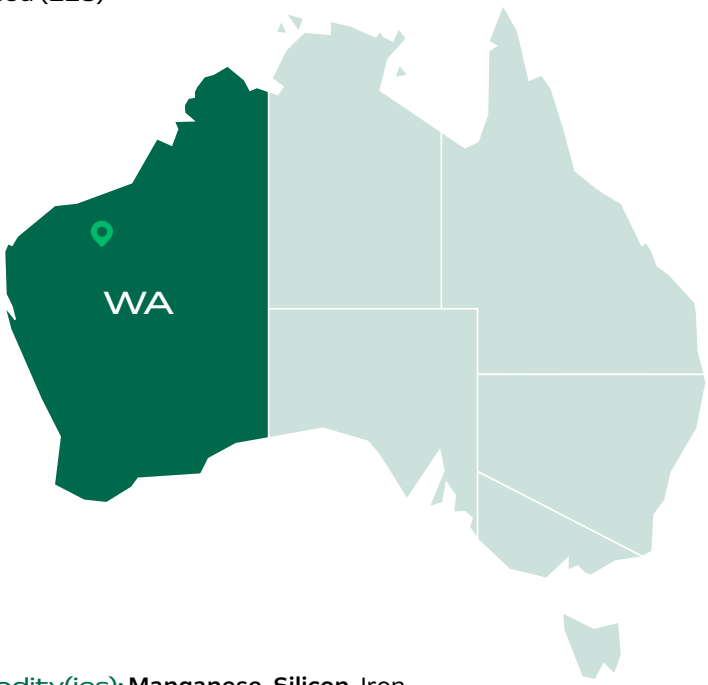
IRR
N/A

Capital Cost
N/A

NPV
N/A

Product & Annual Production Rate
- Spodumene concentrate: N/A (currently on Care and Maintenance)

Element 25 Ltd
ASX-listed (E25)



Commodity(ies): **Manganese**, **Silicon**, Iron

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**

Butcherbird High Purity Manganese Project

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. Construction is expected to commence in 2025 with commissioning expected in early 2026, 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 recently 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 2025 with commissioning expected in 2027, 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 and concentrator 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 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 2025, subject to financing and permitting.

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*1: US$289m (Train 1). US$187m (Train 1); Butcherbird Expansion*2: A$64.8m

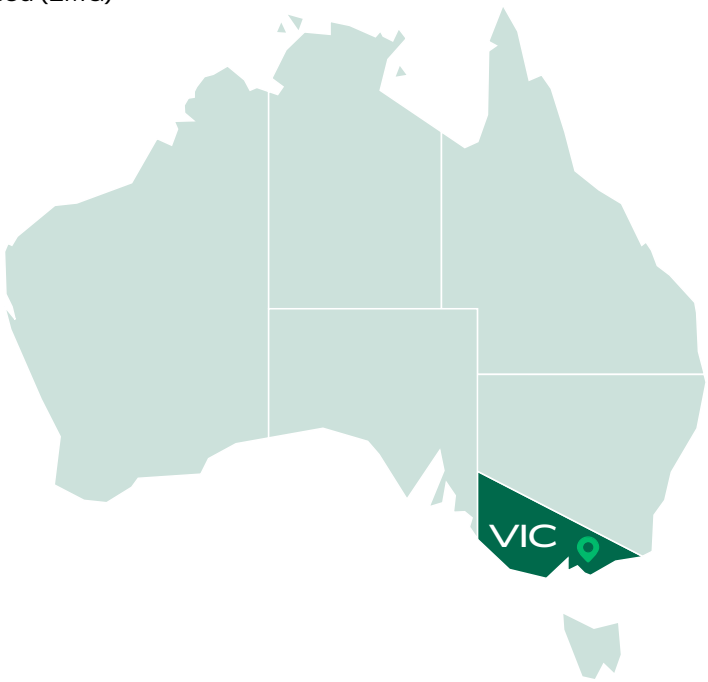
Pre-tax NPV$_{8\%}$
HPMSM*1: US$1,662m; Butcherbird Expansion*2: A$561m

Product & Annual Production Rate

- HPMSM (battery grade 99.99% purity): 65,000tpa expanding to 130,000tpa with Train 2*1.
- Manganese concentrate (30-3% Mn): ~1.1Mtpa*2

*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*

Latrobe Magnesium Ltd
ASX-listed (LMG)



Commodity(ies): **Magnesium**

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 ~7m tonnes of fly ash at a 10% magnesium content. This resource would allow LMG to produce up to 700,000 tonnes of magnesium and operate a plant with a capacity of 10,000tpa magnesium for 70 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.

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 in by the end of 2025. 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 end of 2025. During 2024, LMG continued development studies on its planned 100,000tpa magnesium International Mega-Plant in Sarawak, Malaysia. LMG welcomes discussions on investment and offtake 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, a PFS was completed 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.

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 – Estimate of A$250m
Stage 3 – Estimate of A$1.2b

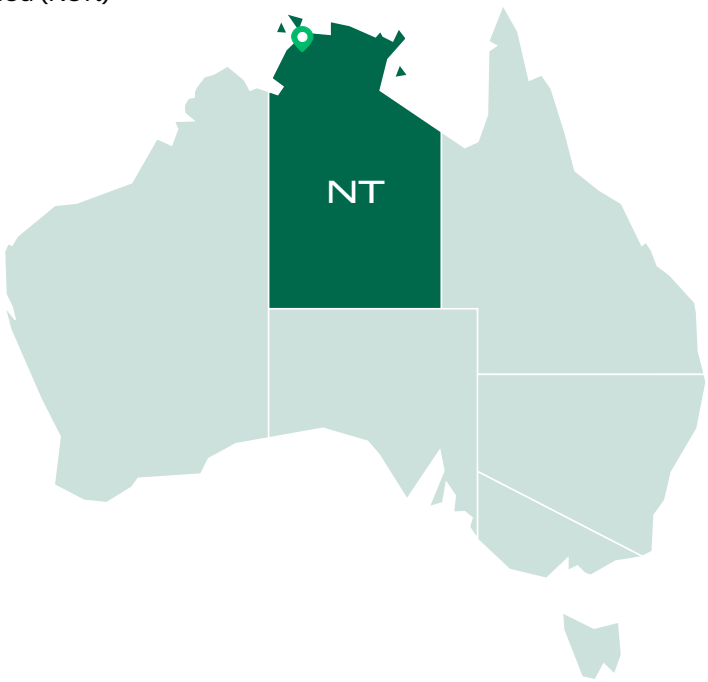
NPV
Stage 2 – EBITDA: estimate of A$59m
Stage 3 – EBITDA: estimate of $A495m

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

Korab Resources Ltd
ASX-listed (KOR)



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

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

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 NPV12% 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.

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

Offtake Available
90%

Min Mine Life (Years)
14 (can be extended)[*3]

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

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

NPV12%
Stage 1: A$184m post-tax 12%[*1]
Stage 2: N/A
Stage 3: A$1b pre-tax 12%[*3]

Product & Annual Production Rate
Stage 1:[*1]
- Magnesium carbonate DSO: 0.6-1.0Mtpa

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

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

Lunnon Metals Ltd
ASX-listed (LM8)

Commodity(ies): **Nickel**, Copper, **Cobalt, Palladium, Platinum**, Gold

Baker Mineral Resources as at Jun-24 (>1.0% Ni cut-off):

Resource Category	Tonnes (Mt)	Ni (%)	Cu (%)	Co (%)	As (ppm)
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**	

Baker Ore Reserves re-stated at Jun-24:

Reserve Category	Tonnes (Mt)	Ni (%)	Cu (%)	Co (%)	Pd (ppm)	Pt (g/t)	As ppm
Probable	0.612	2.86	0.24	0.052	0.49	0.20	110
Total	**0.612**	**2.86**	**0.24**	**0.052**	**0.49**	**0.20**	**110**
Contained (kt)		**17.5**	**1.5**	**0.32**	**0.30**	**0.12**	

Kambalda Gold & Nickel Project

Investment summary

The Baker nickel sulphide deposit is the most advanced asset within Lunnon's Kambalda Gold & Nickel Project (KGNP) which has a global MRE of 4.2Mt @ 2.7% Ni (113kt contained Nickel). The very 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 has been executed with the Ngadju People. BHP's Kambalda Concentrator closed 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. The May 2023 PFS for underground mining at Baker, delineated a ~210,000tpa high-grade project within 350m of surface based on processing ore at BHP's Kambalda Concentrator and delivering concentrate containing ~4,100tpa nickel. Finalization of an updated PFS based on mining both Foster and Baker deposits targeting 400,000tpa ore production was deferred in 2024 due to negative nickel market sentiment. 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. Lunnon has discovered over 74kt of nickel since listing in June 2021, highlighting the world-class discovery credentials of the Kambalda nickel district.

Project Status
Pre Feasibility Study – Baker only, assumes 3rd party concentrator (May 2023). Updated PFS to include Foster and Baker deposits deferred but can be restarted immediately if offtake solution possible.

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

Min Mine Life (Years)
4-5 (Based on initial Ore Reserve) More likely 6 to 7, if Foster and Baker are both mined.

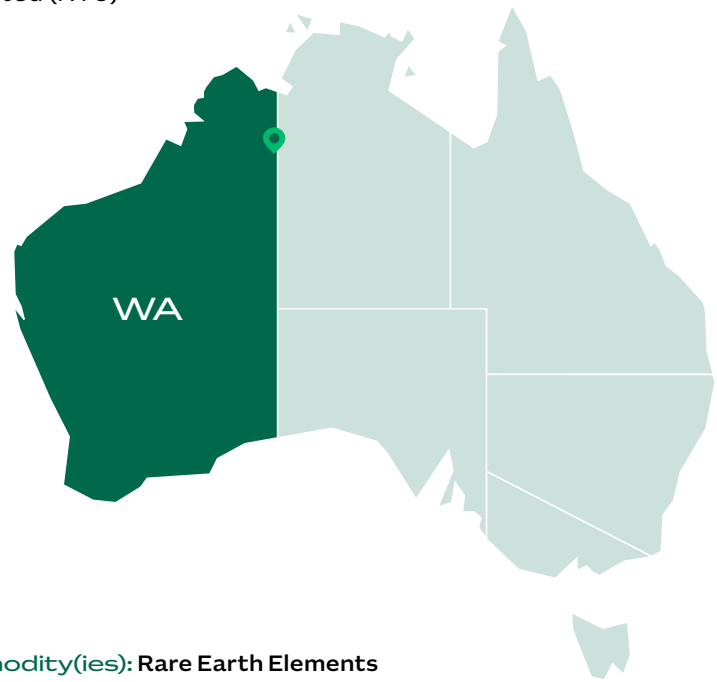
Post-tax IRR
219% (May 2023)

Capital Cost
A$18.6m (May 2023)
**Assumes 3rd party concentrator*

Pre-tax NPV$_{8\%}$
A$164m (May 2023 PFS, based on A$35,294/t nickel price. The current Nickel price (24/2/2025) has fallen to A$26,500/t however Baker is still profitable at that price).

Product & Annual Production Rate
- Nickel concentrate (14.6% Ni): 28,000tpa

Northern Minerals Ltd
ASX-listed (NTU)



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

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.

Browns Range Heavy Rare Earths (HRE)

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.

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)

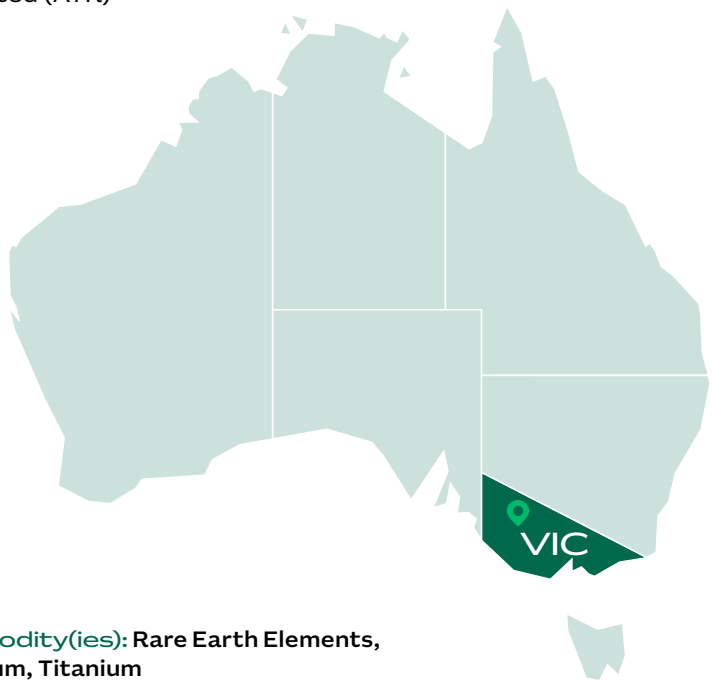
NPV
N/A until completion of updated FS.

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)

Astron Corporation Ltd
ASX-listed (ATR)



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

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.

Donald Rare Earth & Mineral Sands Project

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.

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 with Energy 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)
**Note: Phases 1 and 2*

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

Australian Strategic Materials Ltd
ASX-listed (ASM)

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

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**

Dubbo Project

Investment summary

ASM is a vertically integrated producer of critical metals for growth industries, advanced technologies and sustainable energy solutions. The cornerstone of ASM's 'mine to metals' strategy is the Dubbo Project, a globally significant resource of rare earths, zirconium, niobium and hafnium. The Dubbo Project has all major approvals and permits in place and is construction ready. ASM is targeting a project financing strategy for the Dubbo Project 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 for the construction phase of the Dubbo Project. ASM is continuing discussions with potential strategic investors, offtake partners and financial institutions, targeting Final Investment Decision in 2026.

Project description

The Dubbo Project is located 25km from Dubbo, NSW, close to established infrastructure and within the Orana Renewable Energy Zone. Once operational, the Project will extract, separate, and refine a range of critical mineral oxides, including neodymium, praseodymium, terbium and dysprosium for processing into metals at ASM's metallisation plants. ASM has worked in partnership with Australia's Nuclear Science and Technology Organisation (ANSTO) to develop its process flowsheet, completing significant testwork to maximise oxide recoveries. ASM is currently undertaking its Rare Earth Options Assessment, investigating alternative lower capital and shorter implementation options to recover light and heavy rare earth elements. The Assessment will be completed in 2025. A suitable option would enable a more focused completion of the final engineering work – awarded to Bechtel Engineering – and would present ASM with the opportunity to take a phased approach to the construction of the Dubbo Project.

Project Status
Feasibility Study (Dec 2021)

Offtake Available
Yes

Min Mine Life (Years)
>20

Pre-tax IRR
23.5%

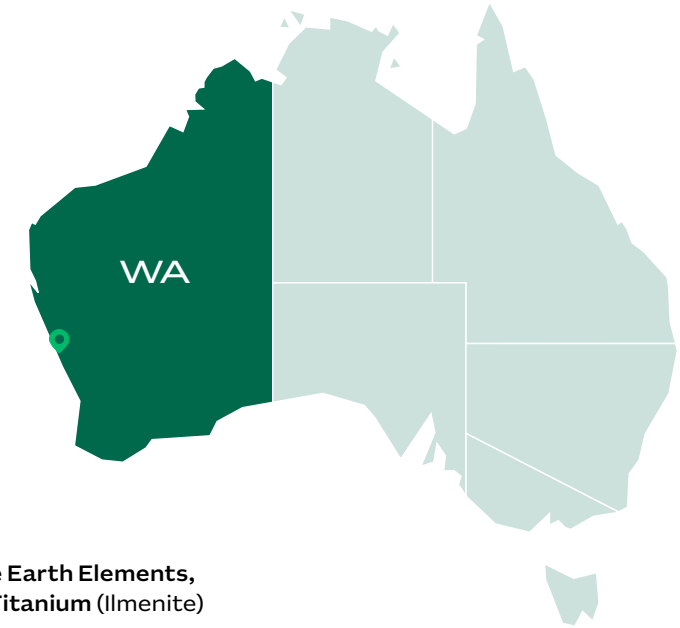
Capital Cost
A$1,678m including contingency

$NPV_{8\%}$
Pre-tax: A$2,361m;
Post-tax: A$1,581m

Product & Annual Production Rate

- 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

Iluka Resources Ltd
ASX-listed (ILU)



Commodity(ies): **Rare Earth Elements, Zirconium** (Zircon) and **Titanium** (Ilmenite)

Eneabba MSP By-Product Stockpile Mineral Resources as at Dec-24:

Resource Category	Tonnes (Mt)	In Situ HM Tonnes (Mt)	Total HM (%)	Percentage of Total Heavy Metals		
				Ilmenite Grade (%)	Zircon Grade (%)	Monazite + Xenotime Grade (%)
Measured	0.65	0.55	84.3	32	27	22.4
Indicated	0.52	0.40	77.0	36	27	13.4
Inferred	0.07	0.05	74.9	37	31	13.4
Total	**1.24**	**1.00**	**81.0**	**34**	**27**	**18.1**
Contained (kt)			**1,001**	**342**	**269**	**183**

Eneabba MSP By-Product Stockpile Ore Reserves as at Dec-23:

Reserve Category	Tonnes (Mt)	In Situ HM Tonnes (Mt)	Total HM (%)	Percentage of Total Heavy Metals		
				Ilmenite Grade (%)	Zircon Grade (%)	Monazite + Xenotime Grade (%)
Proved	0.65	0.55	84.3	32	27	22.4
Probable	0.52	0.40	77.0	37	25	12.4
Total	**1.17**	**0.95**	**81.0**	**34**	**26**	**18.2**
Contained (kt)			**948**	**326**	**245**	**172**

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

Eneabba Rare Earths Refinery

Investment summary

Iluka is currently building Australia's first fully-integrated rare earths refinery at Eneabba in Western Australia. Once commissioned, the refinery will produce both light and heavy separated rare earth oxides, including the highly valuable dysprosium and terbium. Environmental approvals are in place. Traditional Owner agreements are in place, and Iluka is working in partnership with YSRC to improve sustainable economic development in the region. Construction is underway and commissioning of the refinery is expected in 2027.The refinery is being delivered as part of a strategic partnership with the Australian Government, who are providing a A$1.65 billion non-recourse loan.

Project description

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), as well as from a range of potential third parties in 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 oxides, subject to the feedstock used. The refinery provides a foundation to take further steps along the rare earth value chain, including the production of rare earth metals. Iluka is progressing feasibility work into commercial scale production of rare earth metals – the next stage in the value chain and the essential precursor to production of manufacture of permanent magnets.

Project Status
Construction Updated Economics (Dec 2024)

Offtake Available
100% – detailed discussions are ongoing.

Min Mine Life (Years)
Initial ~9 year life from Eneabba stockpile.

IRR
Refer to Iluka's Eneabba rare earths refinery updated economics announcement on 6-Dec-24.

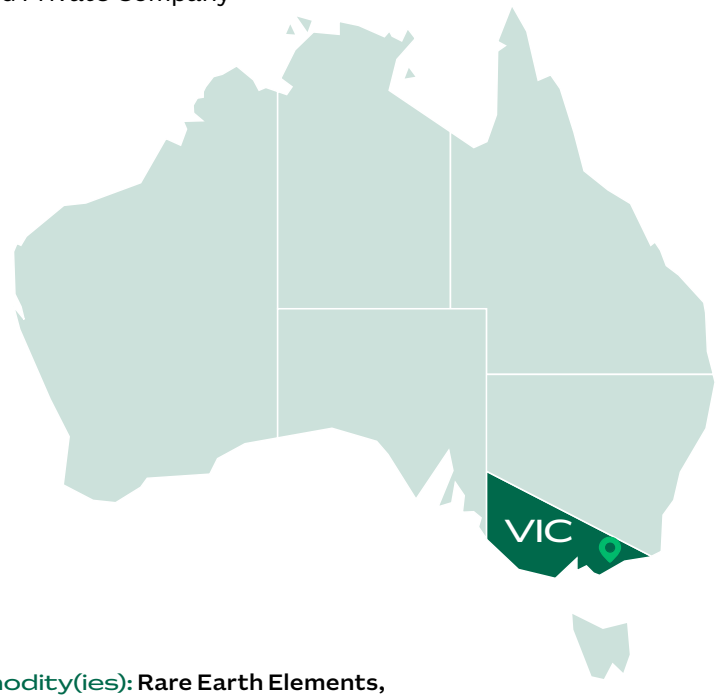
Capital Cost
~A$1,700m–1,800m

NPV
Refer to Iluka's Eneabba rare earths refinery updated economics announcement on 6-Dec-24.

Product & Annual Production Rate
- 17.5-23ktpa rare earth oxides, subject to feedstock used

Product range will include neodymium (Nd) oxide; praesedymium (Pr) oxide, didymium (NdPr) oxide; dysprosium (Dy) oxide; terbium (Tb) oxide.

Gippsland Critical Minerals Pty Ltd
Unlisted Private Company



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

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**

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.

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

Offtake Available
100%

Min Mine Life (Years)
22

Post-tax IRR
49%

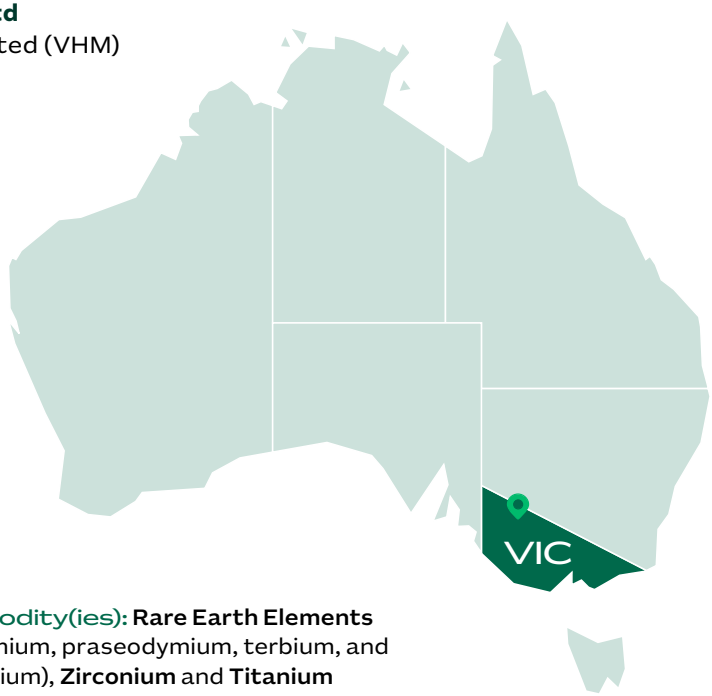
Capital Cost
A$295m

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

VHM Ltd
ASX-listed (VHM)



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

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.

Goschen

Investment summary

VHM is developing the Goschen Rare Earths and Minerals Sands Project in the emerging critical minerals province of northwest Victoria. Goschen is a strategic rare earths deposit (neodymium, praseodymium, terbium, and dysprosium), as well as a significant zircon and titania resource. The Victorian Government approved the Goschen Project Environment Effects Statement (EES) in December 2024. Current pre-construction milestones include receiving a mining license, secondary approvals, financing, and awarding major contracts. Construction is planned to commence in December 2025 with production scheduled for late 2026. No Native Title or Aboriginal Cultural Heritage values have been identified. VHM has commenced funding, offtake and strategic partner discussions.

Project description

The Goschen DFS completed March 2023 was updated in February 2025 based on a staged development strategy commencing at an initial mine production rate of 1.5Mtpa, with planned expansion to 5Mtpa. The initial phase is expected to generate operational cash flow to largely fund the expansion. Ore will be mined over a 22-year mine life using conventional truck and shovel open pit mining methods employed in a dry strip mining operation, with progressive mining, tailings deposition and rehabilitation. Ore will be processed on-site via a processing plant where a Wet Concentrator plant will upgrade the ore through a series of spirals to produce a heavy mineral concentrate (HMC). The HMC will undergo further processing through a flotation circuit to separate the HMC into the two products; a rare earth mineral concentrate (REMC) and a zircon-titania HMC. VHM has entered a partnership for mining services and has selected contractors for process plant delivery and infrastructure.

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

Offtake Available
Yes

Min Mine Life (Years)
21

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

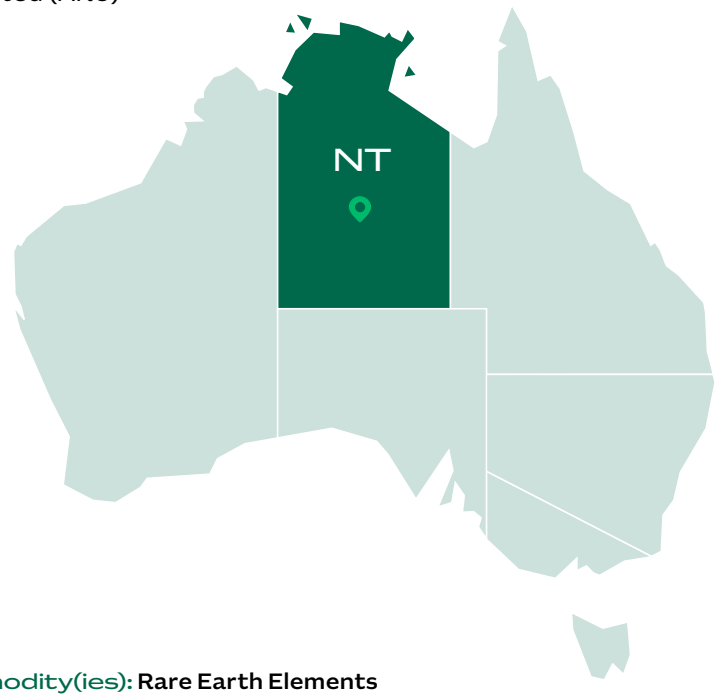
Capital Cost
Stage 1 (Years 1-3): A$160m
Stage 2 (Years 4-22): A$85-$90m

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

Arafura Rare Earths Ltd
ASX-listed (ARU)



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

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**

Nolans Rare Earths Project

Investment summary

Nolans will recover rare earths (NdPr and SEG/HRE oxides, containing Dy and Tb) and phosphoric acid from a mine and processing facility comprising beneficiation, extraction and separation plants. Nolans is key to meeting global NdPr demand, used in high-performance magnets for renewable technologies. The DFS in 2019 and subsequent project updates (latest July 2024) confirm attractive economics of the Project. 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, including a US$533m debt funding package through EFA and NAIF. Project funding activities are now focused on strategic equity investment and in January 2025, Australia's National Reconstruction Fund (NRFC) made a A$200m investment commitment. The Company has binding offtake agreements with Siemens Gamesa Renewable Energy and Hyundai and Kia. Offtake negotiations with other international OEMs and Tier 1 producers are well advanced.

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 a shovel-ready single-site ore-to-oxide operating model with all mining, processing, and waste management onsite, reflecting responsible mining and ESG commitments. Current project activities focus on critical path work programs, compliance, and progressing improvements that reduce capital, schedule, and risk in preparation for a final investment decision and subsequent commencement of construction. 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.

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)

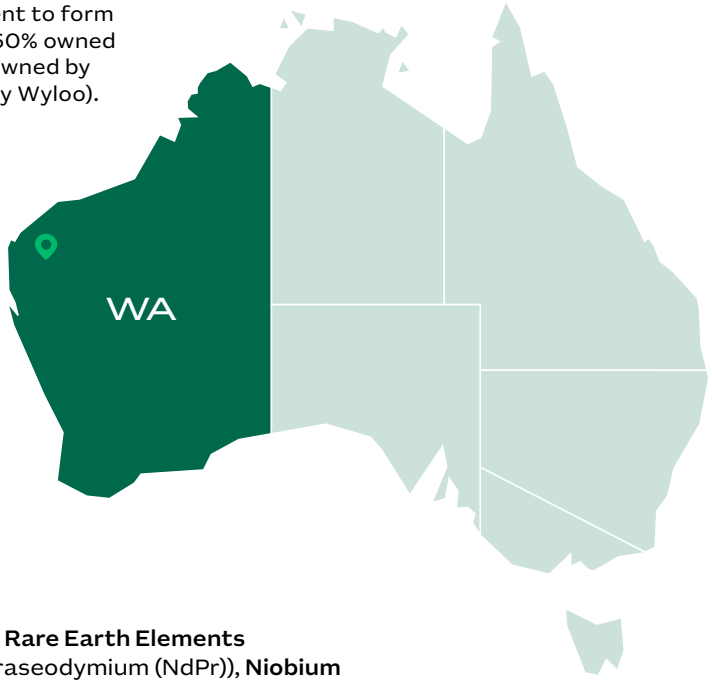
Capital Cost
US$1,226m

Post-tax $NPV_{8\%}$
US$1.7 billion (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

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**

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**

Yangibana Rare Earths & Niobium Project

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.

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

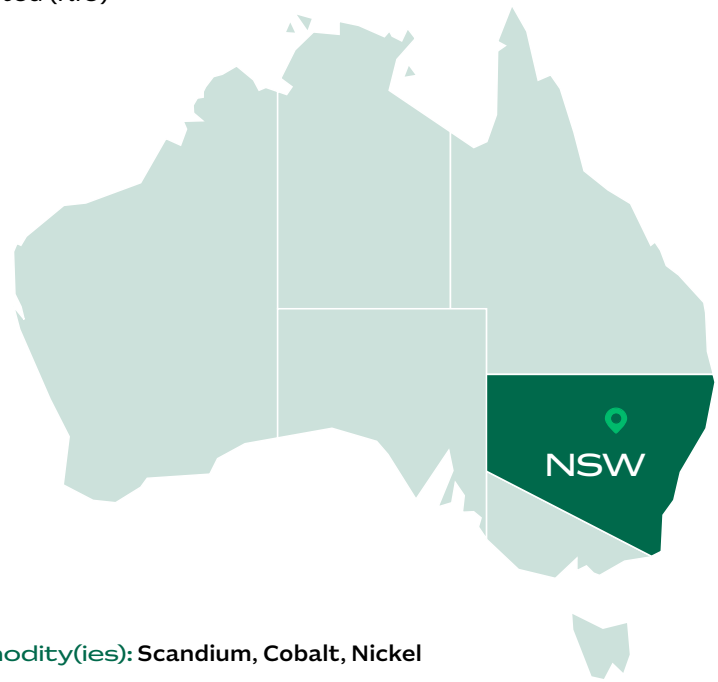
Post-tax IRR
31.28%

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)

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 a number of 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 and minimizing greenfield land disturbance, whilst maximising the logistics, 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[2]**	**20.5 kt**	**35.7 kt**	**317 Koz**

Ore Reserves as at Dec-18 (450ppm Sc cut-off), Platina Resources Ltd:

Reserve Category	Tonnes (Mt)	Sc (ppm)	Co (%)	Ni (%)
Proved	3.05	575	0.10	0.13
Probable	0.97	550	0.07	0.08
Total	**4.02**	**570**	**0.09**	**0.12**
Contained (kt)		**3.5 kt Sc_2O_3[2]**	**3.6 kt**	**4.8 kt**

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

Mineral Resources and Ore Reserves 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 these Mineral Resource and Ore Reserve estimates or the anticipated capacity estimates, and will provide updated estimates if required in due course. Scandium is typically sold as scandia or scandium oxide (Sc2O3) product and is calculated from scandium metal content and a 1.53 factor to convert to the oxide form.

VRX Silica Ltd
ASX-listed (VRX)

Arrowsmith North Silica Sand

Investment summary

VRX Silica has five high-grade, low impurity silica sand projects in WA boasting multi-decade scale deposits with a combined +1.38Bt Mineral Resource of 99.6% to 99.9% SiO_2 silica sand. Arrowsmith North is the first project to be developed and has mining leases granted and Native Title and Aboriginal Heritage agreements in place. Environmental and mining approvals are well advanced. EPA WA recommended Ministerial Consent in January 2025 however an appeal lodged during the public review period is now being assessed with a decision expected in April 2025. VRX is targeting commencement of production early 2026. Silica sand is the raw material required to produce critical silicon components to meet global decarbonisation commitments. Arrowsmith North Silica Sand uses include; glassmaking, foundry products, solar panel backing plate glass, lithium battery thermal protection sponge "blades" and high tensile fiberglass yarn that covers wind turbine blades. Non-binding offtake has been agreed for export of 640ktpa with indicative pricing for Asian foundry and glass markets.

Project description

Arrowsmith North is located 270km north of Perth, adjacent to highway and rail connections to Geraldton Port. Exploration, metallurgical test work, 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 (VDT) to maximise restoration of native vegetation. Key equipment items required for the project have been purchased including screen, trommel and modified loader bucket for VDT rehabilitation.

Commodity(ies): **Silica Sand**

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 (640ktpa subject to non-binding offtake agreements)

Min Mine Life (Years)
25

Post-tax IRR
35% (ungeared)

Capital Cost
Approximately A$67m Inc. 20% contingency

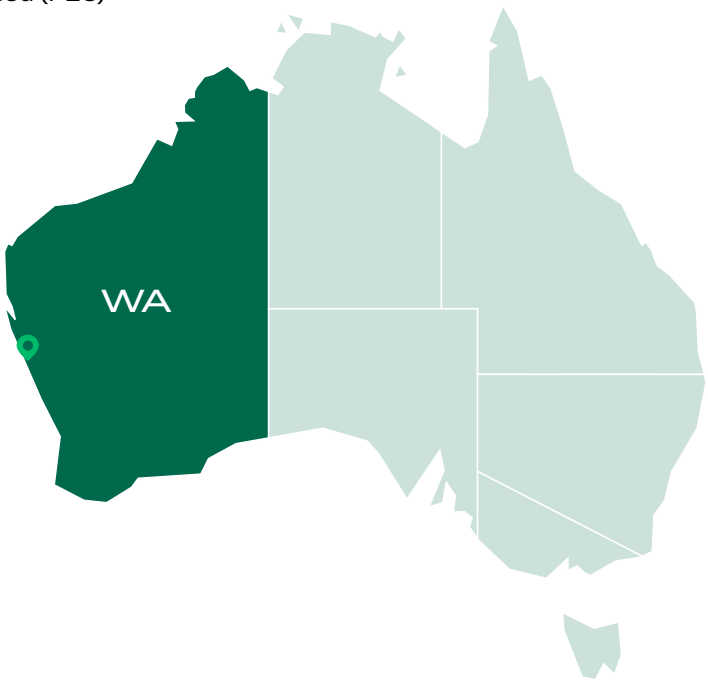
Post-tax $NPV_{10\%}$
A$167m (ungeared)

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

Perpetual Resources Ltd
ASX-listed (PEC)



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.

Commodity(ies): **Silicon**

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

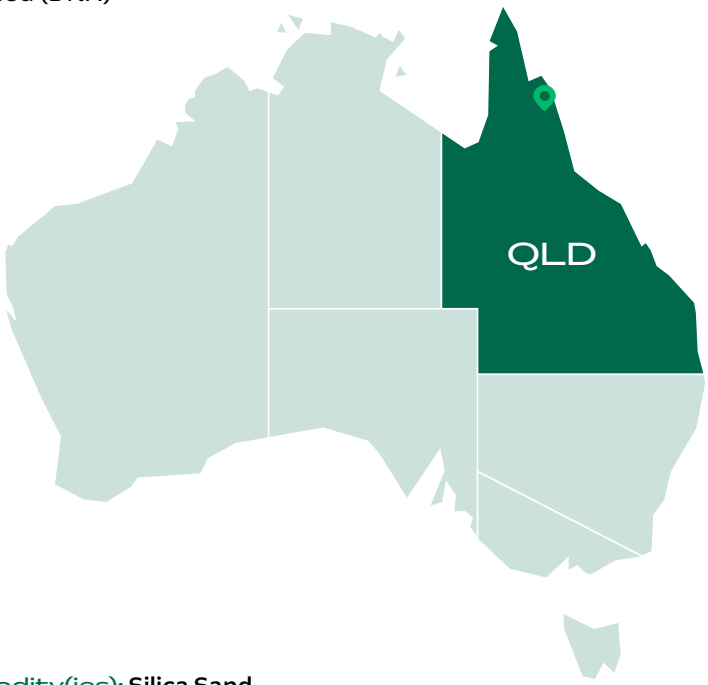
Post-tax ungeared $NPV_{10\%}$
A$231m

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.

Metallica Minerals Ltd
ASX-listed (DRX)



Commodity(ies): **Silica Sand**

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).

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.

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

VRX Silica Ltd
ASX-listed (VRX)

Muchea Silica Sand Project

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.

Commodity(ies): **Silica Sand** and **Flour**

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

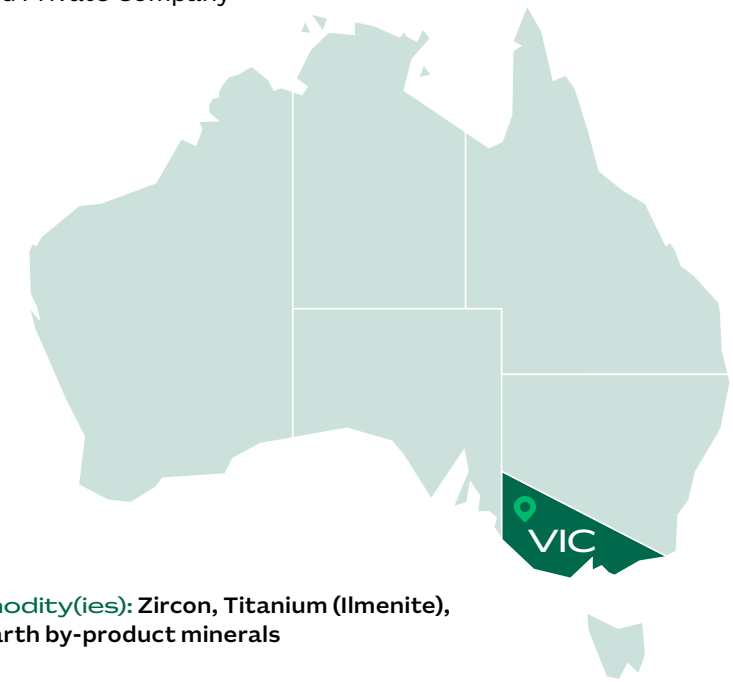
Post-tax IRR
Ungeared: 96%

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

WIM Resource Pty Ltd
Unlisted Private Company



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

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

Avonbank Mineral Sands Project

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.

Project Status
Pre-Construction

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

Min Mine Life (Years)
36

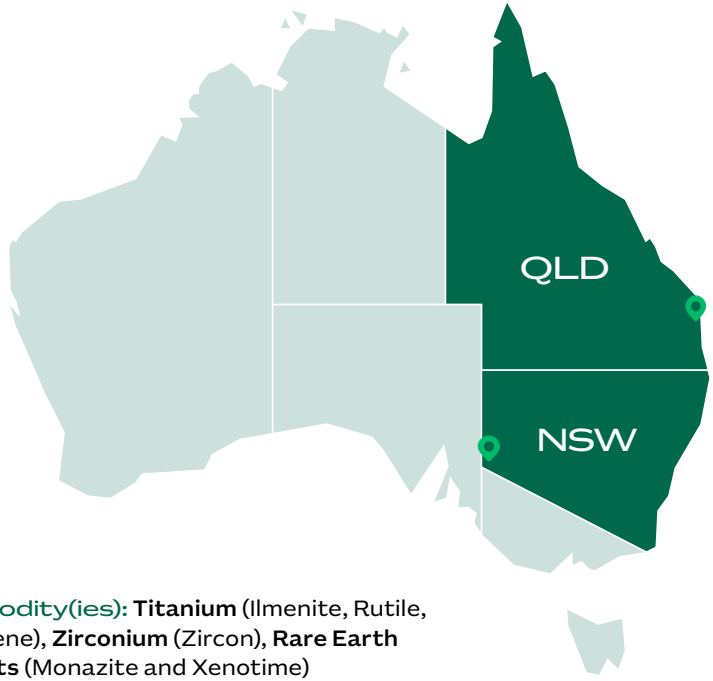
IRR
Please contact WIM for further information.

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

RZ Resources Ltd
Unlisted Public Company,
100% Australian owned



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

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.

Copi

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 Q4 2025. 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 early 2026 (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 to be processed on site 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, currently under care and maintenance. 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.

Project Status
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.

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

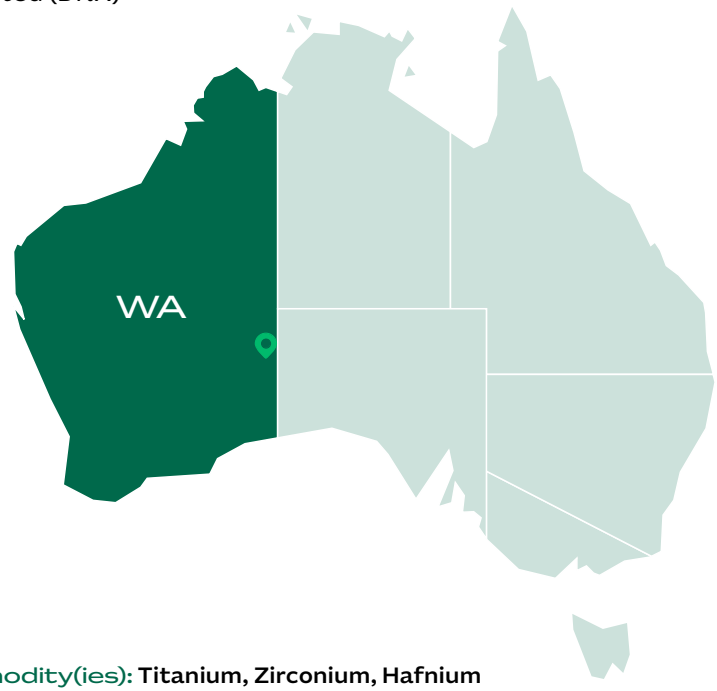
Pre-tax IRR
21%

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

Diatreme Resources Ltd
ASX-listed (DRX)



Commodity(ies): **Titanium, Zirconium, Hafnium**

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.

Cyclone Zircon Project

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.

Project Status
Feasibility Study (November 2018)

Offtake Available
Yes

Min Mine Life (Years)
13.2

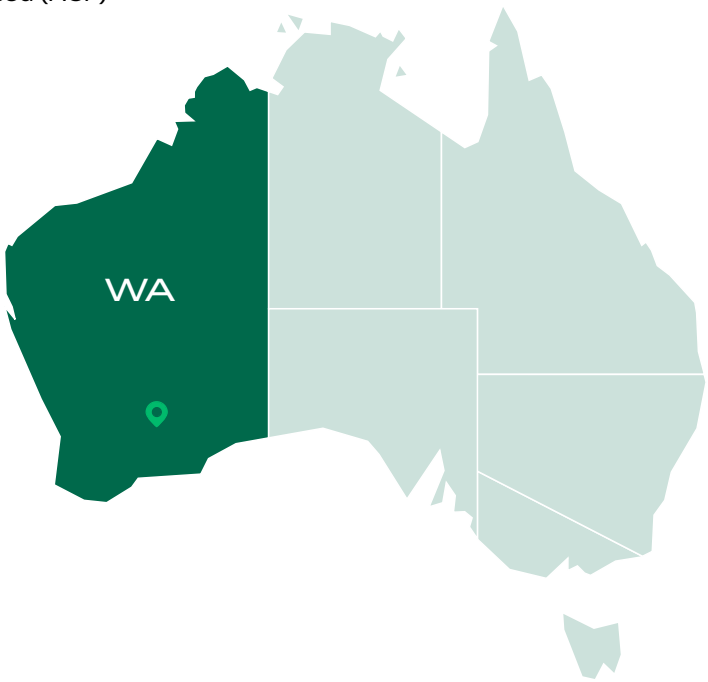
Post-tax IRR
27.2%

Capital Cost
A$135m

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

Product & Annual Production Rate
- HMC: 147ktpa (containing 59ktpa zircon, 9ktpa HiTi87, 49ktpa HiTi67)

Audalia Resources Ltd
ASX-listed (ACP)



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).

Commodity(ies): **Titanium, Vanadium,** Iron

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%

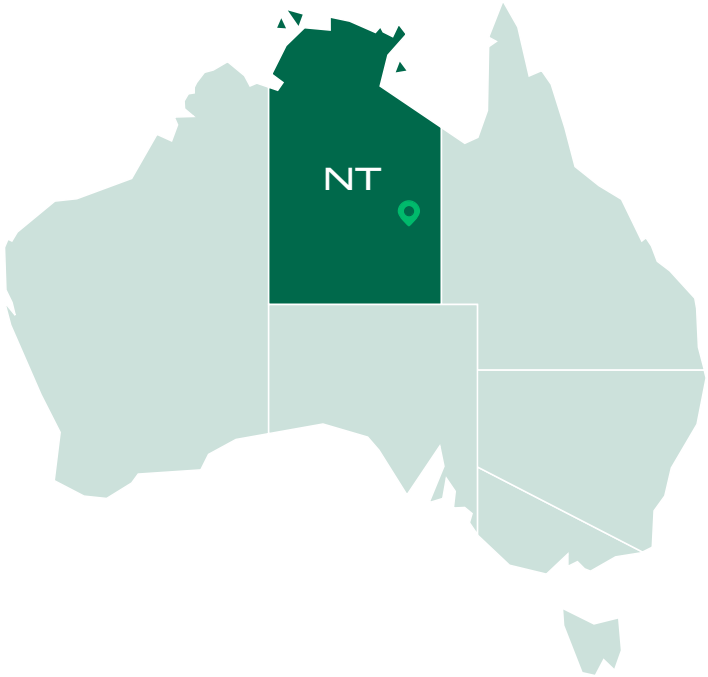
Capital Cost
A$32.8m

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

Thor Energy Plc (75%)
ASX & AIM-listed (THR)

Investigator Resources Ltd (25%)
ASX-listed (IVR)



Commodity(ies): **Tungsten, Molybdenum,** Copper

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

Molyhil Tungsten

Investment summary

The Molyhil Tungsten Project is owned by Thor Energy Plc, with Investigator Resources Ltd earning-in to a JV interest up to 80%. The Project was awarded Major Project Status by the NT Government in 2020. Thor's Feasibility Study in 2018 confirmed Molyhil as a technically and economically viable project producing tungsten, molybdenum, and copper concentrates for export/downstream processing. Following a resource verification drilling program, Investigator completed an updated Mineral Resource Estimate in May 2024 resulting in a 150% increase in tonnes, a 20% increase in WO_3 grade and a 200% increase in contained tungsten within the Measured Resource component. A revised Scoping Study is to be completed as a next step towards development of this Project. Environmental approvals are in place, along with an agreement over the project area with Native Title Arrapere Group and Central Land Council.

Project description

The Molyhil deposit is located ~300km NE of Alice Springs, NT and occurs as skarn bodies containing scheelite, molybdenite, and chalcopyrite mineralisation. Thor's 2018 Feasibility Study was based on a single, simple open-pit mine, with a life of 7 years. Molyhil ore will be processed on-site to produce tungsten, molybdenum, and copper concentrates using industry standard ore sorting and flotation processing techniques. The adjacent Bonya deposits, ~30km from Molyhil, host JORC 2012 Mineral Resources of Tungsten and Copper, with potential to extend the life of Molyhil for several years. Detailed gravity geophysical surveys completed in 2024 have identified a number of potential Molyhil style targets. Investigator will drill the four highest priority targets during 2025, with the objective of identifying near-mine mineralisation.

Project Status
Feasibility Study (Aug 2018)

Offtake Available
100% (Tungsten concentrate)

Min Mine Life (Years)
7

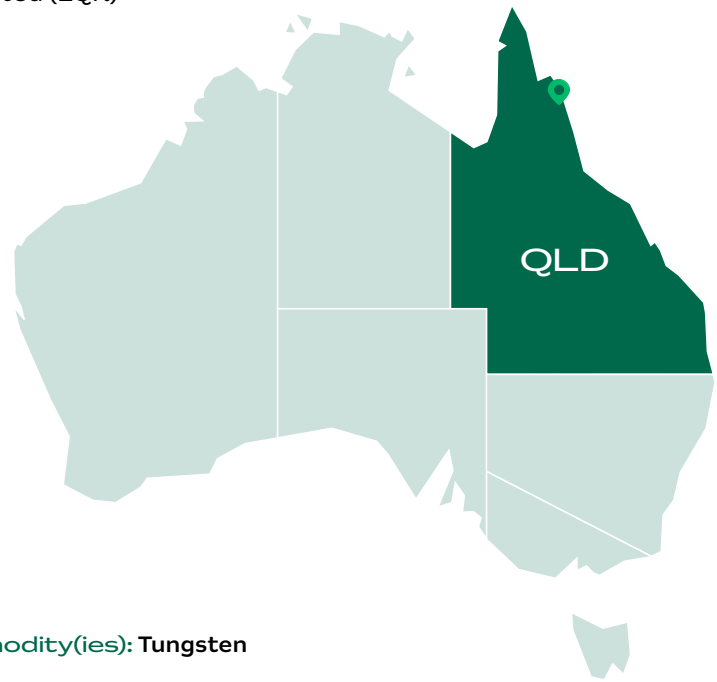
Post-tax IRR
59%

Capital Cost
A$69m

Post-tax $NPV_{5\%}$
A$101m

Product & Annual Production Rate
- Tungsten concentrate: (65% WO_3): 1,850tpa
- Molybdenum concentrate: (51.4% Mo): 850tpa
- Copper concentrates: minor

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 488km^2 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 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	12.7	0.08
Inferred	0.83	0.06
Total	**13.53**	**0.07**
Contained (kt)		**9.80**

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

Resource Category	Tonnes (Mt)	Nickel (%)
Indicated	17.49	0.30
Inferred	10.68	0.30
Total	**28.17**	**0.30**
Contained (kt)		**84.52**

Mt Carbine Ore Reserves as at Jun-24:

Low-Grade Stockpile

Reserve Category	Tonnes (Mt)	WO_3 (%)
Probable	9.77	0.075
Total	**9.77**	**0.075**
Contained (kt)		**7.33**

Open Cut

Reserve Category	Tonnes (Mt)	WO_3 (%)
Probable	5.36	0.28
Total	**5.36**	**0.28**
Contained (kt)		**15.01**

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 (on schedule).
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

Tungsten Mining NL
ASX-listed (TGN)

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

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**

Mineral Resources as at May-20 (0.05% 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**

Mt Mulgine

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.

Project Status
Pre Feasibility Study (2021)

Offtake Available
Yes

Min Mine Life (Years)
20+

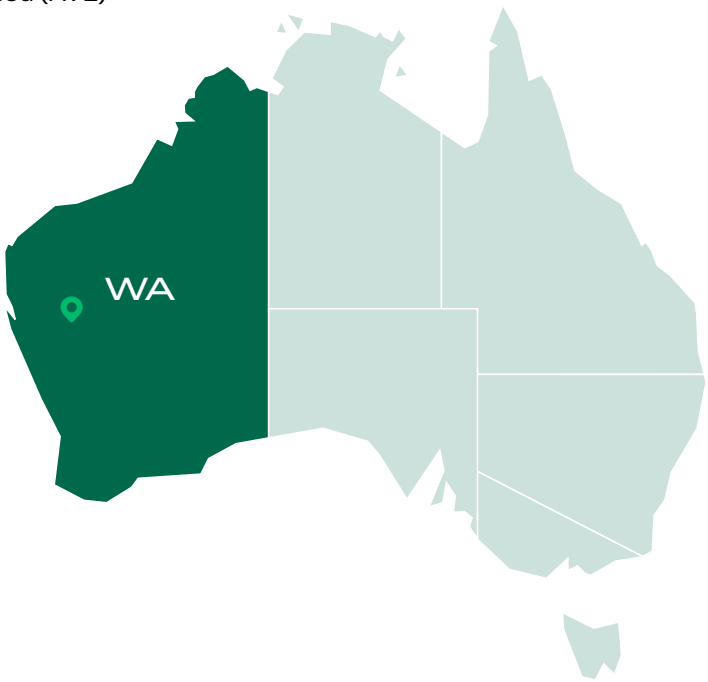
IRR
N/A

Capital Cost
N/A

NPV
N/A

Product & Annual Production Rate
N/A

Australian Vanadium Ltd
ASX-listed (AVL)



Commodity(ies): **Vanadium**, Iron Concentrate

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

Australian Vanadium Project

Investment summary

The Australian Vanadium Project (AVP) is a world-class asset located Western Australia. AVL is undertaking an Optimised Feasibility Study, with the aim of improving the Project's technical and economic results by integration of the northern and southern parts of the deposit. AVL continues to progress the approval process and recently the WA Minister for Environment provided approval of the implementation of the Gabanintha Vanadium Project, which forms part of the Project. 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 advice and support project under the Western Australian Government's Lead Agency Framework. AVL is developing a scalable turnkey utility-scale battery energy storage system (BESS) using vanadium flow battery (VFB) technology to meet the demand for long duration storage in Australia's energy market. Initial analysis on potential 100MW / 800 MWh VFB BESS demonstrated competitiveness with similar sized lithium-ion batteries. A growing VFB market unlocks vanadium demand from the AVP. AVL is seeking offtake, debt and equity.

Project description

The Project is based on an open-pit mine with on-site crushing, milling and beneficiation (CMB) and a processing plant located near Geraldton for conversion to high-quality vanadium pentoxide (V_2O_5). Following the recent merger, metallurgical testwork confirms the trend of higher vanadium and iron concentrate grades towards the south of the combined project. The processing plant will use an alkaline roast leach and ammonium metavanadate extraction process to produce approximately 11,200tpa of high-purity V_2O_5 product and 900,000tpa of iron concentrate.

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

Offtake Available
100%

Min Mine Life (Years)
25

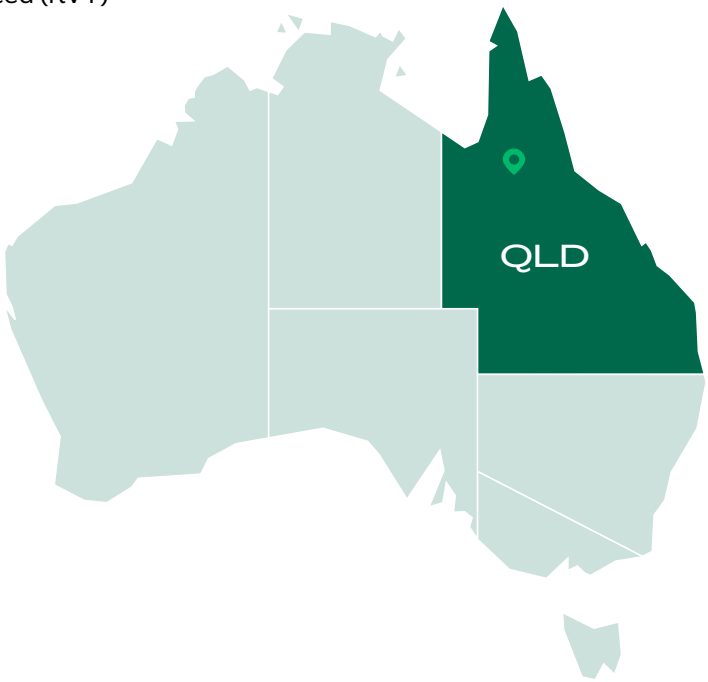
IRR
Not yet available. Awaiting results of Optimised Feasibility Study.

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 Vanadium Technology Ltd
ASX-listed (RVT)



Commodity(ies): **Vanadium**

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**

Richmond-Julia Creek 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 floatation 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.

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

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

Mineral Resources as at Mar-24:

Resource Category	Tonnes (Mt)	V_2O_5 (%)	Al_2O_3 (%)	Mo (ppm)
Measured	3.3	0.52	5.3	245
Indicated	439	0.36	3.6	189
Inferred	277	0.33	3.3	195
Total	**720**	**0.35**	**3.5**	**190**
Contained (kt)		**2,520**	**25,310**	**140**

No Ore Reserves Available

Vecco Critical Minerals Project

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, with refined feedstock transported to Vecco-owned electrolyte manufacturing facilities in Townsville and USA. The integrated vanadium supply chain is being developed in a non-exclusive collaborative partnership with Idemitsu and Sumitomo Electric (leading vanadium flow battery manufacturer). 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 EIS submission in 1H 2025 and approvals by early 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, 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 and on-site processing to produce ~8,700tpa of high purity vanadium pentoxide. This 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. In addition, the Project will produce highly valuable by-products including high purity alumina (HPA) and molybdenum.

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

Offtake Available
Yes, for all products.

Min Mine Life (Years)
28

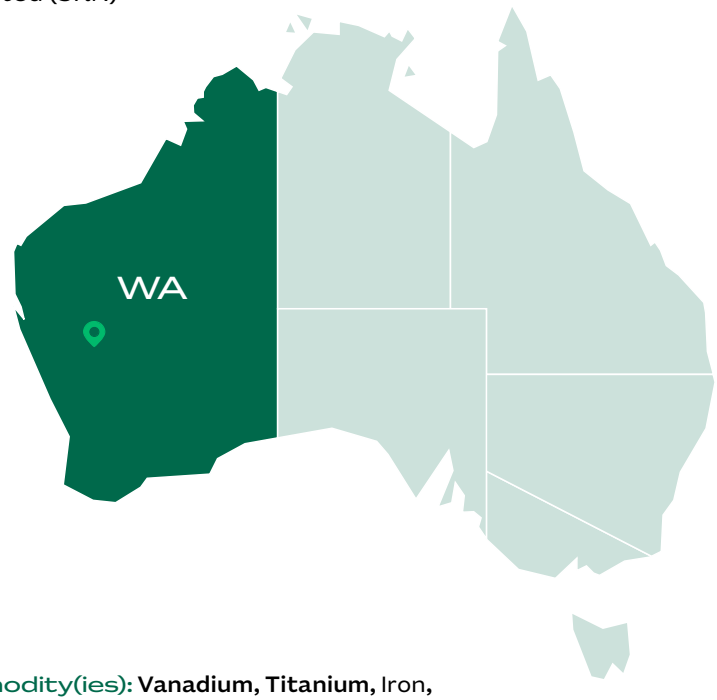
Pre-tax IRR
22.5%

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

Surefire Resources NL
ASX-listed (SRN)



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

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**

Victory Bore

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.

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

Atlantic Vanadium Pty Ltd
Unlisted Private Company

Commodity(ies): **Vanadium**

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**

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 at end 2025. 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 consist of new milling and beneficiation plant, and 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.

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

Min Mine Life (Years)
31

NPV
Expected mid-2025

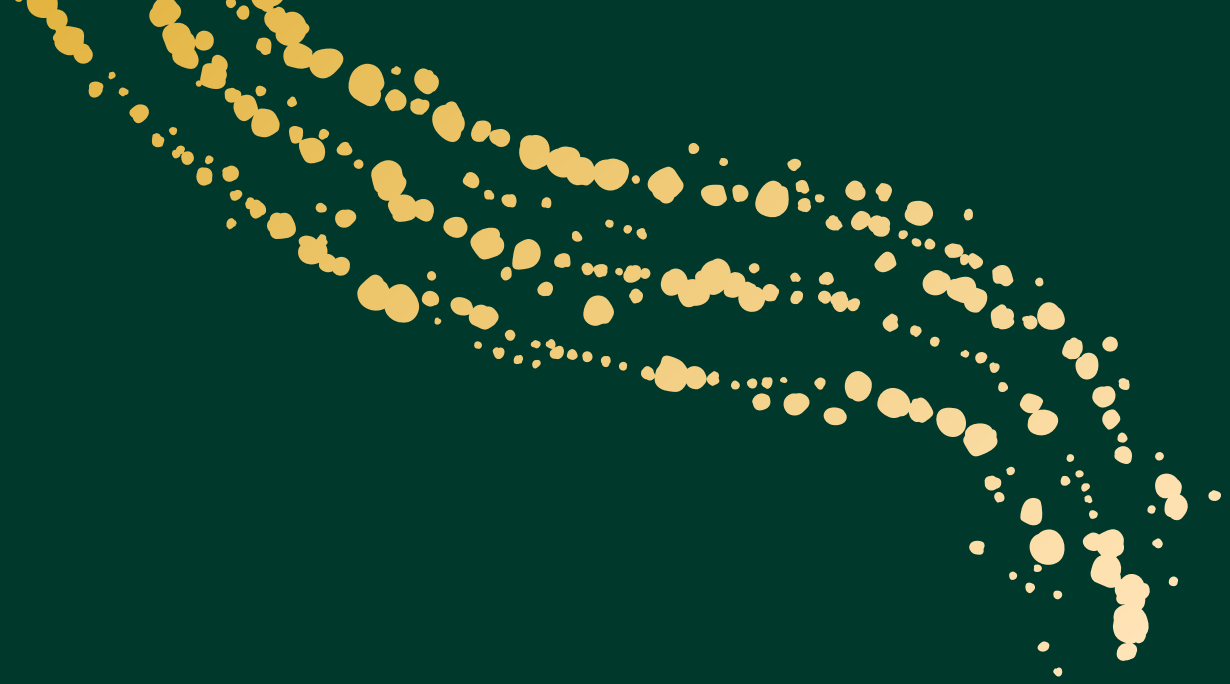
IRR
Expected mid-2025

Product & Annual Production Rate
- High-purity V_2O_5 flake(99.5%): 7,600tpa

Offtake Available
100%

Capital Cost
Expected mid-2025

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



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