



“Endspurt” (final sprint to finish) for Optimisation Plant

Senior appointments to Zero Carbon Lithium™ Project execution team from oil and gas, battery and Tier One EPC industries EPCM contracts for Phase One enter RFP stage

Vulcan Energy Resources Limited (Vulcan; ASX: VUL, FSE: VUL, the Company), the renewable energy producer and carbon neutral lithium developer, is pleased to provide a project execution update, for its Zero Carbon Lithium™ Project in the Upper Rhine Valley Brine Field, Germany. Vulcan is developing the largest lithium resource in Europe and aims to be a key enabler of Europe’s transition to electric vehicles (EVs).

Highlights:

Lithium Extraction Optimisation Plant: “Endspurt”

- Vulcan’s Lithium Extraction Optimisation Plant (LEOP) (Figure 1), has entered the “endspurt”, or final sprint to finish, of mechanical completion, with 73 days left until the target mechanical completion date in August.
- LEOP commissioning is thereafter targeted during September, after which it will enter full operation. This will constitute:
 - the first tonnes of lithium chloride concentrate ever domestically produced in Europe, heralding the birth of a new industry in the EU; and
 - the first tonnes of lithium produced using the commercially proven method of sorption-type Direct Lithium Extraction (DLE) but driven by renewable heat instead of fossil gas.
- LEOP will supply lithium chloride to CLEOP, Vulcan’s downstream Optimisation Plant which will produce the final lithium hydroxide product. This follows 2.5 years of successful piloting testwork.
- The purpose of Vulcan’s Optimisation Plants are three-fold:
 1. to supply Vulcan’s automotive and battery customers in Europe, which include Stellantis and Volkswagen, with product for testing and qualification;
 2. to serve as a training ground for operational readiness in Vulcan’s production team, led by Vulcan’s VP Production, ex-BASF executive Christian Tragut, for the start-up of the commercial Phase One of the Zero Carbon Lithium™ Project, which is also advancing;
 3. to optimise process parameters in preparation for the commercial plant whilst the latter is being constructed.

Contact

Zero Carbon Lithium™ Project: Phase One commercial execution advances

- Senior appointments have been made to Vulcan's project execution team, from the oil and gas (O&G) and battery manufacturing industries, as well as Tier One international EPC organisations. Vulcan's Zero Carbon Lithium™ Project is leveraging complementary skills from the O&G industry as part of the Just Transition to deliver Phase One, to complement its team of ca. 300 in-house personnel. These include:
 - **Senior Director Programs – Carsten Bachg** – over 20 years' experience on capital projects in the petrochemical and chemical industry for Engineering contractors, most recently Senior Director Project Delivery at Worley.
 - **Director Construction & Commissioning – Cedric Adam** – more than 20 years' international experience in large-scale onshore and offshore O&G, taking plants from Engineering through Construction, Commissioning and Start-Up up to final handover to Operation & Maintenance, most recently as Technip FMC Onshore Worksite Operations manager/Offshore Manger ENI Coral FLNG.
 - **Director PMO & Project Services – Neil Davey** – over 24 years' major international capital projects experience, comprising 20 years for Shell, and most recently in the green energy space as Director of Project Controls in battery cathode materials for Northvolt, a battery company based in Stockholm.
- Vulcan has entered the Request for Proposal (RFP) stage for its EPC and EPCM contracts for its integrated commercial geothermal plant and Lithium Extraction Plant (LEP) and Central Lithium Plant (CLP) to produce lithium hydroxide, which is planned for a Phase One capacity of 24,000 tonnes per annum of lithium hydroxide. Prospective contractors to meet with the Vulcan Project Execution team in Karlsruhe, Vulcan's Germany Head office during the week of 5 June for kick off sessions.
- Vulcan is leveraging its strong cash position of ~€164m (~\$269m as at 26 May '23) to negotiate Early Works Agreements (EWAs) and place orders for key long lead commercial plant equipment, in order to maintain rapid project momentum.
- Monday, 12 June, the Federal Ministry for Economic Affairs and Climate Action met for a district heating summit to set the course for full heating decarbonisation by 2045. There was unanimous agreement that Geothermal potential is to be accelerated. An acceleration law will be passed, and a system of de-risking to ensure greater industry stimulation. Municipalities must now submit municipal heat plans. Vulcan is working closely with local municipalities to discuss the supply of renewable geothermal energy for heating.

Vulcan's MD and CEO, Dr. Francis Wedin, commented: "Enabled by our strong cash position, we are making steady, methodical progress towards the execution of the Zero Carbon Lithium™ Project. With the final sprint to finish to mechanical completion of our Lithium Extraction Optimisation Plant and negotiation of key contracts for commercial Phase One, there is a hive of activity on the ground. We are fortunate to be joined by some highly motivated, highly skilled project execution professionals from the O&G and chemicals industries, deploying their considerable experience towards decarbonization, electrification and supply chain security in the West. Completing our Optimisation Plant and starting operations in the coming weeks and months will represent the culmination of over 5 years' work on the Zero Carbon Lithium™ Project, and the birth of an entirely new domestic lithium industry in Germany and Europe, which we are very excited to share with our stakeholders."



Figure 1: Vulcan's LEOP Plant, under construction

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About Vulcan

Founded in 2018, Vulcan's unique Zero Carbon Lithium™ Project aims to decarbonise lithium production, through developing the world's first net carbon neutral lithium business, with the co-production of renewable geothermal energy on a mass scale. By adapting existing technologies to efficiently extract lithium from geothermal brine, Vulcan aims to deliver a local source of sustainable lithium for Europe, built around a net zero carbon strategy with strict exclusion of fossil fuels. Already an operational renewable energy producer, Vulcan will also provide renewable electricity and heat to local communities. Vulcan's combined geothermal energy and lithium resource is the largest in Europe¹, with license areas focused on the Upper Rhine Valley, Germany. Strategically placed in the heart of the European electric vehicle market to decarbonise the supply chain, Vulcan is rapidly advancing the Zero Carbon Lithium™ Project to target timely market entry, with the ability to expand to meet the unprecedented demand that is building in the European markets.

Guided by our Values of Integrity, Leadership, Future-focused and Sustainability, and united by a passion for environmentalism and leveraging scientific solutions, Vulcan has a unique, world-leading team in the fields of lithium chemicals and geothermal renewable energy. Vulcan is committed to partnering with organisations that share its decarbonisation ambitions and has binding lithium offtake agreements with some of the largest cathode, battery, and automakers in the world. As a motivated disruptor, Vulcan aims to leverage its multidisciplinary expert team, leading geothermal technology and position in the European EV supply chain to be a global leader in producing zero fossil fuel, net carbon neutral lithium while being nature positive. Vulcan aims to be the largest, most preferred, strategic supplier of lithium chemicals and renewable power and heating from Europe, for Europe; to empower a net zero carbon future.



¹ According to public, JORC-compliant data. See Phase One DFS announcement, 13 February 2023.



VULCAN ENERGY ZERO CARBON LITHIUM™

Corporate Directory

Managing Director and CEO	Dr. Francis Wedin
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Chairman	Gavin Rezos
Non-Executive Director	Ranya Alkadamani
Non-Executive Director	Annie Liu
Non-Executive Director	Dr. Heidi Grön
Non-Executive Director	Josephine Bush
Non-Executive Director	Dr. Günter Hilken
Non-Executive Director	Mark Skelton
Executive Director, Germany	Dr. Horst Kreuter
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Please contact Vulcan's Legal Counsel Germany, Dr Meinhard Grodde, for matters relating to the Frankfurt Stock Exchange listing on mgrodde@v-er.eu.

Reporting calendar

28 July 2023	June Quarterly
15 September 2023	Half Year Report
27 October 2023	September Quarterly
25 January 2024	December Quarterly



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Vulcan has so far only carried out a pre-feasibility study (the results of which were announced to the ASX in the announcement "Positive PFS & Maiden JORC Ore Reserve: Zero Carbon Lithium™ Project" dated 15 January 2020) ('PFS') and a definitive feasibility study for Phase One of its Zero Carbon Lithium™ Project ('Project') (the results of which were announced to the ASX in the announcement "Zero Carbon Lithium Project Phase 1 DFS Results" dated 13 February 2023) ('DFS'), ('DFS Announcement'). Vulcan has not yet carried out a definitive feasibility study for Phase Two of its Project. This announcement includes certain information relating to both the PFS and DFS. Investors should not rely on the results of the PFS as Vulcan considers that the material assumptions underpinning that study are no longer correct in light of the additional studies undertaken in preparing the DFS.

The DFS is based on the material assumptions outlined elsewhere in the DFS Announcement. While Vulcan considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the DFS will be achieved.

Competent Person Statement:

The information in this announcement that relates to Mineral Resources and Ore Reserves, and any Exploration Results and Production Targets, of Vulcan's Zero Carbon Lithium™ Project is extracted from the DFS Announcement, which is available to view on Vulcan's website at www.v-er.eu. Vulcan confirms that in respect of estimates of Mineral Resources and Ore Reserves, and any Exploration Results and Production Targets, included in this announcement:

- it is not aware of any new information or data that materially affects the information included in the original market announcement, and that all material assumptions and technical parameters underpinning the estimates in the original market announcement continue to apply and have not materially changed;
- the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement; and
- all material assumptions underpinning any production targets (and any forecast financial information derived from such production targets) included in this announcement continue to apply and have not materially changed.