



Critical
Minerals
Group

ASX Announcement

ASX: CMG

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Lindfield Vanadium Project Power Supply Study Completed – Model solution for remote mines

Key Highlights

- A power supply Pre Feasibility Study has been completed by Arche Energy for the Lindfield Vanadium Project in Julia Creek, Queensland.
- The Hybrid solution combining wind and solar generation, firmed by long duration battery storage and backed up with diesel delivered the lowest whole of life power cost.
- The vanadium flow battery (VFB) solution demonstrated superior long-duration storage benefits delivering the highest penetration of renewable energy utilisation of the options assessed (up to 75.5%).
- Diesel only option identified as lowest upfront capital cost, but highest lifetime cost due to fuel expense.
- Renewable generation, firmed by electrochemical storage delivered ~40% reduction in Net Present Cost (NPC) compared to diesel only, over the project life.
- Grid connection ruled out due to lack of capacity at Julia Creek substation and high cost of transmission line augmentation.

Critical Minerals Group Limited (ASX:CMG) (“CMG” or “the Company”) is pleased to advise that Arche Energy has completed a detailed **Power Supply Study** for the Company’s Lindfield Vanadium Project, located near Julia Creek, North Queensland.

The study modelled multiple supply options, including diesel generation only, hybrid solutions that couple renewable generation with storage and diesel backup systems, as well as grid connection. Two mine throughput cases (1.25Mtpa and 4.0Mtpa) were analysed.

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Key outcomes of the study include:

- **Hybrid renewable + VFB option:** 59% reduction in NPC¹ versus diesel only, renewable penetration of up to 75.5%, and levelised cost of energy (LCOE²) of ~\$0.23/kWh. The VFB option enables greater penetration of renewable power generation compared to other battery technologies through longer storage duration capability.
- **Diesel-only option:** lowest upfront capital requirement (\$11M–\$27M) but highest long-term costs, with an LCOE of \$0.39/kWh.
- **Grid connection:** ruled out due to capacity constraints at Julia Creek substation and the high transmission augmentation cost (\$32–45M).

This independent report confirms that a **hybrid power solution that involves both wind and solar generation, firmed by long duration battery storage and backed by diesel is the optimal pathway** for the Lindfield Vanadium Project, significantly reducing power supply costs compared to the traditional network or diesel generator solutions, whilst, lowering carbon emissions, and demonstrating the benefits of vanadium battery technology through high renewable penetration in a large-scale mining operations.

A VFB not only delivers an optimal long term cost solution but bring many other operating benefits that support installations in rural settings, consider long term recyclability and growing power needs. A VFB attributes include:

- Lifespan – a long life with operations greater than 25 years
- Safety – no risk of fire or thermal runaway and can operate safely in all environments
- Recyclable, reuseable – VFBs are up to 99.2% recyclable with electrolyte reuseable
- Scalability – easily scaleable to large grid scale storage
- Multi cycle capability – multi day cycles with no degradation.

The Company will now advance detailed planning for staged implementation of a hybrid renewable power solution for Lindfield, while continuing to engage with potential offtake partners and regional stakeholders.

CMG Managing Director, Scott Winter, commented:

“This power study clearly demonstrates that hybrid renewable solutions not only deliver the lowest long-term costs for Lindfield, but also highlight the unique advantages of vanadium flow batteries in delivering reliable, long-duration energy storage and high renewable generation penetration. As we advance development of the Lindfield Project, CMG is well positioned to showcase the benefits of Australian mined and processed vanadium in building sustainable, cost-effective power

¹ Net Present Cost

² LCOE is the net present value of the total cost of building and operating a power-generating asset over its lifetime, divided by the total electricity generated over that lifetime.

solutions. The added benefit which hasn't been modelled is the long term enduring value that this power plant could offer the local community. Furthermore, as the vanadium electrolyte does not degrade, being 100% reusable, the value add in the future is significant. "

Model for Remote Mine Power Solutions

Critical Minerals Group sees the Lindfield project as more than a standalone solution – it is a template that can be replicated across other remote mining regions and communities in Australia.

This announcement was authorised for release by the Board.

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About Critical Minerals Group

Critical Minerals Group (ASX: CMG) is a Brisbane based company uniquely placed to deliver comprehensive and sustainable energy storage solutions to communities worldwide.

CMG aspires to be a leading provider of Vanadium Flow Battery energy storage solutions for clients seeking to optimise their energy consumption and infrastructure. Our strategy is deeply aligned with the ongoing domestic and global energy transition and the opportunities it presents.

To achieve this CMG is establishing an end to end supply chain which includes the formation of an energy developer capability located in Brisbane, the development of a vanadium mine and processing operation in the Julia Creek region of North Queensland, and a vanadium electrolyte manufacturing facility in South East Queensland.