ASX Release

29 July 2024 ASX: VUL | FSE:VUL

Fast Facts Issued Capital: 188,188,571 **Market Cap** (@$4.44): $835m

VULCAN ENERGY
ZERO CARBON LITHIUM™

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Quarterly Activities Report for the period ending 30 June 2024

During the period ending 30 June 2024 (the Quarter), Vulcan Energy Resources Limited (Vulcan, ASX: VUL, FSE: VUL, the Company) has delivered significant project progress and secured strategic investments to further advance Phase One of its integrated renewable energy and ZERO CARBON LITHIUM™ Project (the Project).

Highlights from the Quarter

- First lithium chloride (LiCl) produced from upstream Lithium Extraction Optimisation Plant (LEOP), marking the Start of Production (SOP) and first lithium chemicals produced from a local resource in Europe. SOP signifies an important step for European battery supply chain security.
- Investments totalling €40 million from strategic investors including CIMIC Group (CIMIC) and Hancock Prospecting Pty Ltd (HPPL), demonstrating strong support of the lithium value chain globally and for the execution of Phase One of the Project.
- Final stage of financing launched for Vulcan's Phase One Project with significant interest from strategic and financial investors, tier one banks, the European Investment Bank (EIB) and major export credit agencies.
- Landau City Council voted in favour of the land development plan for the industrial estate containing Vulcan's Phase One Geothermal Lithium Extraction (G-LEP) plant location with a substantial majority.

Highlights of subsequent events

- Vulcan was granted its first lithium and geothermal energy licences in the Alsace region of France. The licences authorise Vulcan to explore for lithium to support Europe's EV transition and for geothermal energy for the decarbonisation of industry and local community heating.

Managing Director and CEO Cris Moreno commented: "Our progress this Quarter continues significant strides in our mission to deliver Europe's green energy and mobility transition. The production of our first lithium chloride from local resources in Europe is a landmark achievement, bolstering the security of the European battery supply chain."

"During the Quarter, Vulcan successfully raised a total of €40 million in equity, with strategic investments from CIMIC and HPPL highlighting the strong commitment from global strategic investors. With the launch of the final stage of our financing process, together with strong developments from an EU policy perspective, Vulcan is well positioned going into the second half of the year."

Figure 1 Aerial shot of part of Vulcan's upstream Phase One area in the Landau region, including the Natürlich Insheim geothermal renewable energy wells and plant, location of the LEOP, commercial G-LEP and the Schleidberg well site.

Health and safety

- There were no recordable Lost Time Injuries (LTIs) during the Quarter. Vulcan has concluded a full 12 months with zero LTIs.

Integrated renewable energy and lithium production

Geothermal Operations

- Operations continued at Vulcan's Natürlich Insheim geothermal renewable energy plant with production of 3.300MWh of gross baseload, renewable power, at an average selling price of €0.255/kWh, with € 0.84 million gross revenue generated. Scheduled maintenance was successfully and safely completed in June.
- Further progress was made on the joint publicly and privately funded GEOSMART project, which is designed to test and deliver the supply of renewable heat to local communities. This progress was in relation to the construction and commissioning of the components (hybrid heat exchangers, air-cooled condensers, thermal energy storage, piping system, electrics, and automation control) for district heating.

Figure 2 Thermal energy storage facility on site at Vulcan's Natürlich Insheim geothermal renewable energy plant for the GEOSMART project.

Well Site Preparation & Rig Readiness

- Preparatory works at the Schleidberg site are ongoing, including the construction of a road to access the well site, as well as the set up for Vulcan's crew camp.
- In addition, the team installed two data loggers at two groundwater measuring points, as well as a seismic monitoring system, to support safe operations.
- During the Quarter, Vercana has prepared the V20 rig for the start of transport from the Nienhagen yard to Vulcan's Schleidberg well site. The refurbishment of Vulcan's V10 drill rig remains ongoing.

Lithium Extraction and Optimisation Plant (LEOP)

- During the Quarter, Vulcan started production of the first LiCl product at its upstream LEOP facility in Landau.

- LEOP is showing strong early results with between 90%-95% lithium extraction efficiency from its Adsorption-type Direct Lithium Extraction (A-DLE) unit[1], replicating what Vulcan has seen in its lab and pilot plant operations, and in line with commercial plant expectations and Vulcan's financing model.
- During the Quarter, Vulcan's internally developed high-performance aluminate-based lithium sorbent, VULSORB®, was installed and is now in operation. First results confirm positive and consistent high performance of VULSORB® for A-DLE from brine in the Upper Rhine Valley.
- LiCl from LEOP will be converted to battery-grade Lithium Hydroxide Monohydrate (LHM) at Vulcan's downstream Central Lithium Electrolysis Optimisation Plant (CLEOP).
- Interest in Vulcan's LEOP remained high throughout the Quarter, with visits from representatives from the city of Landau, neighbouring municipalities, the Rhineland-Palatinate mining authority, members of both the German and Baden-Württemberg State Parliaments, regional political groups, potential strategic investors, as well as several regional interest groups.

Figure 3 Vulcan's Chief Technology Officer, Dr. Stefan Brand, at Vulcan's LEOP.

Central Lithium Electrolysis Optimisation Plant (CLEOP)

- During the Quarter, construction of CLEOP continued with the main equipment packages installed, including the electrolyser and two crystallisers.
- Vulcan celebrated the Topping-Out ceremony (Richtfest) of CLEOP on 9 April, 2024 in an event attended by local stakeholders and partners.

[1] https://www.investi.com.au/api/announcements/vul/16999da3-dff.pdf

- The LiCl produced at LEOP will be transported to CLEOP located in industrial park Frankfurt-Höchst, where the LiCl will be converted into battery-grade LHM.
- The battery-grade LHM produced by CLEOP will be tested for qualification by Vulcan's lithium offtake partners.
- CLEOP will be used to train the production team and test operating conditions, while the commercial Phase One Central Lithium Plant (CLP) is constructed in the same industrial park.

Figure 4 Inside Vulcan's CLEOP, showing the two newly-installed crystallisers.

Phase One execution readiness

- Progress continues on Phase One execution, including engineering works, permitting and land acquisition for remaining Phase One areas.
- During the Quarter, Vulcan received a positive vote from the Landau City Council which voted in favour of the land development plan for D12 with a strong majority[2]. The zoning outlined in the D12 development plan for the Am Messegelände Südost industrial estate provides the foundation for constructing Vulcan's integrated G-LEP in Landau. Vulcan has already submitted the corresponding building applications for the planned facility.
- Two MoUs were signed with key partners ABB and JordProxa during the Quarter to reduce interfaces and ensure execution readiness. The MoU with ABB focuses on the electrical and automation delivery requirements of Vulcan's Phase One Project[3], while the JordProxa MoU is for the technology

[2] https://v-er.eu/blog/vulcan-receives-positive-vote-from-landau-city-council-2/
[3] https://v-er.eu/blog/vulcan-and-abb-partner-for-phase-one-of-zero-carbon-lithium-project/

and process components for the lithium extraction and central lithium plants of Vulcan's Phase One Project.[4]

- Vulcan has initiated the validation works for the Engineering, Procurement, and Construction Management (EPCM) contract for Phase One of the project. The EPCM validation will be carried out by CIMIC companies, Sedgman and HOCHTIEF.

Commercial and financing

Strategic investments

- During the Quarter, Vulcan announced a total of €40 million in strategic investments by CIMIC of €25 million (10 million shares), HPPL of €12.5 million (5 million shares) and Victor Smorgon Group of €2.5 million (1 million shares) via private placements.[5]
- This equity raise demonstrates commitment from strategic investors to support the lithium value chain globally and the execution of Phase One of Vulcan's integrated renewable energy and the Project.

Progress on Phase One financing

- During the Quarter, Vulcan launched the second and final phase of its project-level financing process, led by BNP Paribas.[6]
- The first phase of the finance process was completed during the Quarter, with the Company receiving significant interest from strategic and financial investors, commercial banks, the European Investment Bank (EIB) and major government-backed export credit agencies.
- The Company has entered formal discussions with Tier 1 financing partners who have expressed in-principle and non-binding interest. These structuring banks comprise four international banks and four export credit agencies, along with the continued support from the EIB.

[4] https://v-er.eu/blog/vulcan-and-jordproxa-partner-for-phase-one-of-zero-carbon-lithium-project/
[5] https://www.investi.com.au/api/announcements/vul/d892790b-6a8.pdf
[6] https://www.investi.com.au/api/announcements/vul/a4c48d6a-e47.pdf

Figure 5 Tier 1 financing partners.

- In addition to advancing Vulcan's finance process, the Company has also applied for a significant amount of public funding, through several grant schemes. Vulcan believes its Project is well placed to qualify for these grant schemes through sector-leading economic and sustainability credentials. The launch of the second phase of the financing process has been timed to coincide with the public funding application process.
- In parallel with the project-level debt process, Vulcan has also launched the second phase of its project-level equity financing process, having received significant interest from strategic and financial investors after a first due diligence phase, including from engineering and energy companies with whom Vulcan is expecting to build long term strategic partnerships with as part of this process.

French licensing approval

- During the Quarter, Vulcan received the grant of its first lithium and geothermal energy licences in the Alsace region of France. The licences are located in the Mulhouse, Alsace region on the French side of the Upper Rhine Valley Brine Field (URVBF), which accounts for roughly one third of the Upper Rhine Graben, containing both geothermal energy and lithium-rich brine.
- Vulcan continues to progress project development activities in the Mulhouse area, as per Phase A of its binding term sheet for geothermal renewable energy development signed with Stellantis N.V in 2023. A "go/no-go" decision has yet to be reached as per the term sheet to commence Phase B. Vulcan will continue to keep the market updated with material developments.
- The licence area of 463km2 expands Vulcan's total licence area from 1,771km2 to 2,234km2 in the URVBF between Germany and France.
- Vulcan has commenced discussions with potential investment partners relating to its French licences.

Environmental, Social and Governance (ESG)

- During the Quarter, as part of Vulcan's stakeholder engagement program, an open-door day for members of the local community and local authorities was organised. The initiative attracted more than 200 people to the Natürlich Insheim geothermal renewable energy plant, where they were given an opportunity to ask Vulcan's experts about the geothermal energy production process.

Figure 6 Open door day on 4 May 2024 at Vulcan's Natürlich Insheim geothermal renewable energy plant.

European policy update

European Critical Raw Materials Act (CRMA):

- The Quarter included the enacting of the CRMA, which will offer a predictable and simplified regulatory environment aimed at being a 'one-stop shop' for centralised and faster permitting. Permitting shall not exceed 24 months for strategic projects, and the opinion on the scope and level of detail on EIAs shall not exceed 30 days, per Directive 2011/92/EU[7].
- The CRMA is also designed to facilitate faster access to funding and member state guarantees to decrease borrowing fees.

[7] https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747898/EPRS_BRI(2023)747898_EN.pdf

- Strategic Project Status will be offered to European projects that meet a series of criteria. Vulcan believes it is ideally suited and meets all criteria which include supply of strategic raw materials, technical feasibility, sustainability, and social standards. If successful, Strategic Project Status will offer additional de-risking and potential streamlining, providing further tailwinds for Vulcan's Phase One Project.

Draft Geothermal Acceleration law[8]

- During the Quarter, the German Federal Ministry for Economic Affairs and Climate Action took a significant step towards advancing geothermal renewable energy projects in Germany with the publication of a draft law for geothermal acceleration, which is due to be passed by the German Federal cabinet in August 2024.
- The GA Law is aligned with Germany's goal of generating 10TWh of geothermal energy by 2030, expediating the target of 100 additional geothermal plants in Germany by 2030. Geothermal energy is seen as a key contributor to the green energy mix for Germany's future.
- As an existing commercial producer of geothermal energy and with phased Government plans to significantly increase the geothermal contribution in Germany, Vulcan is well placed to benefit from the draft GA Law.

Additional ASX Disclosure Information

ASX Listing Rule 5.3.1: Exploration and Evaluation expenditure during the Quarter was €2.8 million. Expenditure related to the developed in-house sorbent, planning for the upcoming project execution and interpretation costs. Interpretation costs include capitalised costs from Vulcan Energy Subsurface (VES) and Vulcan Energie Ressourcen GmbH staff costs where time was allocated to Vulcan licence areas.

ASX Listing Rule 5.3.2: Development expenditure during the quarter was €19.6 million. Expenditure predominately related to construction of the Central Lithium Electrolysis Optimisation Plant (€2.5 million), construction of the Lithium Extraction Optimisation Plant (€2.5 million), refurbishment costs for Vulcan's two electric drill rigs (€5.3 million), engineering for the Phase 1 (€8.30m) and EU funded project GEOSMART focusing on geothermal extraction and purification of brine (€1.0m).

ASX Listing Rule 5.3.3: During the Quarter, no licences were granted or relinquished.

ASX Listing Rule 5.3.5: Payments to related parties of the Company and their associates during the Quarter per section 6.1 of the Appendix 5B amounted to €262,000. This is comprised of an allocation of the Managing Director remuneration of €50,000, Executive Chair remuneration of €102,000 and Non-Executive Director fees of €110,000. Payments to related parties of the Company and their associates during the quarter per section 6.2 of Appendix 5B total €50,000. This amount is an allocation of the Managing Director's remuneration for work done on exploration activities associated with the Vulcan ZERO CARBON LITHIUM™ Project. Please see the Remuneration Report in the 2023 Annual Report for further details on Directors' Remuneration.

[8]https://www.reuters.com/business/energy/germany-expedite-approval-processes-geothermal-plants-2024-06-28/#:~:text=BERLIN%2C%20June%2028%20(Reuters),its%20heating%20system%20by%202045.

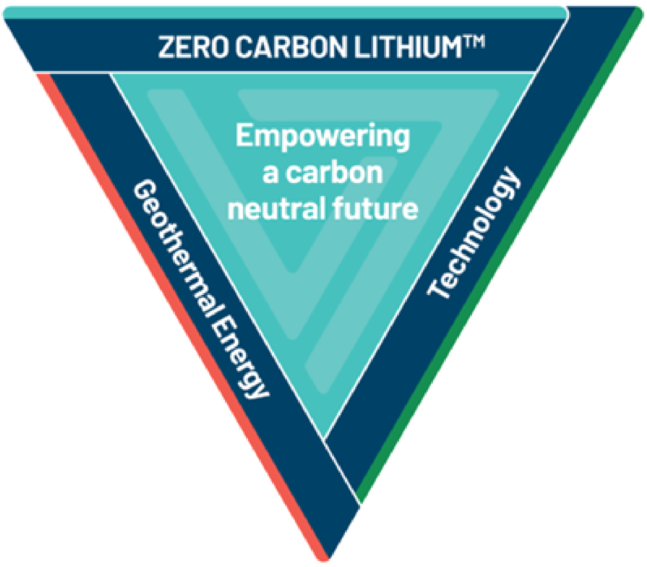
Vulcan's integrated renewable energy and ZERO CARBON LITHIUM™ Project licence table

NAME	STATE	RESOURCES APPLIED FOR	AREA (KM²)	EXPIRY	OWNERSHIP AS AT 30 JUNE 2023	CHANGE IN OWNERSHIP	TYPE
Ried	Hessen	Geothermal, brine & lithium	289.92	07.2025	100 % VER GmbH	N/A	exploration
Luftbrücke	Hessen	Geothermal, brine & lithium	207.25	9.2026	100 % VER GmbH	N/A	exploration
Rift-Nord (or Rift)	RLP	Geothermal & lithium	61.83	06.2027	50% interest in licence, with 100% ownership of first new production project developed	N/A	exploration
Waldnerturm	BW	Geothermal, brine & lithium	20.43	12.2024	100 % VER GmbH	N/A	exploration
Lampertheim II	Hessen	Geothermal, brine & lithium	1.99	07.2026	100 % VER GmbH	N/A	exploration
Ortenau II	BW	Geothermal, brine & lithium	374.10	12.2025	100 % VER GmbH	N/A	exploration
Mannheim	BW	Geothermal, brine & lithium	144.49	06.2027	100 % VER Pty Ltd	N/A	exploration
Taro	RLP	Geothermal	32.68	08.2025	100% GGH (part of VER Group)	N/A	exploration
Lisbeth	RLP	Lithium		09.2024	100 % VER GmbH	N/A	exploration
Ludwig	RLP	Geothermal & lithium	96.34	12.2024	100 % VER GmbH	N/A	exploration
Therese	RLP	Geothermal & lithium	81.12	12.2024	100 % VER GmbH	N/A	exploration
Lampertheim	Hessen	Geothermal, brine & lithium	108.03	07.2026	100 % VER GmbH	N/A	exploration
Kerner	RLP	Geothermal & lithium	72.26	12.2024	100 % VER GmbH	N/A	exploration
Löwenherz	RLP	Geothermal & lithium	75.43	12.2024	100 % VER GmbH	N/A	exploration
Flaggenturm	RLP	Geothermal	166.75	12.2024	100 % VER GmbH	N/A	exploration
Fuchsmantel	RLP	Lithium		07.2025	100 % VER GmbH	N/A	exploration
Landau-Süd	RLP	Geothermal	19.41	05.2034	JV and brine offtake agreement Geox	N/A	production
Ilka	RLP	Lithium		11.2025	JV and brine offtake agreement Geox	N/A	exploration
Insheim	RLP	Geothermal	19.00	11.2037	100% Natürlich Insheim GmbH	N/A	production
LiThermEx	RLP	Lithium		03.2025	100% Natürlich Insheim GmbH	N/A	exploration
Kachelhoffa	FR	Geothermal & lithium	492.04	07.2029	100 % Vulcan Énergie France	N/A	exploration

Table 1 Vulcan's Licences as at the date of this report.

About Vulcan

Founded in 2018, Vulcan's unique **Zero Carbon Lithium**™[9] Project aims to decarbonise lithium production, through developing the world's first 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 carbon neutral strategy with 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 Europe[10], 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 Climate Champion, Determined and Inspiring**, and united by a passion for the environment and leveraging scientific solutions, Vulcan has a unique, world-leading scientific and commercial 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, 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 carbon neutral future.



[9] Please see page 13 of our Sustainability Report FY2023 for how we define Zero Carbon Lithium™.
[10] According to public, JORC-compliant data. See Upgrade of Zero Carbon Lithium™ Project Resources, 29 September 2023.

Corporate Directory

Executive Chair	Dr Francis Wedin
Managing Director and CEO	Cris Moreno
Group Chief Financial Officer	Felicity Gooding
Deputy Chair	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
Chief Representative GER	Dr Horst Kreuter
Company Secretary	Daniel Tydde

For and on behalf of the Board
Daniel Tydde | Company Secretary

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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

12 September 2024	Half Year Report
29 October 2024	September Quarterly
30 January 2025	December Quarterly
28 March 2025	Annual Report
28 March 2025	Sustainability Report

Disclaimer

Some of the statements appearing in this announcement may be in the nature of forward-looking statements. You should be aware that such statements are only predictions and are subject to inherent risks and uncertainties. Those risks and uncertainties include factors and risks specific to the industries in which Vulcan operates and proposes to operate as well as general economic conditions, prevailing exchange rates and interest rates and conditions in the financial markets, among other things. Actual events or results may differ materially from the events or results expressed or implied in any forward-looking statement. No forward-looking statement is a guarantee or representation as to future performance or any other future matters, which will be influenced by a number of factors and subject to various uncertainties and contingencies, many of which will be outside Vulcan's control.

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Vulcan has carried out a definitive feasibility study ("DFS") and bridging engineering study ("Bridging Study") for Phase One of its Zero Carbon Lithium™ Project ("Project"), the results of which were announced to the ASX in the announcements "Zero Carbon Lithium Project Phase 1 DFS Results" dated 13 February 2023 ("DFS Announcement") and "Positive Zero Carbon Lithium™ Project Bridging Study Results" on 16 November 2023 ("Bridging Study Announcement"). This announcement may include certain information relating to the DFS and the Bridging Study. The DFS and Bridging Study are based on the material assumptions and parameters outlined in their respective announcements. While Vulcan considers all 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 Bridging Study or DFS will be achieved. This presentation may also include certain information relating to Phase 2 of its Project, Vulcan has not yet carried out a definitive feasibility study for Phase Two of its Project.

Competent Person Statement
The information in this announcement that relates to estimates of Mineral Resources and Ore Reserves is extracted from the Bridging Study Announcement which is available to view on Vulcan's website at www.v-er.eu. Vulcan confirms, that in respect of the estimates of Mineral Resources and Ore Reserves included in this announcement:

a) 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;

b) the form and context in which the Competent Persons' findings are presented in this announcement have not been materially modified from the original market announcement; and

c) all material assumptions underpinning the production targets (and the forecast financial information derived from such production targets) included in this announcement continue to apply and have not materially changed.