

**Fast Facts**

Issued Capital: 123,606,179  
Market Cap (@\$13.31): \$1.65b

## First battery quality lithium hydroxide from Zero Carbon Lithium™ Project pilot operations

### Summary

- Vulcan Energy Resources Limited's (Vulcan; ASX: VUL) chemical engineering team has successfully produced its first battery quality lithium hydroxide monohydrate (LHM) from piloting operations.
- The LHM was produced from Vulcan's sorption pilot plant, located at a geothermal renewable energy plant in the Upper Rhine Valley in Germany, with downstream electrolysis processing offsite, as per Vulcan's planned commercial Zero Carbon Lithium™ Project.
- The sample exceeds traditional battery grade LHM product including best on the market battery grade specifications required from offtake customers, at >56.5% LiOH.H<sub>2</sub>O and very low impurities.
- The lithium chloride extracted by the sorbent in the pilot plant was recovered with water and sent offsite, where it was purified and concentrated by a third-party provider to prepare the lithium chloride for electrolysis to produce lithium hydroxide solution. The solution was then crystalized to produce battery grade lithium hydroxide monohydrate (LHM).
- Further production of battery quality material will continue to ramp up to supply Vulcan's offtake partners with samples. Vulcan is targeting Phase 1 commercial production for CY2024.
- Data generated during the production of the sample will be used for Vulcan's ongoing Definitive Feasibility Study currently being carried out by Hatch and Vulcan's engineering teams.
- Vulcan's pilot has been operating successfully since April 2021, using brine from a geothermal plant, and will be progressively scaled up in size during the coming year.

### Highlights

Globally unique **Zero Carbon Lithium™** Project.

**Combined lithium chemicals & renewable energy project** in the Upper Rhine Valley of Germany.

EU's **largest** lithium resource.

Located at the heart of the EU Li-ion battery industry.

Fast-track development towards supplying the EU's battery & electric vehicle industry.

### Corporate Directory

Managing Director  
Dr Francis Wedin

Chairman  
Gavin Rezos

Executive Director Germany  
Dr Horst Kreuter

Non-Executive Director  
Ranya Alkadamani


Non-Executive Director  
Annie Liu

Non-Executive Director  
Dr Heidi Grön

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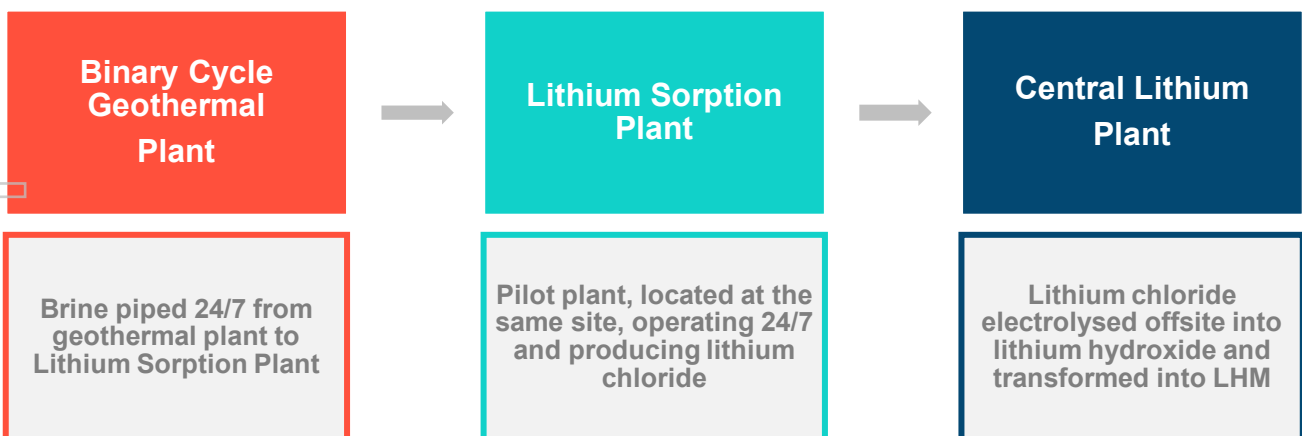
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Vulcan Managing Director, Dr. Francis Wedin, commented: *“I would like to congratulate our chemical engineering and chemistry teams on this important milestone as we develop the Zero Carbon Lithium™ Project. We will continue to methodically progress, de-risk and execute on our plan to build a fully integrated renewable energy and battery-quality lithium chemicals project in Europe to service the battery and electric vehicle industry. The team is working towards what is likely to be the first raw materials project with net zero greenhouse gas emissions in the world; an important statement of what can be achieved with the right scientific approach at this critical juncture of global climate change leading toward COP26.”*



Images of lithium hydroxide monohydrate from the Zero Carbon Lithium™ Project.

**Process**



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# VULCAN ENERGY ZERO CARBON LITHIUM™

## About Vulcan

*Vulcan is aiming to become the world's first lithium producer with net zero greenhouse gas emissions. Its ZERO CARBON LITHIUM™ Project intends to produce a battery-quality lithium hydroxide chemical product from its combined geothermal energy and lithium resource, which is Europe's largest lithium resource, in Germany. Vulcan's unique, ZERO CARBON LITHIUM™ Project aims to produce both renewable geothermal energy, and lithium hydroxide, from the same deep brine source. In doing so, Vulcan intends to address lithium's EU market requirements by reducing the high carbon and water footprint of production, and total reliance on imports. Vulcan aims to supply the lithium-ion battery and electric vehicle market in Europe, which is the fastest growing in the world. The Vulcan Zero Carbon Lithium™ project has a resource which can satisfy Europe's needs for the electric vehicle transition, from a source with net zero greenhouse gas emissions, for many years to come.*



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**VULCAN ENERGY**  
**ZERO CARBON LITHIUM™**

**For and on behalf of the Board**

Daniel Tydde

Company Secretary

For further information visit [www.v-er.eu](http://www.v-er.eu)

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#### Competent Person Statement:

The information in this report that relates to Mineral Resources is extracted from the ASX announcement made by Vulcan on the 15 December 2020, which is available on [www.v-er.eu](http://www.v-er.eu). The information in this presentation that relates to the Pre-Feasibility Study for the Vulcan Lithium Project is extracted from the ASX announcement "Positive Pre-Feasibility Study", released on the 15<sup>th</sup> of January 2021 which is available on [www.v-er.eu](http://www.v-er.eu). The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcements continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcements.