



Advancing the **Julia Creek** Project

"We would like to acknowledge the Wunumara people as Traditional Owners and their custodianship of the lands on which QEM operates its Julia Creek Project."

We pay our respects to their Ancestors and their descendants, who continue cultural and spiritual connections to Country.

We recognise their valuable contributions to Australian and global society."

Investor Presentation | April 2022



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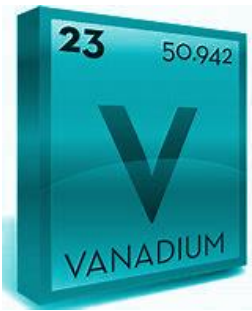
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Competent Persons and Qualified Estimator Statements

The information in this announcement that relates to exploration results, mineral resource and contingent resource estimates for the Company's Julia Creek Project was first reported by the Company in its IPO prospectus dated 20 August 2018 and supplementary prospectus dated 12 September 2018 (together, the "Prospectus") and the subsequent resource upgrade announcement ("Resource Upgrade") dated 14 October 2019. The Company confirms that it is not aware of any new information or data that materially affects the information included in the Prospectus and Resource Upgrade, and in the case of estimates of Mineral Resources and Contingent Resources, that all material assumptions and technical parameters underpinning the estimates in the Prospectus and Resource Upgrade continue to apply and have not materially changed



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Team & Corporate



Led by a team of highly successful and invested mining professionals, with proven track record of mine development



John Foley **Chairman**

Extensive experience as current Chairman of Precious Metal Resources Limited (ASX: PMR), Citigold Corporation Limited (ASX: CTO) and Carbon Credit Corporation (C3).



Gavin Loyden **Managing Director**

Company Founder, having identified and acquired the significant dual commodity resource at Julia Creek. Responsible for QEM's early capitalisation, initial exploration program and initial scoping study.



John Henderson **Non-Executive Director**

Over 40 years experience in major and mega project development, including executive roles with oil and mining multinationals such as BHP and Rio Tinto, as well as mid-tier and startup energy companies.



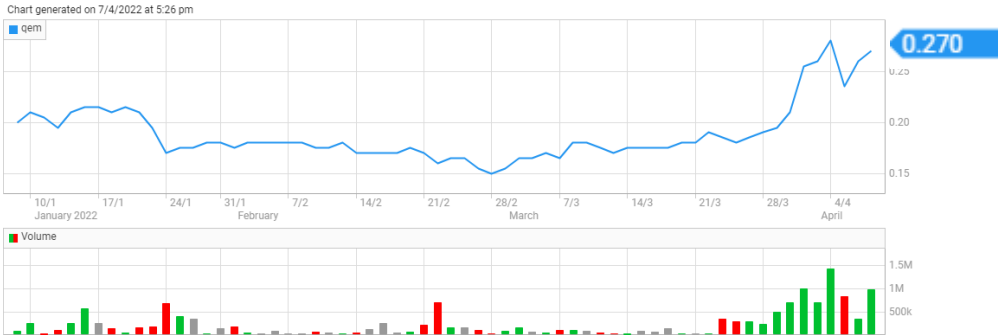
Daniel Harris **Non-Executive Director**

Mining executive with 40 years resources sector experience. Current independent Director at Australian Vanadium (ASX:AVL), former exec at Atlantic (ASX: ATI and Atlas Iron (ASX: AGO). Director of US Vanadium LLC.



David Fitch **Non-Executive Director**

Experienced in strategic planning, commercial negotiations and operations. Former COO & major shareholder of the Fitch Group and currently a director of BioCentral Laboratories. David is the largest shareholder of QEM.



ASX Symbol: QEM	
Shares on Issue	113.4 million
Market Cap (7 April 2022)	\$29.50m
Share Price (7 April 2022)	\$0.270
Cash (as at 31 March 2022)	\$0.832m

Major Shareholders (~48% QEM Director Shareholding)	
David Fitch (Non-Executive Director)	28.1%
Gavin Loyden (Managing Director)	18.2%

Julia Creek Project



QEM is developing a Critical Minerals project utilizing Innovative & Sustainable energy solutions



Unique multi commodity exposure



Staged development strategy to de-risk project



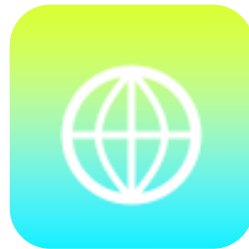
Shallow-Low strip ratio allows for standard open cut mining method



Test work to date shows up to 200% yield achievable for oil extraction (Based on MFA); 90% extraction rate for V_2O_5 ; Bench scale pilot plant recently completed



Vanadium defined as Critical Mineral by Australian, US & EU Governments



Globally significant JORC (2012) Indicated + Inferred Resource
2,850 Mt @ 0.31% V_2O_5



- **79 MMbbl's** of oil in-situ in the SPE-PRMS 2018 (2C)
- **696 MMbbl's** in-situ (3C)



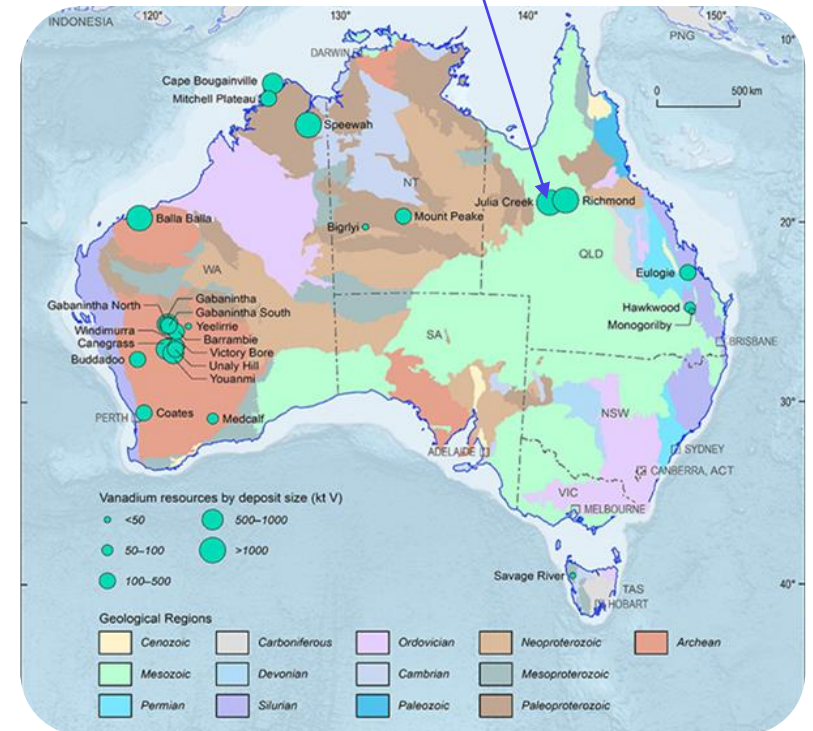
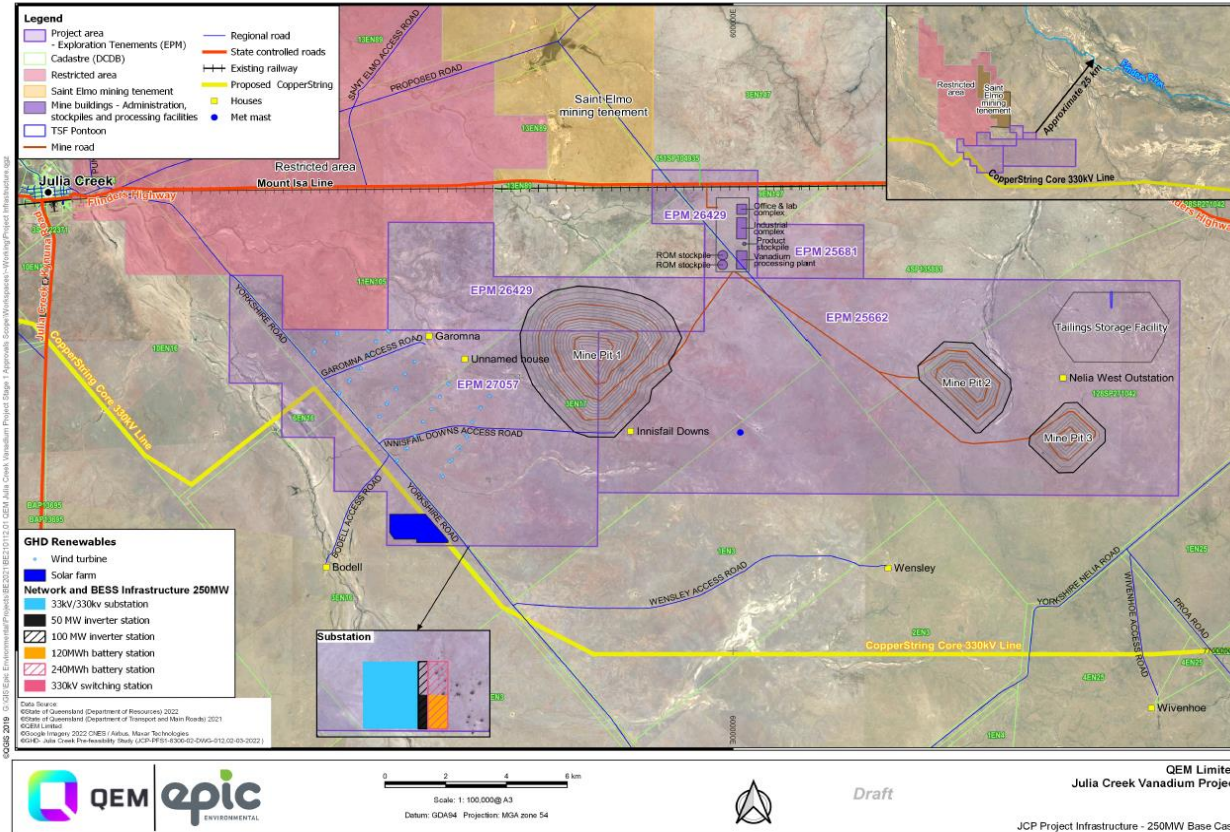
Renewable power and hydrogen to be directly applied to oil and vanadium production and to meet growing demand by government and industry

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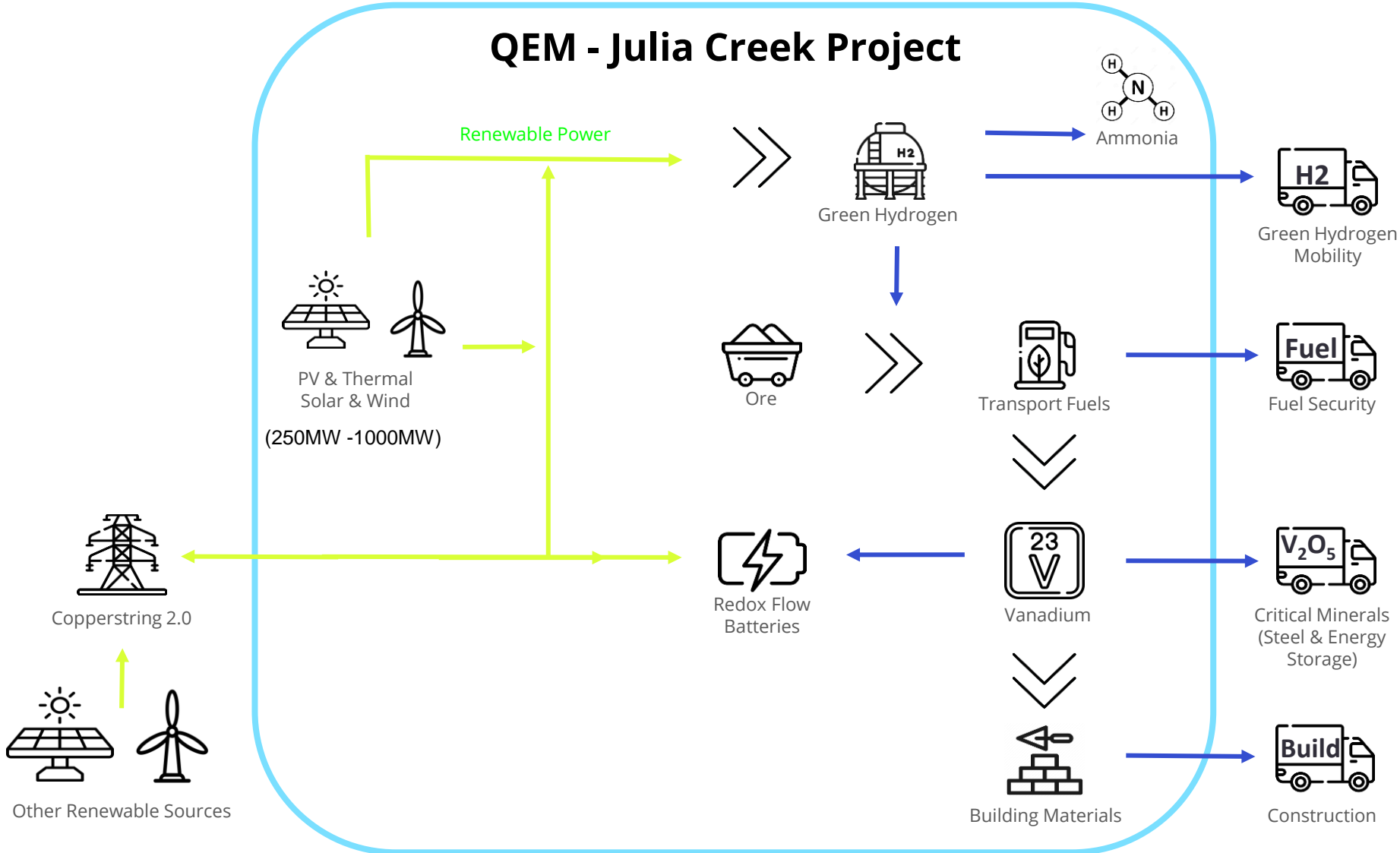
4 Exploration Tenements Covering 249.6km² in the Julia Creek Area, North-Western Queensland

- **Tier-1 location**
- **North-West Minerals Province (NWMP), Mt Isa to Townsville (MITEZ) corridor, Eastern Resource Development Corridor (ERDC)**
- **Close to services and infrastructure**, including direct road and rail access to the Port of Townsville (600 km) and Mount Isa to the west (250 km).
- **CopperString 2.0** Proposed network transmission line diverted to encompass project area



Source: Geoscience Australia - Vanadium <https://www.ga.gov.au/scientific-topics/minerals/mineral-resources-and-advice/australian-resource-reviews/vanadium#heading-6>

Project Concept Design



Drilling Results JORC Upgrade



Indicated JORC Resource increases by 64% to 360 million Tonnes (Mt)

Vanadium Resource

- Total Vanadium JORC Resource rises to **2,850Mt @ Ave V2O5 ore content of 0.31%**

Oil Resource

- Maiden **2C** oil shale estimate of **71MMbbl's (recoverable @ 90%)**
- **3C** oil shale estimate of **626 MMbbl's (recoverable @90%)**

New- HPA Potential

- Material volume of Aluminium identified in resource base @ ave **24,304 ppm Al**
- Potential to extract High Purity Aluminium as by-product
- HPA recently added to Critical Minerals List in Australia

Complete JORC tables in Appendix A



Pilot Plant Update



Bench scale pilot plant- Commissioning underway at HRL

- Fabrication and certification is now complete
- Pilot plant delivered to HRL **7th April 2022**
- Pilot will enable QEM to optimise oil and vanadium recovery, using proprietary extraction process
- HPA extraction will also be trialled within the test program
- **QEM remains on target to commence operational activity at the bench-scale pilot in May 2022.**
- The pilot plant was fabricated by specialist manufacturer AMAR and will validate QEM's proprietary extraction process ahead of development of a commercial demonstration plant.



2021 Site Inspection. Location for pilot plant at HRL Labs Victoria

Environmental Update



EPIC Environmental completes ecology study at JCP

- EPIC is developing the Environmental Impact Statement for the JCP. EPIC is undertaking extensive technical studies at Julia Creek, coordinating environmental approval applications, water access and establishing a Progressive Rehabilitation and Closure Plan
- Assistance with Major Project status application (Federal) and Coordinated Project status (State) being sought through the Qld Coordinator Generals Office.
- Baseline environmental studies commenced 16 March 2022
- Activities include: 12-month air quality, groundwater and surface water monitoring program, topographic drone survey
- 8 water bores will be drilled on-site, as part of the early works program June/July
- Field ecology studies now complete- awaiting final report
- Cultural heritage survey to begin this year.

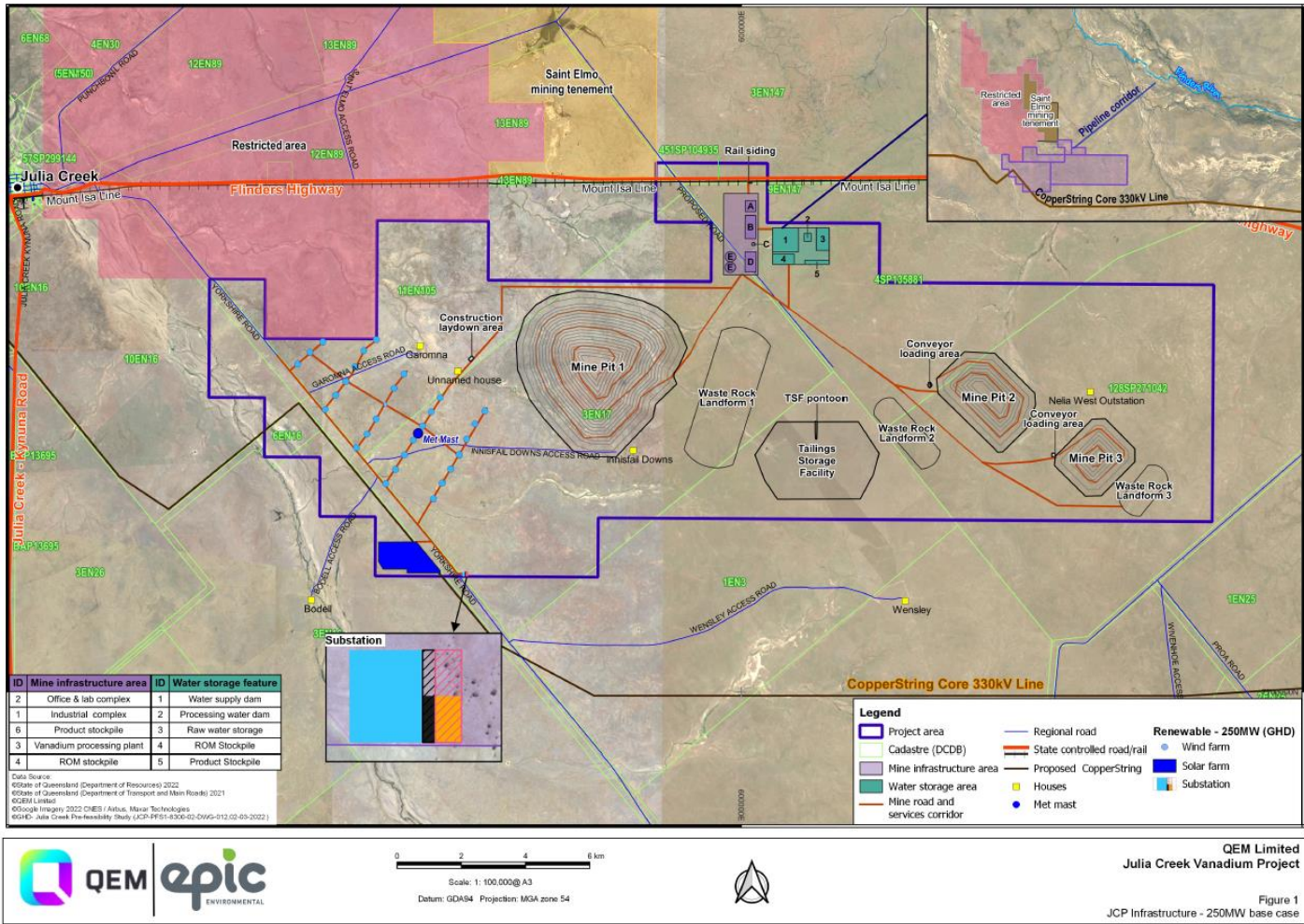


Renewable Power Update



“Situated in the best co-located wind and solar resources in Eastern Australia” - AEMO

- GHD recently completed study for Renewables Project describes scalability options:
- Stage 1: 250 MW hybrid solar/wind.
- Stage 2: 500MW with potential for up to 1GW.
- Cloncurry-based Fulcrum 3D is supplying a 160m Met Mast for a 12-month (min) on-site wind and solar monitoring station to gather baseline meteorological data. Delivery in June.
- SODAR and LIDAR units will also be stationed on site. Delivery 16 May.
- Geotech to begin on-site April.
- 250Km2 Topographic drone survey. Begins 16 May 2022
- Connection enquiry sent and received to CopperString 2.0 for potential import/export into NEM.

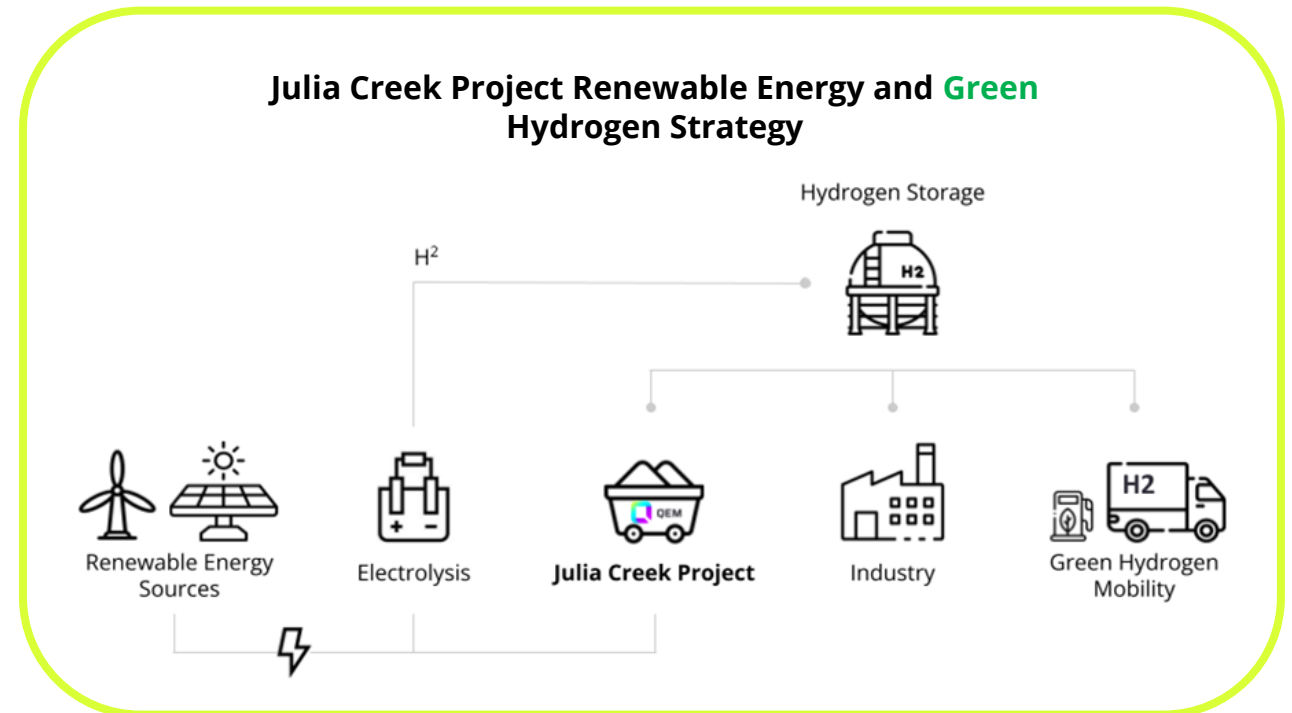


Hydrogen Update



Hydrogen - for oil upgrading and a lower emissions future

- **Project Infrastructure:** Green Hydrogen can be produced from renewable power source and used on-site to upgrade produced raw oil into usable transport fuels, such as Ultra-Low-sulphur diesel
- Excess production could potentially create a hydrogen hub for the North-West Minerals Province (NWMP).
- Potential benefits for regional communities, industry and heavy transport in the region.
- Significant support being shown by Governments to progress Green Hydrogen projects in Queensland.
- Andrew Forrest's FFI and the Queensland Government recently announced a \$1 billion electrolyser manufacturing plant in Gladstone. It will be the largest in the world and highlights the significant investment into the hydrogen industry.



Community Update



Julia Creek- McKinley Shire Council meeting

- Directors Gavin Loyden and John Henderson, along with Joanne Bergamin, recently met with most sitting members of the McKinley Shire Council in Julia Creek, to discuss the activities and update the Council on progress being made on the project.
- Project detail very well received, and the Council is very supportive of new mineral project development in the region.
- Potential benefits to the wider community discussed, such as regional and local employment potential, future community amenity and regional development.
- Council will be regularly updated as progress is made, and milestones achieved.
- Landowners are kept well informed via a weekly Project Report and all owners are supportive of the project advancing.



Vanadium Uses



Vanadium - The Versatile Element

Improves Steel Tensile Strength

Most widely used alloy to strengthen steel (HSLA.) in construction, automotive, aerospace, rail, shipping, tools, drilling and more.

Lowers CO₂ emissions

In steel-Lowers CO₂ emissions by 185 million metric tons annually -Texas A&M University

Supports Fuel Efficiency

High strength-to-weight ratio makes vanadium a critical component in the automotive industries. In 85% of all vehicles by 2025. Henry Ford first used in Model – T.

Durability & Weather Resistance

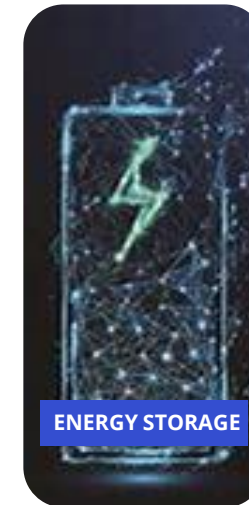
Vanadium alloys are naturally durable to extreme temperature and corrosion, making it irreplaceable in the aerospace industry. Suitable for hydrogen storage & pipes (reduces failure due to hydrogen embrittlement).

Chemical & Catalysts

Catalysts, 'Smart Glass', sulphuric acid production, ceramics, dyes, cathodes for lithium batteries.

Renewable Energy Storage

Vanadium Redox Flow Batteries (VRFB) are the preferred solution for large scale energy storage globally. Produces 78% less CO₂ than Li-B - Cradle-to-gate, with recycling and renewables.



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Renewable Energy Storage



Building a Renewable Future with Vanadium Redox Flow Batteries

	Vanadium	Lithium
Number of Cycles (Lifespan)	100,000+ (20-30 yrs)	3000-10,000 (5-7 yrs)
Low Self-discharge (stays charged)	✓	✗
Low Environmental Footprint	✓	✗
Highly Expandable	✓	✗
Generates Low Levels of Heat	✓	✗
Charges & Discharges Simultaneously	✓	✗
Can Release Energy Instantaneously	✓	✗
Suitable for Connection to Power Grid	✓	✗ (Without Inverters)
Small Footprint	✗	✓
CAN BE COMPLETELY RECYCLED	✓	✗



Source: <https://www.energyandcapital.com/articles/the-best-thing-since-lithium/1531>
Mining Journal June 2018

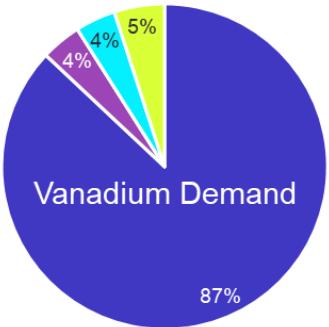
Vanadium Production



Market Set for growth

- Global Production 2020 ~110,409 MTV or approx. 197,000tpa V2O5
- Market is expected to reach **\$2.36 Billion** in 2025 at **CAGR of 10.2%**
- Vanadium listed as a **Critical Mineral** in Aust, US, EU and Japan
- Demand for VRFB is expected to equate to **~23% of vanadium market by 2030, currently only <3%**
- Australia holds **18%** of undeveloped global reserves BUT has **no domestic production**

Europe : US\$12.20/lb ▼(-0.81%)
Mar 29, 2022



■ Steel ■ Energy Storage ■ Chemicals ■ Aerospace Alloys

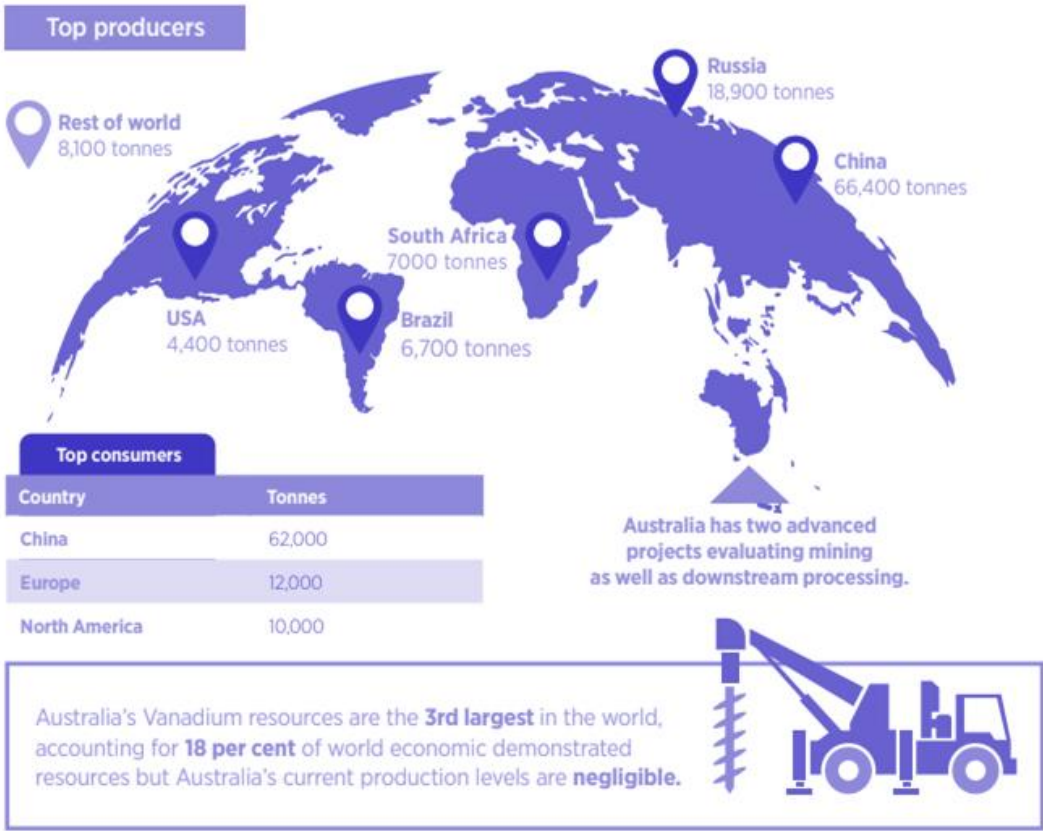


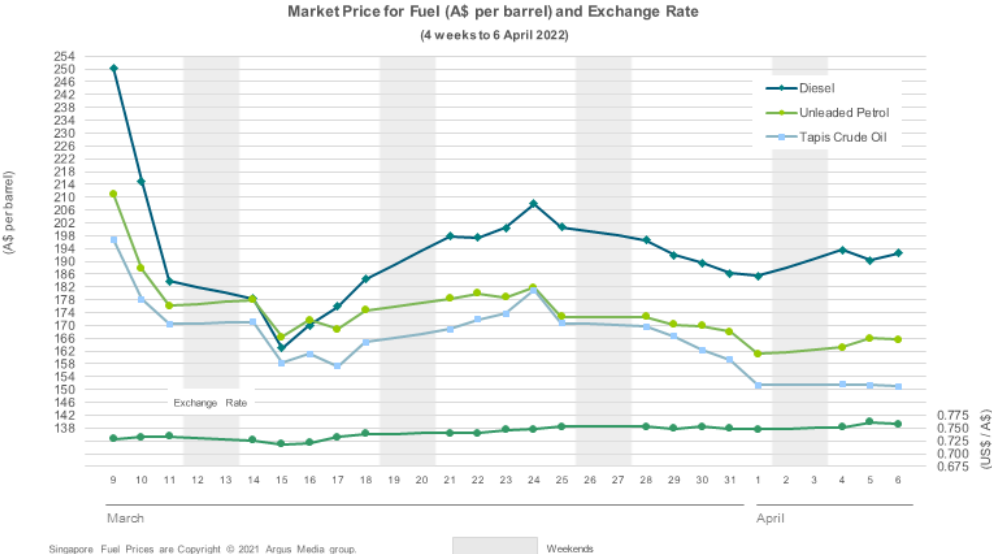
Image source: Office of the Chief Economist, Outlook for Selected Critical Minerals in Australia 2021 report

Oil Market



Looming Energy Crisis

- Globally, nations are dealing with a severe rise in energy prices. Demand is high and supply is tight.
- In the last 12 months, Australia lost half of its remaining oil refineries, with just two remaining which has **left our fuel supply vulnerable to crisis**.
- A dramatic rebound in the global economy and tight supply has seen demand and price for oil skyrocket, with **prices recently reaching levels above US\$100bbl**.
- Prices at the bowser are rising nationally. Recent invasion of Ukraine is adding to pressure globally.



CL:NMX - Crude Oil Price



Source: NASDAQ <https://www.nasdaq.com/market-activity/commodities/cl:nmx>

NG:NMX - Natural Gas Price



Source: NASDAQ <https://www.nasdaq.com/market-activity/commodities/ng%3Anmx>

Fuel Resilience



COVID-19 demonstrates supply chain risks

- Australia is an island nation that lacks resilience, depending heavily on imported fuel
- Australia’s obligation as a member of the International Energy Agency (IEA):

Required	Actual
<ul style="list-style-type: none">- At least 90 days of supply- Not held since 2012- Current stockpile is critically low	<ul style="list-style-type: none">- ~30 days of petrol for automobiles- ~20 days of diesel- ~20 days of aviation fuel <p>(Australian Petroleum Statistics 2020)</p>

- Dependency on transport fuel imports has grown from **~60%** in 2000 to over **93%** today adding around **\$30B** to Australia’s trade deficit in 2021.
- COVID-19 has further exposed Australia’s lack of resilience in this area
- **QEM considers this an opportunity!**



QEM's Commitment to ESG

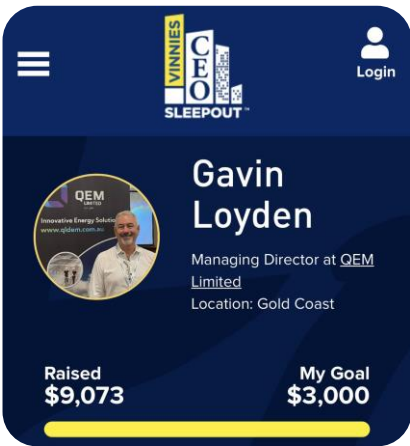


QEM has adopted ESG framework developed by the World Economic Forum (WEF).



Environmental

- Low carbon footprint
- Utilises renewable energy sources
- Target products such as V₂O₅, fuel & hydrogen to support emission reduction targets



Social

- Supports local community – engagement, Indigenous relations and employment, long-term jobs, training, youth programs, sport
- Encourages employees to volunteer and fundraise (St Vinnies CEO Sleepout, St Vincent de Paul Society, Endeavour Foundation)



Governance

- Dedicated to corporate transparency
- Ethically sourced Critical Minerals- traceability and provenance.
- Indigenous Engagement Strategy
- Management aligned with shareholders
- *Socialsuite ESG Go* reporting software used to capture all ESG data

Right Project at The Right Time



The catalyst to help unleash the inherent potential wealth of the NWMP and beyond



Vanadium

QEM aims to become a leading supplier of high-quality vanadium pentoxide in Australia



Multi-Commodity Deposit

Julia Creek in North Queensland allows production of both Vanadium (a Critical Mineral) and high-quality transportation fuels including Hydrogen



Transport Fuels + Hydrogen

QEM aims to provide innovative and environmentally friendly solutions that are important to our energy future

Contact



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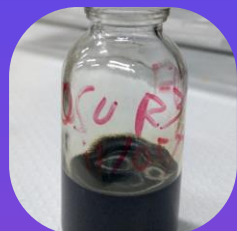
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Appendix – A

Julia Creek Resource

Julia Creek Resource Overview



Table 1: Summary of JORC Mineral Resource Estimate 31 March 2022

Total										
Resource Class	Strat. Unit	Mass (Mt)	Average Thickness (m)	Insitu Density (gm/cc)	V2O5 (wt%)	Cu (ppm)	Mo (ppm)	Ni (ppm)	Zn (ppm)	Al (ppm)
Indicated	CQLA	127	3.16	2.41	0.24	161	132	121	763	4525
	CQLB	104	2.74	2.32	0.30	201	180	151	912	5756
	OSU	64	1.97	1.99	0.32	217	162	194	1012	49360
	OSL	64	2.05	1.95	0.32	206	143	182	1006	52759
Inferred	CQLA	698	2.52	2.42	0.23	156	136	120	810	2706
	CQLB	879	3.32	2.24	0.38	225	226	205	1197	5322
	OSU	458	1.92	2.02	0.31	229	150	189	1121	60505
	OSL	457	1.94	1.97	0.29	215	130	169	1051	59696
Total		2,850		2.21	0.31	203	167	169	1029	24304

Note:

1. The estimate uses a minimum cut-off of 0.2% V₂O₅ for the oil shale units, and minimum cut-off of 0.15% V₂O₅ for the Coquina units.
2. The total resource tonnage reported is rounded to reflect the relative uncertainty in the estimate categories and component horizons may not sum correctly.

Table 2: Summary of SPE-PRMS Oil Resource estimate 31 March 2022

Resource Class	Strat Unit	Mass (Mt)	Average Thickness (m)	Total Moisture wt%	Oil Yield (L/tonne)	Oil Yield LTOM	MMBbls (in-situ PIIP)	MMBbls Recoverable
3C Contingent	CQLB	983	2.8	5.6	49.2	51.2	274	247
	OSU	522	1.8	5.6	74.6	78.8	221	199
	OSL	521	1.9	5.6	68.3	71	202	181
Total / Ave		2026		5.6	64	67	696	626
2C Contingent	CQLB	104	2.6	2.6	43.7	44.5	27	24
	OSU	64	1.9	9.5	79.4	83	28	25
	OSL	64	1.9	12.2	74.2	76	25	23
Total / Ave		232		8.1	66	68	79	71

Note:

1. The total resource tonnage reported is rounded to reflect the relative uncertainty in the estimate and component horizons may not sum correctly.
2. The 3C petroleum resource reported includes the 2C volumes, ie. They are cumulative not incremental as per the PRMS 2018 guidelines
3. An economic cut-off of 40l/tonne was applied prior to the calculation; it must be noted that the CQU and CQLA did not meet the >40l/tonne for inclusion in the calculation. The 2C and 3C volumes reported here are unrisks

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