VULCAN ENERGY
ZERO CARBON LITHIUM™

# Management Report 23

1 January to
31 December 2023

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# 1. MANAGEMENT REPORT

## 1.1 BUSINESS MODEL AND CORPORATE PROFILE

# ABOUT VULCAN: EMPOWERING A CARBON NEUTRAL FUTURE

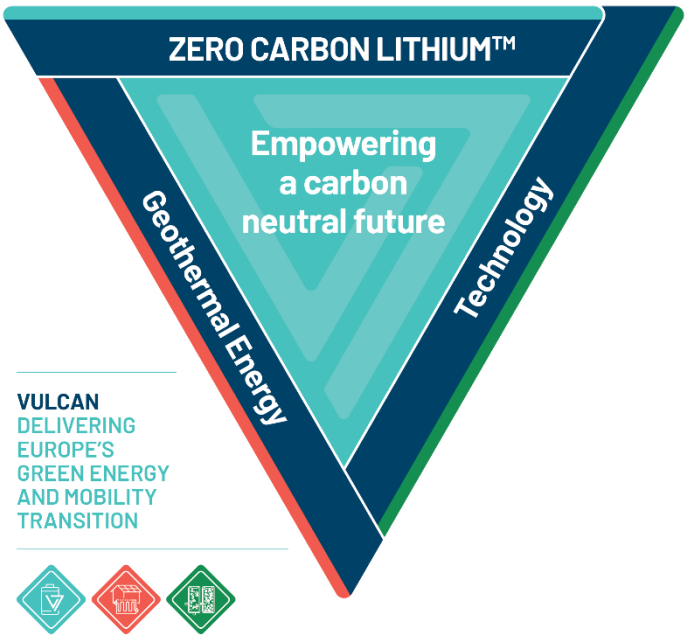
### WE ARE ONE VULCAN

FOUNDED IN 2018, VULCAN'S PURPOSE IS TO EMPOWER A CARBON NEUTRAL FUTURE, THROUGH THE EFFICIENT CO-PRODUCTION OF RENEWABLE ENERGY, HEAT, AND LITHIUM FROM GEOTHERMAL BRINE. VULCAN IS FOCUSED ON DELIVERING THE WORLD'S FIRST INTEGRATED RENEWABLE ENERGY AND ZERO CARBON LITHIUM™ PROJECT.

By adapting existing technologies to efficiently extract lithium from geothermal brine, Vulcan (the Company) aims to deliver a local source of sustainable lithium for Europe, built around a carbon neutral strategy with exclusion of fossil fuels from the lithium production process. 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[1], with licence 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 and 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 and lithium technology, and position in the European electric vehicle supply chain to be a global leader in producing carbon neutral lithium. 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.

[1] According to public, JORC-compliant data. See Upgrade of ZERO CARBON LITHIUM™ Project Resources, 29 September




## DEFINING ZERO CARBON LITHIUM

VULCAN USES 'ZERO CARBON' IN ITS TRADEMARK TO REFER TO THE CLIMATE CHANGE IMPACT OF THE LITHIUM HYDROXIDE MONOHYDRATE (LHM) PRODUCT EXTRACTION AND PROCESSING. VULCAN IS CURRENTLY EXPECTING ZERO BURNING OF FOSSIL FUELS IN ITS PROCESS TO PRODUCE LHM ONCE FULLY OPERATIONAL.

Since 2020, Vulcan has commissioned Minviro to undertake a series of International Organisation for Standardisation (ISO) compliant Life Cycle Assessments (LCAs). These are cradle-to-gate studies which include the extraction of the raw lithium product, the geothermal plant, the brine handling, the purification, electrolysis and crystallisation, and the transport of the product from well sites through to the final processing plant. The LCA does not include emissions associated with construction of the ZERO CARBON LITHIUM™ production plant, or the Vulcan Group's corporate office emissions.

The latest update of the LCA, undertaken in 2024, found that Vulcan's planned integrated renewable energy and ZERO CARBON LITHIUM™ Project has an overall net climate change impact contribution of – 2.0 kg $CO_2$ eq. per kg $LiOH.H_2O$. This included the estimated emissions from lithium production and transport including the import of energy from the grid, and estimated emissions avoided due to export of geothermal electricity and heat into the grid and district heating respectively. For full information on the LCA calculation, please see the 2023 Sustainability Report.

## 1.2 GROUP STRUCTURE

### PARENT ENTITY

The Company is the parent company of the Vulcan Group (Table 1).

Vulcan Energy Resources Limited Registered Office - Level 2, 267 St Georges Terrace, Perth Western Australia 6000, Australia.

### SUBSIDIARIES

| Name, registered office, country of incorporation | Field of activity |
|---|---|
| Vulcan Energy Europe Pty Ltd, Perth (Australia) | Operating Company |
| Vulcan Energy Italy Pty Ltd, Perth (Australia) | Holding Company |
| Energie Ressourcen GmbH, Karlsruhe (Germany) | Holding Company / Geothermal energy |
| Vulcan Energy Engineering GmbH (formerly Gec-co Global Engineering & Consulting-Company GmbH), Neusäß (Augsburg) (Germany) | Engineering / Consultancy |
| Vulcan Energy Subsurface Solutions GmbH (formerly GeoThermal Engineering GmbH), Karlsruhe (Germany) | Engineering / Consultancy |
| Vulcan Geothermal GmbH, Karlsruhe (Germany) | Geothermal energy |
| VERGEOLIO GmbH, Karlsruhe (Germany) | Geothermal energy |
| VERCANA GmbH, Karlsruhe (Germany) | Drilling Services |
| Natürlich Insheim GmbH, Karlsruhe (Germany) | Geothermal energy |
| Natürlich Südpfalz Geschäftsführungs GmbH, Landau (Germany) | Geothermal energy |
| Natürlich Südpfalz GmbH & Co. KG, Landau (Germany) | Geothermal energy |
| Vulcan Energie France SAS, Haguenau (France) | Geothermal energy |
| Vulcan Lily Lithium GF –GmbH, Karlsruhe (Germany) | Geothermal energy & Lithium |
| Vulcan Lily Lithium (Höchst) -GmbH & Co KG, Karlsruhe (Germany) | Geothermal energy & Lithium |
| Vulcan Projektgesellschaft 2 GmbH, Karlsruhe (Germany) | Geothermal energy & Lithium |
| Vulcan Projektgesellschaft 3 GmbH, Karlsruhe (Germany) | Geothermal energy & Lithium |
| Comeback Personaldienstleistungen GmbH, Lingen (Germany) | Drilling Services Personnel |
| Vulcan Energy SA Pty Ltd | Lithium |

*Table 1 Vulcan Group entities.*

## 1.3 MANAGEMENT STRATEGY AND OBJECTIVES

Vulcan was founded in 2018 with a clear purpose: To empower a carbon neutral future, by becoming Europe's leading ZERO CARBON LITHIUM™ business and enabling energy security through geothermal energy. The Company aims to produce both geothermal renewable energy and lithium hydroxide for electric vehicles (EVs), from the same deep brine source in the Upper Rhine Valley (URV), Germany.

With the completion of its Definitive Feasibility Study (DFS)[2], followed by a more advanced Bridging Engineering Study (BES)[3] published in November 2023, Vulcan is now execution ready to commence delivering its Phase One integrated renewable energy and ZERO CARBON LITHIUM™ Project.

### VULCAN'S 2024 OBJECTIVES


*Figure 1 Vulcan's 2024 objectives.*

Vulcan has a clear goal and strategy built around implementing the world's first integrated renewable energy and ZERO CARBON LITHIUM™ Project, targeting a phased approach over the long term.

The Company has applied an integrated business model, aiming for dual revenue sources through its lithium chemicals and geothermal renewable energy business. Vulcan has access to a strategically located and scalable lithium raw materials resource, estimated by the Company to be the largest lithium resource in Europe[4]. In addition, Vulcan has strategic support with secured, long term lithium supply contracts. The Company has five key offtake agreements secured, with binding take-or-pay, and a mixture of pricing mechanisms for stable cash flow that also enables upside in pricing if the market is favourable.

[2] https://www.investi.com.au/api/announcements/vul/e617fca6-6d4.pdf
[3] https://www.investi.com.au/api/announcements/vul/7e316105-420.pdf
[4] According to public, JORC-compliant data. See Upgrade of ZERO CARBON LITHIUM™ Project Resources, 29 September 2023

## 1.4 MANAGEMENT SYSTEMS AND STEERING

Vulcan's internal management system is based on five core performance indicators. These are influenced by the Company's strategic goals and monitored on a regular basis. The following indicators are essential for steering the Company:

- Strong cash position.
- Capital expenditure.
- Operating expenses.
- Building a world-class team.
- Carbon neutral position.

Compared to 2022, management excluded revenue and EBITDA from the core performance indicators for 2023, as these indicators are less informative given the development stage of Vulcan.

The Company had a cash position of €78.7m on 31 December 2023, down from €134.1m on 31 December 2022. The reduction in cash during the financial year was principally due to construction costs towards completion of the Lithium Extraction Optimisation Plant (LEOP) and the Central Lithium Electrolysis Optimisation Plant (CLEOP), partial refurbishment of two electric drill rigs, exploration costs including well planning costs for the upcoming Schleidberg well, acquisition of land relating to upcoming production locations, and Bridging Engineering Study costs.

Capital Expenditure (CAPEX) for the twelve-month financial year ended 31 December 2023 was €90.4m, up from €30.7m in the six-month shorter financial year ended 31 December 2022, and Operating Expenditure (OPEX) increased to €62.5m in the financial year ended 31 December 2023, up from €21.1m in the six-month shorter financial year ended 31 December 2022. The increase in CAPEX and OPEX relates to the longer financial year compared to the previous financial year (six months) as well as the construction of the LEOP and CLEOP during the financial year. Furthermore, the Company made relevant investments in rig refurbishments, well sites, and permit engineering, helping to ensure that Vulcan is ready to execute its integrated renewable energy and ZERO CARBON LITHIUM™ Project.

Building a project execution team has been a core focus throughout 2023 which will be instrumental in the Company's ability to successfully execute on the project development strategy. The Company's workforce increased to 371 FTE by December 2023.

Vulcan's management distinguishes between the segments concerning the performance indicators. A conservative cash position is required at the Vulcan Group level to develop the operations in Germany and to cover supporting corporate costs at the German and Australian level. CAPEX is a reasonable KPI for Australia and Germany as the Company is in the development phase. OPEX is also used to steer the segments of Australia and Germany.

Vulcan is aiming to deliver a local source of sustainable lithium hydroxide monohydrate for Europe, built around a carbon neutral strategy, with the team expecting to exclude fossil fuels from the lithium production process. The acquisition of the Natürlich Insheim renewable energy

operation is in line with this steering indicator and adds renewable energy producer alongside Vulcan's carbon neutral lithium product.

A carbon neutral position is important at the Company level as it is central to Vulcan's strategy to empower a carbon neutral future through the production of sustainable lithium and geothermal heat and power.

The Australian Vulcan business has been certified as carbon neutral by Climate Active since 2020, with the German operations certified as carbon neutral from 2021. The 2022 carbon neutral certification has been completed through Climate Impact Partners' carbon neutral label. During the reporting Period, Vulcan together with ERM, a leading global provider of environmental, health, safety, risk, social, and sustainability related consulting services, completed its Environmental and Social Impact Assessment (ESIA), a comprehensive report that details the potential environmental and social risks and impacts for Phase One of its ZERO CARBON LITHIUM™ Project through all stages of the Project including construction, operation and decommissioning. The ESIA highlighted multiple positive impacts of the Project, including renewable heating provision for local communities, and carbon neutral lithium production to decarbonise the lithium supply chain. The ESIA shows the Project's potential alignment with Equator Principles 4 and the International Finance Corporation Performance Standards, is a prerequisite for the raising of sustainable or "green" debt finance and is an important third-party validation of the Project.

## 1.5 INNOVATION, RESEARCH, AND DEVELOPMENT

Vulcan aims to provide lithium and baseload renewable heat and power with a very low environmental impact compared to legacy methods. To achieve this, the Company views innovation as a cornerstone to successfully delivering its project. Currently there are several publicly funded research, development, and innovation (R&D+I) projects conducted at the Vulcan Labs and at the geothermal power plant to optimise output efficiency. The projects aim to:

- Gain comprehensive understanding of reservoir properties to optimise reservoir development and to assess and control reservoir productivity towards a deep understanding of the reservoir – operations-interactions to mitigate risks.
- Increase efficiency for base-load heat and electricity production.
- Optimise efficiency of lithium production from the brine with a carbon neutral footprint.

Vulcan collaborates with internationally acknowledged research partners (such as Potsdam Geoforschungszentrum, Karlsruhe Institute of Technology, University of Stuttgart, TU Darmstadt, and other renowned institutions), as well as strong industrial partners.

Most of these research, development and innovation projects are publicly supported by the European Commission and Germany.

## KEY R&D+I PUBLICLY FUNDED PROJECTS DURING THE FINACIAL YEAR 1 JANUARY TO 31 DECEMBER 2023

| # | Title | Content |
|---|---|---|
| 1 | GeoSmart<br>(EU) | Major geothermal (R&D) project on a European level, expected to be completed in the second half of 2024.<br>Smart Technologies for Geothermal to Enhance Competitiveness and Agile Operation.<br>Natürlich Insheim will serve as a demonstration site to install district heating, optimise electricity, and heat production as well as test hybrid heat exchangers for future wells/power plants. Germany |
| 2 | Effgeo<br>(GERMANY) | Improving the efficiency of geothermal power plants via simulation and demonstration tests.<br>Identification and development of efficiency-increasing measures. |
| 3 | GreGEO<br>(GERMANY)<br>Project coordinator | Glass Fiber Reinforced Epoxy Casing System for Geothermal Application aims to develop a new well completion strategy to provide a corrosion-resistant alternative to steel. |
| 4 | GeoThermScaling<br>(GERMANY) | Development, evaluation, and testing of advanced iron-boride based coating for deep geothermal applications. |
| 5 | Mobiflow<br>(GERMANY) | Testing and marketing of mobile device to measure heat capacity of brine. |
| 6 | KlimProMem<br>(GERMANY) | Process development for the climate neutral production of basic chemicals based on biogenic carbon dioxide, renewable electricity and geothermal process heat using innovative membrane processes using the example of alkali carbonates. |
| 7 | CRM Geothermal<br>(EU) | Critical Raw Material from Geothermal fluids: Occurrence, enrichment, extraction. |
| 8 | GeoPro<br>(EU) | Advanced understanding and modelling of geofluid properties that has wide applicability across most geothermal installations.<br>Obtain a better understanding of carbon dioxide-solubility under plant operational conditions and the possible link between local micro-degassing, scaling, and corrosion. |
| 9 | Reflect<br>(EU) | Redefining geothermal fluid properties at extreme conditions.<br>Get a better understanding of the geothermal fluid properties. |
| 10 | EVA | Removal of Scaling in Pipes using the Electric Impulse Technology. |

| | | |
|---|---|---|
| 11 | EIKE (GERMANY) | Inhibitor development to cope with scales and corrosion challenges in operation to increase heat output and lower maintenance.<br>Assessing the impact of a colder geothermal brine regarding scaling and corrosion and the chemical treatments efficiency. |
| 12 | PERFORM II | Improving Geothermal System Performance Through Filter Technology Development. |

*Table 2 Key R&D+I publicly funded projects during the Period.*

# 2. ECONOMIC REPORT

## 2.1 MACROECONOMIC ENVIRONMENT: OVERALL INDUSTRY SITUATION

In 2023, the global economic landscape witnessed a delicate balance between recovery and uncertainty. Whilst some regions experienced robust Gross Domestic Product (GDP) growth, others had to deal with persistent challenges. Europe, for instance, navigated a mixed terrain marked by high inflation rates and the complex task of balancing economic revival with price stability. Governments and central banks employed various strategies to address inflationary pressures, aiming to sustain growth without compromising financial stability. As a result, Europe's economic development has been characterised by a delayed post-pandemic recovery. Overall, the respective Period underlined the significance of agile policymaking and collaborative efforts to foster resilience in the face of evolving economic dynamics.

Momentum has continued to build over the last year, as the world rushes to meet decarbonisation targets to reduce the impact of climate change. Aligned with European decarbonisation targets together with EV transition efforts, the European Union (EU) targets new cars to be fully electric by 2035[5], which may lead to a 57-fold increase in lithium demand for Europe[6]. To tackle this, the EU reached a resolution and agreement on the Critical Raw Materials Act (CRMA) to become law in early 2024[7]. The CRMA seeks to reduce EU's dependence on China, a dominant force in global mineral processing that has already threatened EU supply through export restrictions, such as the supply of graphite, a critical raw material (CRM) in lithium-ion batteries[8]. This policy tailwind may present a strong focus and further fast-tracking of the permitting process and funding for strategic projects like Vulcan's. Ultimately, secure domestic and sustainable supply chains strengthen the EU's resilience and acceleration towards a greater European competitiveness and sovereignty.

### 2.1.1 LITHIUM AND ECONOMIC SITUATION OF THE CHEMICAL INDUSTRY

Lithium stands as an essential and irreplaceable element in lithium-ion batteries, which are used in EVs and renewable energy storage systems. As a foundational resource, it plays a crucial role in global efforts to mitigate climate change.

Global sales volumes of electric vehicles (EVs) are forecast to increase by 45% per annum from 2020 to 2030[9] (Figure 2). According to S&P Global Mobility, demand for lithium-ion batteries from light vehicles between 2020 and 2027 will increase at a compound annual growth rate (CAGR) of nearly 40% to about 2,050 GWh[10].

EVs accounted for 9.5 million out of the 13.6 million EVs sold around the world in 2023, with Plug-in Hybrid EVs accounting for the rest[11], meaning EV sales jumped 25% from the prior year, setting

[5] https://ec.europa.eu/commission/presscorner/detail/en/ip_22_6462
[6] https://www.euractiv.com/section/economy-jobs/news/eu-unveils-critical-raw-materials-act-aiming-to-lessen-dependence-on-china/
[7] https://www.reuters.com/markets/commodities/eu-sets-critical-mineral-goals-faces-struggle-hit-them-2023-12-18/
[8] https://edition.cnn.com/2023/10/20/economy/china-graphite-export-curbs-hnk-intl/index.html
[9] Global EV and PHEV sales forecast (Millions of Units) Fastmarkets IEA
[10] https://www.spglobal.com/mobility/en/research-analysis/growth-of-liion-battery-manufacturing-capacity.html 2022/05/20
[11] https://www.reuters.com/business/autos-transportation/global-electric-car-sales-rose-31-2023-rho-motion-2024-01-11/

a record and representing 21%[12] of the overall car sales market. Notably, China's EV manufacturer BYD sold more electric cars in Q4, 2023 than Tesla[13], and has even replaced Volkswagen as the market leader in Volkswagen's home country of Germany[14].

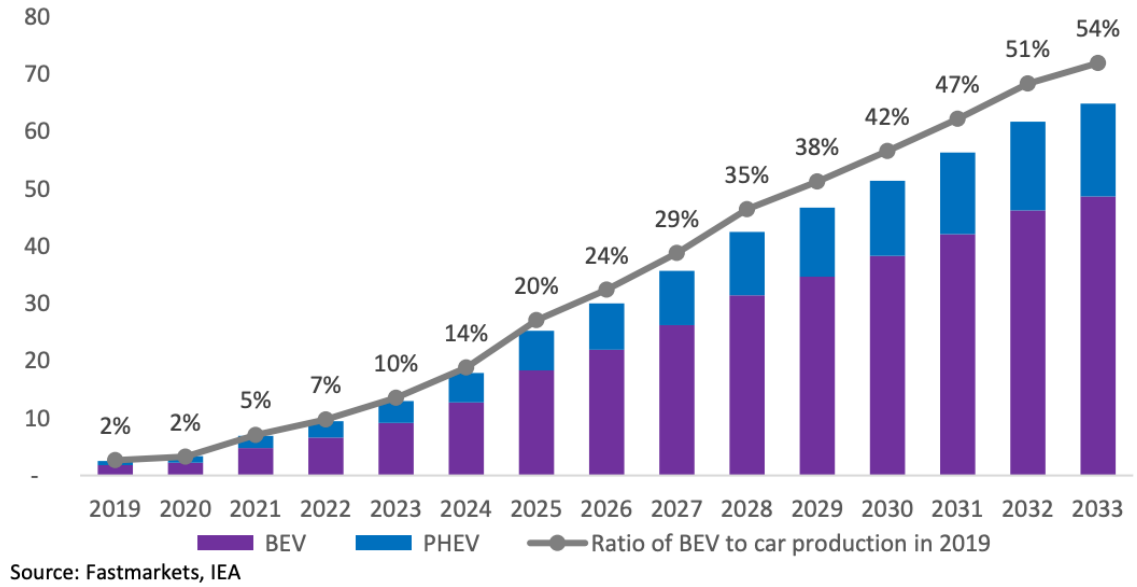



*Figure 2 Global EV and PHEV sales forecast (Million units).*

Correspondingly, the lithium-ion battery is expected to be the fastest-growing rechargeable battery technology due to increasingly strong penetration rates in the EV market and a fall in manufacturing costs[15]. The global annual consumption of lithium is expected to increase from 345,000 tonnes in 2020 to 2 million tonnes in 2030, which would represent a sixfold increase[16].

Europe is the fastest growing lithium market in the world based on EV sales and lithium-ion battery production growth[17]. This would imply that by 2030, the European Union will need up to 18 times more lithium and nearly 60 times more by 2050[18]. Notably, on the supply side, there is no existing European domestic lithium production.

Since the implementation of the Inflation Reduction Act (IRA) in the United States of America in mid-2022, there has been a major impact on the battery value chain and investments in 2023. With the CRMA, Europe has made a significant step forward in investing to stay globally competitive and have secure, domestic access to CRM.

[12] European Alternative Fuels Observatory https://alternative-fuels-observatory.ec.europa.eu/general-information/news/european-ev-market-analysis-strong-growth-continues-plug-vehicle
[13] https://edition.cnn.com/2024/01/02/cars/china-byd-ev-sales-increase-tesla-intl-hnk/index.html
[14] https://www.handelsblatt.com/unternehmen/industrie/vw-in-china-verkauft-byd-jetzt-mehr-autos-als-volkswagen/29098304.html
[15] https://www.isi.fraunhofer.de/content/dam/isi/dokumente/cct/2023/Fraunhofer-ISI_LIB-Roadmap-2023.pdf
[16] https://www.fastmarkets.com/insights/lithium-supply-and-demand-to-2030/
[17] https://source.benchmarkminerals.com/article/europes-ev-gigafactory-capacity-pipeline-grows-6-fold-to-789-2gwh-to-2030-berlin-summit-to-dissect-battery-megatrend
[18] https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/689337/EPRS_BRI(2021)689337_EN.pdf

## CURRENT AND FUTURE STATE OF THE LITHIUM MARKET

The below graph[19] (Figure 3) shows the annual average spot price for lithium hydroxide from mid-2017 to the end of 2023 with forecasted assumptions until 2040, based on the Asian and European prices and base assumptions. Lithium market analysts Fastmarkets see the price differential between Asia and the EU/US narrowing as demand for lithium hydroxide in Asia increases, due to nickel-rich battery chemistries gaining market share.

Since a record high for lithium prices of more than USD $70,000 per metric tonne in 2022, the lithium market has experienced volatility in 2023, reducing around 80% from the highs in 2022 due to softening demand. Further volatility is expected in the lithium market during the next few years as supply and demand try to balance in a fast-growing environment, causing dramatic rises and falls in lithium pricing. However, Vulcan is in an advantageous situation due to its offtake agreements secured in 2021-2022 with key industry players, Stellantis, Renault, LG, Umicore, and Volkswagen, which incorporate various pricing mechanisms such as fixed pricing and floors. Another point to note is that Vulcan is targeting one of the lowest costs of production in the industry[20]. This, together with Vulcan's offtake agreements, provides some degree of insulation from a volatile lithium market in the years to come and greater stability in future revenue generation.

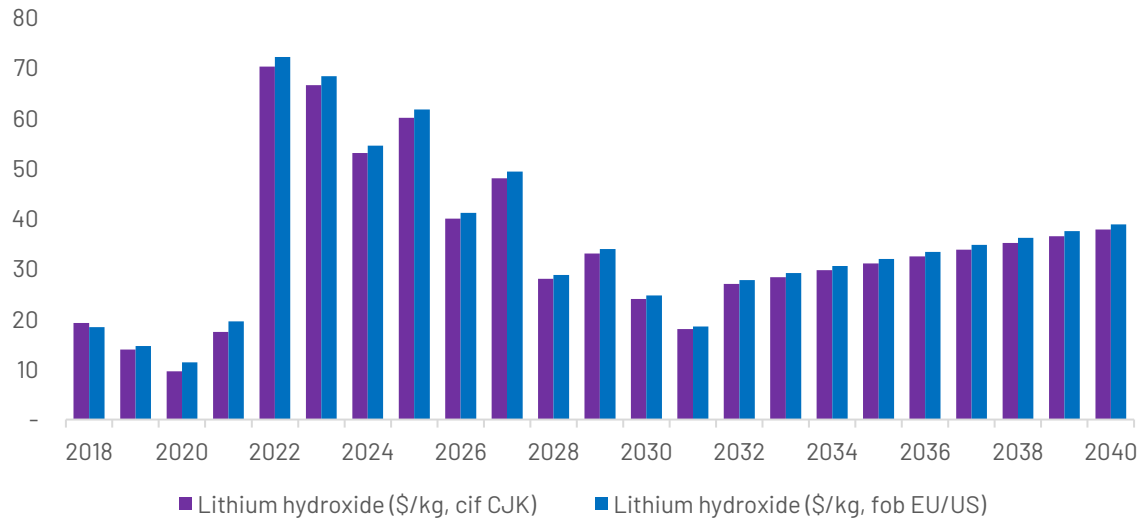



*Figure 3 Lithium hydroxide price forecasts - Base case ($/kg, annual average).*

## SECURING LITHIUM SUPPLY FROM EUROPE, FOR EUROPE

Europe has set important goals to combat climate change: the EU is aiming to be carbon neutral by 2050[21] and is committed to advancing the development of renewable domestic energy sources. Additionally, all new cars in the EU must be 100% electric by 2035[22], emphasising the

[19] Fast markets, Lithium Market study, Lithium price forecast Lithium hydroxide price forecasts - Base case ($/kg, annual average) https://www.fastmarkets.com/metals-and-mining/battery-materials/lithium/
[20] https://www.investi.com.au/api/announcements/vul/22623520-1b3.pdf
[21] https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2050-long-term-strategy_de
[22] https://ec.europa.eu/commission/presscorner/detail/en/ip_22_6462

urge for Europe to secure domestic lithium hydroxide monohydrate supply. Europe will require unprecedented quantities of lithium chemicals for its transition to EVs and to meet its targets. Otherwise, its domestic automotive industry is at risk of losing its relative competitiveness to other non-domestic players, and it will likely not be able to meet its set climate goals. To tackle this challenge, Europe needs to boost local production of green industries - including batteries to power clean vehicles, and the raw materials required for batteries.

Today, China owns 70 - 80% of the entire supply chain of EVs and accounts for approximately 80% of lithium hydroxide output[23]. There is no lithium extraction and little refining capacity in Europe[24] and 100% of the continent's current lithium needs must be imported. This is leading to several concerns and complex problems for European auto and battery makers linked to logistics, geopolitics, and supply chain risk. Therefore, European Original Equipment Manufacturers (OEMs) and battery makers have an urgent need to secure sufficient lithium supply to be able to remain in business and given global geopolitical instability as well as the carbon footprint of transport, this lithium would ideally be sourced locally.

As such, the EU member states are now aiming to reduce the risk of over-reliance on a single supplier for energy and critical commodity imports. In December 2022, the DIW (German Institute for Economic Research) released a paper stating Germany is entirely dependent on imports for 21 out of 27 critical raw materials[25]. In July, the Chinese government announced raw materials restrictions for germanium, gallium, and graphite[26], posing a real risk to European automakers and ultimately the EU reaching 2035 targets. This, in Vulcan's opinion, is yet another sign that the tide is turning on import reliance versus local production.

These sentiments reflect the long-held objective of Maroš Šefčovič, the EU Commission's Vice President and leader of the EU Commission's work on the European Green Deal, for the European Union to be 80% self-sufficient in lithium[27]. In 2023, this commitment has been transferred into tangible policies: On 13 November 2023, the EU Parliament and the European Council of the European Commission reached a political agreement on the CRMA, setting out a series of comprehensive actions to ensure the EU's access to a secure, diversified, affordable, and sustainable supply of CRM[28]. The CRMA is expected to enter into force in 2024[29]. Additionally, the European Commission President Ursula von der Leyen said Europe needs more public investment to accelerate the green transition, with complementary EU financing required, since[30] not every EU member has budgetary space for large increases in state aid.

[23] World Economic Forum: The world needs 2 billion electric vehicles to get to net zero. But is there enough lithium to make all the batteries. https://www.weforum.org/agenda/2022/07/electric-vehicles-world-enough-lithium-resources/
[24] Europe's first large-scale lithium refinery will be in the UK. https://www.soci.org/news/.
[25] DIW (German Institute for Economic Research Deutschland kann seine Versorgungssicherheit bei mineralischen Rohstoffimporten erhöhen https://www.diw.de/
[26] https://www.economist.com/business/2023/06/22/why-is-china-blocking-graphite-exports-to-sweden
[27] Green Deal: Eu agrees to new law on more sustainable and circular batteries to support EU's energy transition and competitive industry 2022/12/09
[28] https://ec.europa.eu/commission/presscorner/detail/en/ip_23_5733
[29] https://www.consilium.europa.eu/en/press/press-releases/2024/03/18/strategic-autonomy-council-gives-its-final-approval-on-the-critical-raw-materials-act/
[30] Speech by president von der Leyen at the European Parliament Plenary on the preparation of the European Council meeting of 15 December 2022 https://ec.europa.eu/commission/presscorner/detail/en/speech_22_7727 2022/12/14

### SUSTAINABLY SOURCED LITHIUM

In addition to locally sourced, the EU and its member states are implementing regulations designed to de-risk their supply chain and lower their carbon footprint.

On 1 October 2023, the EU Carbon Border Adjustment Mechanism (CBAM) entered into application with the aim to combat climate change and prevent carbon leakage. The CBAM aims to equalise the price of carbon paid for both EU products operating under the EU Emissions Trading Scheme (ETS) and imported goods. Effectively, some key imports will become more expensive, however Vulcan believes that the CBAM may eventually benefit Vulcan and industry related peers who are already located in or aiming to be located in Europe to produce sustainable critical minerals.

Vulcan believes that the availability of lithium chemicals with a carbon neutral footprint and produced in Europe, represents a significant opportunity for European companies, particularly Europe's battery automotive industry, and that this is increasingly important to companies from a Corporate Social Responsibility (CSR) and Environmental, Social, and Governance (ESG) perspective. Vulcan is well positioned to support European companies in their aim to produce sustainable batteries, starting with lithium. But to Vulcan it is not only about providing the raw materials for Europe's battery and automotive industry. It is also about building the first carbon neutral lithium hydroxide monohydrate value chain in the world, from producing the raw material to processing and ultimately to the final product: sustainable, green lithium.

Using the sustainable technology Adsorption-Type Direct Lithium Extraction (A-DLE), lithium can be extracted from geothermal brine with very high efficiency. Better still, the process is heat-driven, meaning the natural waste heat in the brine after the energy generation process is enough to drive the lithium extraction process. According to lithium market analysts Fastmarkets, A-DLE accounts for approximately 10% of current commercial global lithium supply[31]. Although the lithium market is growing by 20% compound annual growth rate (CAGR), A-DLE is set to increase its market share to 15% of the global market by 2030, according to Fastmarkets[32]. This not only represents an astonishing rate of increase of A-DLE production, which has been used commercially since 1996, but also an opportunity for companies to use A-DLE to produce carbon neutral lithium. Lithium as well as oil and gas companies, such as Exxon Mobile, Koch Industries, Eramet, and Arcadium Lithium have already started developing or are already operating A-DLE projects.

## 2.1.2 ENERGY MARKETS – PRICE DEVELOPMENT AND PROCUREMENT STRATEGY

Vulcan intends to enable the decarbonisation of energy supply in Europe by supplying geothermal energy. This can be demonstrated by Vulcan's heat offtake agreement with MVV Energie AG (MVV), the first of a few planned district heating agreements from geothermal energy, to help combat Germany's local sourced energy needs[33]. At the start of 2023, Vulcan and Stellantis signed an agreement to support the decarbonisation of the Rüsselsheim am Main auto manufacturing

[31] Fastmarkets 2023-2030 DLE Forecast
[32] https://www.fastmarkets.com/insights/do-we-have-the-battery-materials-for-the-future/
[33] Vulcan executes agreement to supply German energy company, MVV, with renewable, zero carbon heat https://www.investi.com.au/api/announcements/vul/fccbdb90-d23.pdf 2022/04/06

facility with geothermal renewable energy. This facility is located at the northernmost extent of Vulcan's focus area in the Upper Rhine Valley (URV) and underlines the Company's commitment to increase its decarbonising impact on the European EV industry. In addition, the companies signed their fourth agreement later in 2023, with the aim of a joint project to develop geothermal renewable energy to supply Stellantis' Mulhouse Plant in France.

As noted above, Europe and, particularly Germany's, over-reliance on Russian energy is being keenly felt due to the ongoing impact of the war in Ukraine. Germany must expand energy production at home, particularly for heating, to secure energy security and to successfully transition away from fossil fuels towards renewables and better energy efficiency to meet the country's climate obligations.

Vulcan anticipates that geothermal renewable energy on a mass scale will play an important part in achieving Europe and Germany's energy security and independence. This is backed by the Fraunhofer Institute, stating that deep geothermal energy could provide more than a quarter of Germany's heating demands[34].

Increasingly, there is more recognition for the value of supporting geothermal energy in addition to other renewable energy sources. At the district heating summit in June 2023, Germany's Vice Chancellor and Federal Minister for Economic Affairs and Climate Protection, Robert Habeck, as well as Federal Building Minister Klara Geywitz, together with several industry representatives, agreed on a declaration stating the importance of converting and expanding heating networks for the success of the heating transition and to meet climate protection targets[35]. The declaration also includes deep geothermal energy: "Deep geothermal energy is to be more strongly incentivised through an exploration campaign, an acceleration law, and a system for risk protection system"[36]. This complements the Federal Ministry of Economic Affairs and Climate Action announcement from 2022, to boost green district heating, through Federal Funding for Efficient Heating Networks (BEW)[37].

In the period up to and including 2026, approximately €3 billion will be made available for renewable heat generation using geothermal energy, solar thermal energy, large-scale heat pumps and further heat network infrastructure[38]. This subsidy scheme, which over a four-year timeframe will support the country's long-term energy transition, is targeting investment to increase the share of renewable and climate neutral heat sources in the heating networks to 25% by 2025 and 30% by 2030 ( Figure 4). Vulcan has a fully integrated drilling, development, and operations team in geothermal, as well as in-house rigs, which makes the Company uniquely positioned to benefit from the funding program.

At a state level, the Green parliamentary group in the Baden-Württemberg state parliament, which is also the State's governing party, published a resolution aiming to make Baden-

[34] Fraunhofer Institute, Roadmap deep geothermal energy in Germany, p. 22
[35] https://www.bmwk.de/Redaktion/DE/Pressemitteilungen/2023/06/20230612-aus-und-umbau-waermenetze.html
[36] https://www.bmwk.de/Redaktion/DE/Downloads/Energie/0612-erklaerung-fernwaeme-gipfel.pdf?__blob=publicationFile&v=10 (page 3)
[37] https://www.bmwk.de/Redaktion/EN/Pressemitteilungen/2022/09/20220915-boost-for-green-district-heating-federal-funding-for-efficient-heat-networks-bew-begins.html
[38] https://ec.europa.eu/commission/presscorner/detail/en/ip_22_4823

Württemberg "a deep geothermal energy state", as well as supporting sustainable lithium production[39].

At a community level, support continues to grow for geothermal production. The Upper Rhine Council, a cross-border association of the regions of Baden-Württemberg, Rheinland-Pfalz, Alsace (France), and the cantons of Northwestern Switzerland, resolved in favour of supporting deep geothermal projects in the URV[40]. In addition, the City Council of Landau, which covers part of Vulcan's geothermal production licence at Insheim, as well as the Landau-Süd production licence, where Vulcan has a brine offtake agreement with the operating company, continues to support geothermal energy production in the area. This also supports a positive stance towards the extraction of lithium from geothermal brine, taking into consideration climate protection goals and the interests of the regional-urban development in the area. Further to the measures already in place, Vulcan is proactively advocating for German legislators to prioritise the enormous potential of deep geothermal energy for a safe and clean heat supply in Germany.

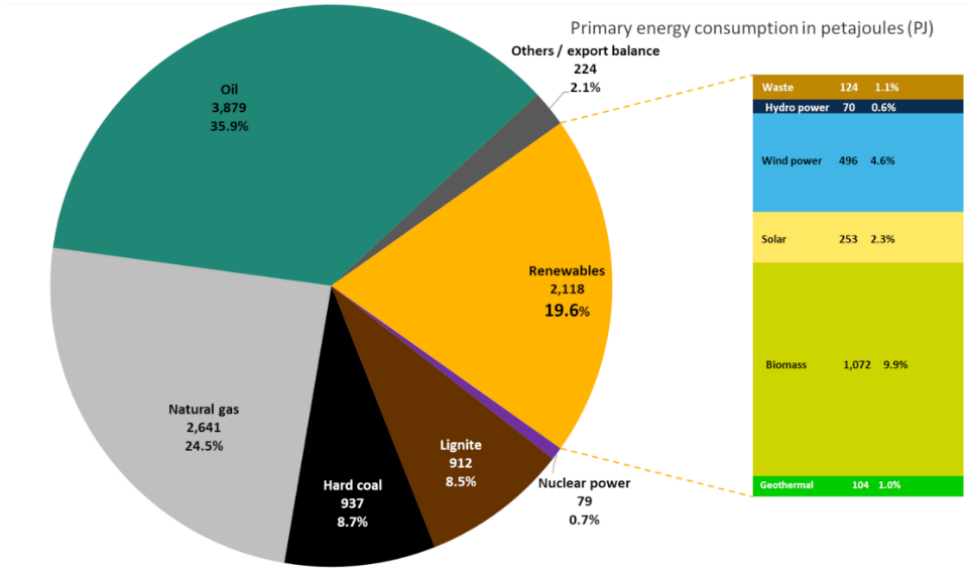



*Figure 4 German energy mix 2023: Energy sources' share in primary energy consumption[41].*

## ENERGY PRICING FEED-IN TARIFFS

According to Vulcan's Feed-in contract for the Natürlich Insheim power plant located in Germany, the geothermal electric power fixed Feed-in Tariff (FiT) was at least €0.252 per kWh[42], during the reporting Period. In 2023, Vulcan has purchased electricity for self-consumption on the market. Vulcan's contract is with the local energy supplier Pfalzwerke AG.

[39] https://www.gruene-landtag-bw.de/fileadmin/user_upload/230523_positionspapier_fraktion_gruene_tiefengeothermie.pdf
[40] https://v-er.eu/de/vulcan-nimmt-an-trinationalem-klima-und-energie-kongress-in-landau-teil/
[41] https://www.cleanenergywire.org/factsheets/germanys-energy-consumption-and-power-mix-charts
[42] Network Transparency, 'Market value overview', https://www.netztransparenz.de/EEG/Marktpraemie/Marktwerte Accessed February 2024

## 2.2 REVIEW OF OPERATIONS

### BUILDING RENEWABLE ENERGY AND LITHIUM CHEMICALS PRODUCTION

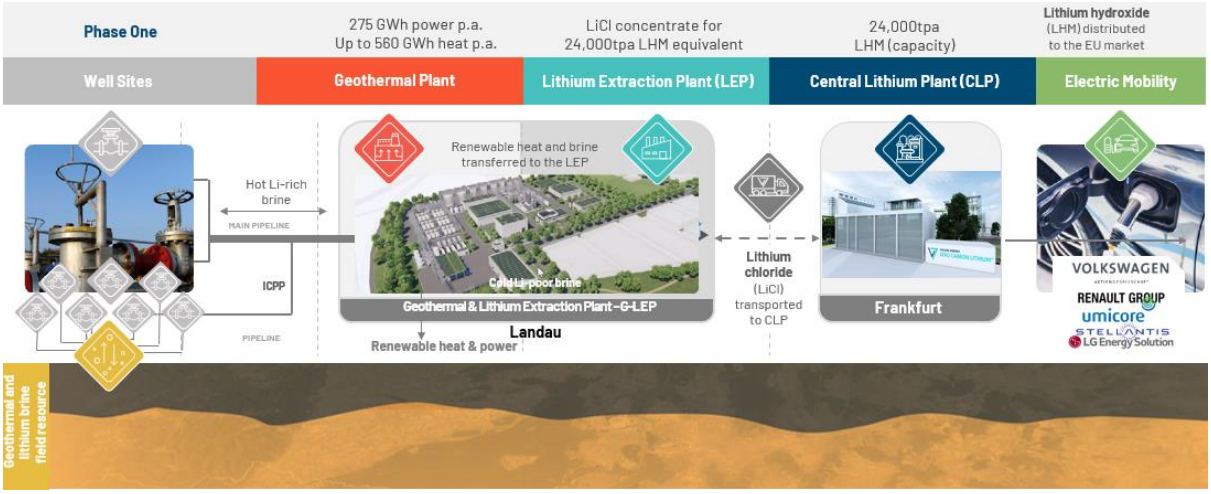



*Figure 5 Phase One integrated renewable energy and ZERO CARBON LITHIUM™ Project Overview.*

### EXECUTION OF VULCAN'S STRATEGY: 1 JANUARY TO 31 DECEMBER 2023 SNAPSHOT: DELIVERY OF PHASE ONE DEVELOPMENT

| 2023 Delivery on its strategy | Key highlights achieved during the reporting Period |
|---|---|
| **Renewable energy operations** | During 2023, Vulcan generated approximately 16,000 MWh of renewable energy from Vulcan's operational geothermal wells and plant at Natürlich Insheim, at an average selling price of €0.26 per kWh, supporting Germany's transition to domestic renewable energy sources. Currently, there are 42 geothermal plants operating in Germany[43] and the German Federal Government targets to reach 100 new geothermal projects to be built by 2030[44]. With affordable, baseload renewable energy, Vulcan actively contributes to achieving this goal. |
| **Phase One execution of Vulcan's integrated renewable energy and ZERO CARBON LITHIUM™ Project** | Vulcan announced the positive decision by the Landau City Council to execute an agreement to allow the Company to begin construction of its integrated Geothermal renewable energy and Lithium Extraction Plant (G-LEP) on the intended land located in the Landau region[45]. Completion of the acquisition of this land is set to occur subsequently, following satisfaction of the already agreed conditions and execution of the formal purchase |

[43] https://www.deutschlandfunkkultur.de/tiefe-geothermie-zukunft-energie-risiken-102.html
[44] https://www.bmwk.de/Redaktion/DE/Downloads/Energie/eckpunkte-geothermie.pdf?__blob=publicationFile&v=6
[45] https://www.investi.com.au/api/announcements/vul/81fc2515-0e5.pdf

agreement. The prospective land acquisition is a major step in completion of the Phase One plant land packages and will add to the site already secured at the Frankfurt Höchst Industrial Park for the Central Lithium Plant (CLP).

During the reporting Period, Vulcan officially opened its Lithium Extraction Optimisation Plant (LEOP) in Landau, Germany[46]. The LEOP is Europe's first plant for fully domestic lithium chemicals production, to secure Europe's lithium supply chain for EV manufacturers. It is a €40m investment to date by Vulcan and serves as an optimisation, operational training, and product qualification facility, enabling commercial operational readiness for 2026.

In addition, Vulcan has published the results of its Definitive Feasibility Study (DFS) for Phase One in February 2023[47], followed by the positive results of the Bridging Engineering Study[48] launched by Vulcan and supported by Hatch. This includes significant value improvements, including a reduction in CAPEX, and OPEX, while increasing and streamlining project definition.

The State Mining Directorate has approved the first Main Operating Plan for Vulcan's newly planned wells in its Insheim licence, where Vulcan is already operating commercial geothermal wells and a plant. Vulcan plans to increase brine production by adding several production and re-injection wells. Pipelines will flow the lithium-rich brine, as well as water heated by the brine, to the planned facilities in the Landau Industrial Park[49].

The building permit has been received for the Central Lithium Electrolysis Optimisation Plant (CLEOP) at the Frankfurt Höchst Industrial Park[50] which is expected to start operation in Q3, 2024.

During the reporting Period, Vulcan has continued to make significant progress towards execution of Phase One of Vulcan's integrated renewable energy and ZERO CARBON LITHIUM™ Project and has commenced debt and project level equity financing of the Company's Phase One, led by BNP Paribas[51]. The Company has already received substantial in-principal government-backed ECA support, e.g. A$200 million (~€120 million) letter of support from

[46] https://v-er.eu/zero-carbon-lithium-optimisation-plant-opening/
[47] https://www.investi.com.au/api/announcements/vul/e617fca6-6d4.pdf
[48] https://www.investi.com.au/api/announcements/vul/7e316105-420.pdf
[49] https://www.investi.com.au/api/announcements/vul/2a2a0ef6-dc7.pdf
[50] https://www.investi.com.au/api/announcements/vul/947f7a7d-e89.pdf
[51] https://www.investi.com.au/api/announcements/vul/7e316105-420.pdf

| | |
|---|---|
| | Export Finance Australia[52].<br><br>Mineral Resources update, stating Vulcan's URVBF lithium Resource has increased to 27.7 million tonnes of contained Lithium Carbonate Equivalent (Mt LCE) @ 175 mg/L, from 26.6Mt LCE @ 174 mg/L, to reflect a larger resource in the Phase One area[53]. This signifies an increase in confidence, reduction of risk in the upstream of Phase One, and supports Vulcan's overall financing process. |
| **Future phases and project pipeline** | During the reporting Period, Vulcan was granted a new geothermal and lithium brine exploration licence, designated "Luftbrücke", covering a region of Frankfurt am Main, an area with potential industrial customers like the Höchst Industrial Park and Frankfurt Airport[54], all heavy energy consumers requiring large quantities of renewable energy and heating solutions.<br><br>At the start of 2023, Vulcan signed a Binding Term Sheet with Stellantis for the first phase of a multiphase project aimed at decarbonising the energy mix of the Rüsselsheim am Main manufacturing site in the URV, Germany, by developing new geothermal projects[55]. In addition, the companies signed another agreement, representing a joint project to develop geothermal renewable energy to supply Stellantis' Mulhouse plant in France[56].<br><br>In the Mannheim region, Vulcan completed a 3D Seismic survey, with results finalised in Q1, 2024[57]. Vulcan signed a renewable heat offtake agreement with MVV, the utility for the city of Mannheim in April 2022[58].<br><br>Throughout 2023, Vulcan assessed the global market opportunity of VULSORB®, Vulcan's industry-leading lithium production technology. Vulcan has identified potential licensing opportunities globally beyond its current use in the URVBF. With this strategic approach, Vulcan is at the forefront of providing sustainable solutions that resonate far beyond its immediate operational footprint. |
| **ESG and community stakeholder engagement** | In December 2023, Vulcan together with ERM completed its Environmental and Social Impact Assessment (ESIA) for Phase One of its integrated renewable energy and ZERO CARBON LITHIUM™ Project[59]. The ESIA aligns with the criteria set by lenders to |

[52] https://www.investi.com.au/api/announcements/vul/91c7d896-b8e.pdf
[53] https://www.investi.com.au/api/announcements/vul/b3559a91-add.pdf
[54] https://www.investi.com.au/api/announcements/vul/b495a96f-650.pdf
[55] https://www.investi.com.au/api/announcements/vul/d459a2b4-87b.pdf
[56] https://www.investi.com.au/api/announcements/vul/a40dc507-014.pdf
[57] https://www.investi.com.au/api/announcements/vul/0c706d5e-e9d.pdf
[58] https://www.investi.com.au/api/announcements/vul/fccbdb90-d23.pdf
[59] https://www.investi.com.au/api/announcements/vul/3290f6ef-51a.pdf

| | |
|---|---|
| | guarantee a standard of environmental performance aligned with Equator Principles 4 and the International Finance Corporation Performance Standards before the provision of debt finance and is, together with the accompanying Environmental and Social Management Plan (ESMP), integrated into the debt and project level equity financing process. Within the ESIA it is noted that there are multiple positive impacts of the Project, including renewable heating provision for local communities, and carbon neutral lithium production to decarbonise the lithium supply chain.<br><br>Multiple communication and information campaigns, linked to Vulcan's Stakeholder Engagement Plan were successfully performed in the URV region where Vulcan operates, with information sessions, local on the ground events, and guided tours in the project regions[60]. |
| **Others** | Successful completion of a €67m (A$109m) placement[61].<br><br>Leadership: To ensure successful delivery of Vulcan's integrated renewable energy and ZERO CARBON LITHIUM™ Project, Cris Moreno has been appointed to Managing Director and CEO, Dr Francis Wedin has moved to the role of Executive Chair. Gavin Rezos will continue to serve on the Board as Non-Executive Deputy Chair[62]. |

[60] https://v-er.eu/de/vulcan-fuehrt-dritten-beteiligungsworkshop-zu-3d-seismik-in-der-vorderpfalz-durch/
[61] https://www.investi.com.au/api/announcements/vul/e2227a34-fe3.pdf
[62] https://www.investi.com.au/api/announcements/vul/80314cd7-4db.pdf

## VULCAN'S BROADER PROJECT ROADMAP FOR PHASE ONE EXECUTION

### 2.2.1 EXPLORATION AND DEVELOPMENT

The Company has the largest lithium Resource in Europe[63], compliant with the Australasian Code for Reporting of Exploration Results, Mineral Resources, and Ore Reserves ('the JORC Code')[64]. During the reporting Period, Vulcan's URVBF lithium Resource increased to 27.7 million tonnes of contained Lithium Carbonate Equivalent (Mt LCE) @ 175 mg/L, from 26.6Mt LCE @ 174 mg/L, to reflect a larger resource in the Phase One area. Vulcan's URVBF area now comprises 11.2 Mt LCE @ 179 mg/L Li of Measured and Indicated Resource, of which 4.16 Mt LCE @ 181mg/l Li is in the Phase One area, and 2.11 Mt LCE is now in the Measured category.

Over the reporting Period, Vulcan's licence footprint in the URVBF increased from 15 to 16 and the total area increased from 1,583km$^2$ to 1,771 km$^2$ respectively (Figure 6).

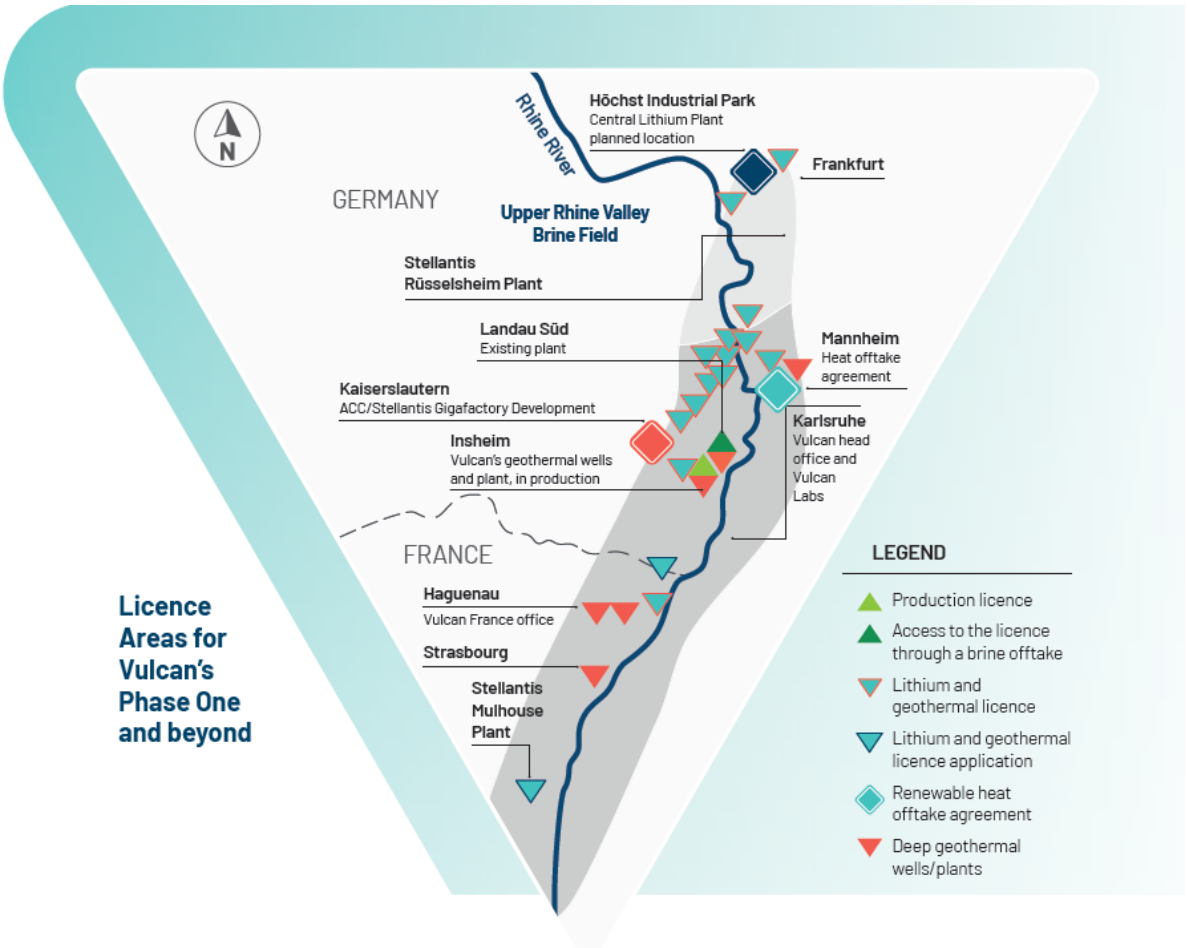



*Figure 6 Map of Vulcan's Licence areas in the URVBF*

[63] According to public, JORC-compliant data. Refer Vulcan ZERO CARBON LITHIUM™ Project Phase One DFS results and Resources-Reserves update (DFS Presentation)
[64] https://www.investi.com.au/api/announcements/vul/b3559a91-add.pdf

## 2.2.2 VULCAN'S INTEGRATED RENEWABLE ENERGY AND ZERO CARBON LITHIUM™ PROJECT LICENCE TABLE

| NAME | STATE | RESOURCES APPLIED FOR | AREA ($KM^2$) | EXPIRY | OWNERSHIP AS AT 30 JUNE 2023 | CHANGE IN OWNERSHIP | TYPE |
|---|---|---|---|---|---|---|---|
| **Ried** | Hessen | Geothermal, brine & lithium | 289.92 | 7.2025 | 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 | 6.2027 | 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 | 7.2024 | 100 % VER GmbH | N/A | exploration |
| **Ortenau II** | BW | Geothermal, brine & lithium | 374.1 | 12.2025 | 100 % VER GmbH | N/A | exploration |
| **Mannheim** | BW | Geothermal, brine & lithium | 144.49 | 6.2024 | 100 % VER Pty Ltd | N/A | exploration |
| **Taro** | RLP | Geothermal | 32.68 | 8.2025 | 100% GGH (part of VER Group) | N/A | exploration |
| **Lisbeth** | RLP | Lithium | | 9.2024 | 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 |

| NAME | STATE | RESOURCES APPLIED FOR | AREA ($KM^2$) | EXPIRY | OWNERSHIP AS AT 30 JUNE 2023 | CHANGE IN OWNERSHIP | TYPE |
|---|---|---|---|---|---|---|---|
| **Lampertheim** | Hessen | Geothermal, brine & lithium | 108.03 | 7.2024 | 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 | | 7.2025 | 100 % VER GmbH | N/A | exploration |
| **Landau-Süd** | RLP | Geothermal | 19.41 | 5.2034 | 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 | 11.2037 | 100% Natürlich Insheim GmbH | N/A | production |
| **LiThermEx** | RLP | Lithium | | 3.2025 | 100% Natürlich Insheim GmbH | N/A | exploration |

*Table 3 Vulcan's current licences in the URVBF.*

## 2.2.3 GEOTHERMAL AND RENEWABLE ENERGY

### OPERATIONS

During the reporting Period from 1 January to 31 December, Naturlich Insheim generated approximately 16,000,000 KwH of renewable electrical energy, avoiding an estimated 6,500 tonnes of $CO_2$ equivalent emissions on the grid. These avoided emissions are not included in Vulcan's current carbon neutral certificates.

A workover of the production well pump at Vulcan's current production and re-injection well site was carried out during the first half of 2023. To underline Vulcan's commitment to play a leading role in the German heat transition, Natürlich Insheim is currently being redesigned to be able to produce district heating in the future as well. This will allow the supply of carbon neutral district heating to nearby municipalities.

Natürlich Insheim has the capacity to produce up to 4.8 MW of renewable power (Figure 7 Figure). There are two operating wells located at this plant, one for production of the 165°C hot brine and one for re-injection of cooled brine. The wells were drilled between 2008 and 2010. The plant has been in operation since 2012.

*Figure 7 Aerial shot of Vulcan's geothermal power plant in Insheim, Germany.*

There is a second geothermal plant in the region of Landau-Süd, Geox GmbH (the operating company), with which Vulcan has an offtake agreement for brine production. The Landau plant

and wells have been in operation since 2007. Vulcan has entered a 51:49 (in Vulcan's favour) Joint Venture agreement with the owners of the Landau-Süd licence to develop a new geothermal well site in the same Landau-Süd licence as the current Landau plant, which will also supply Vulcan's Phase One operations with brine for lithium extraction.

Vulcan has an agreement to develop new geothermal projects on the Rift-Nord exploration licence in return for a production royalty. Vulcan plans to develop the licence areas in a phased approach. Phase One will be developed first. Subsequent phases are planned to fully leverage the large licence area that Vulcan has secured. The integrated renewable energy and ZERO CARBON LITHIUM™ Project plans for multiple central surface facilities for geothermal operations to be fed from multi-well pads[65].

Key political figures visited the Insheim plant during the reporting Period, including U.S. Consul General Norman Thatcher Scharpf, Malu Dreyer, Prime Minister of Rheinland-Pfalz, and Parliamentary State Secretary Michael Theurer, signifying the profile of Vulcan and importance of the project to local, federal state, federal, and international stakeholders.

During the reporting Period, Vulcan and Stellantis entered two phased project agreements, aimed at developing, building, and operating geothermal renewable energy assets to help decarbonise Stellantis' energy supply in Rüsselsheim am Main[66] and Mulhouse[67], by providing renewable heat. Stellantis aims to be an auto industry champion in climate change mitigation, becoming carbon neutral by 2038, with a 50% reduction by 2030. This requires Stellantis, as a leading mobility tech company, to decarbonise and localise its energy supply across its manufacturing facilities.

In the northern area of the URV in Rüsselsheim am Main, Stellantis maintains a large manufacturing facility in which the DS 4 and Opel Astra models are produced, including the electrified variants. This facility in the German state of Hessen is also the traditional home of the Opel brand and the German headquarters of Stellantis. The planned renewable heating project is at the northernmost extent of Vulcan's focus area in the URV.

Vulcan and Stellantis' agreement in Mulhouse represents the first joint project in France for the potential use of geothermal renewable energy to decarbonise and localise the energy supply for Stellantis' European operations. Stellantis is a major industrial player in the automotive sector in the Grand Est of France. Vulcan remains focused on execution of its Phase One commercial lithium and renewable energy project, in the centre of the URVBF, however this project with Stellantis is a complementary opportunity to expand future development pipeline into the French region of the URV, supported by industrial partners like Stellantis.

[65] https://www.investi.com.au/api/announcements/vul/7e316105-420.pdf
[66] https://www.investi.com.au/api/announcements/vul/d459a2b4-87b.pdf
[67] https://www.investi.com.au/api/announcements/vul/a40dc507-014.pdf

## 2.2.4 FOCUS PHASE ONE EXECUTION

### OPTIMISATION PLANTS FOR COMMERCIAL READINESS

A key element of Vulcan's strategy to de-risk its integrated renewable energy and ZERO CARBON LITHIUM™ Project is the design and construction of its optimisation plants. Vulcan's optimisation plants consist of two operations, the Lithium Extraction Optimisation Plant (LEOP) and the Central Lithium Electrolysis Optimisation Plant (CLEOP). The optimisation plants will adopt the full process from Adsorption-Type Direct Lithium Extraction (A-DLE) to lithium hydroxide monohydrate (LHM) production including recycle streams. LEOP and CLEOP serve as training facilities for its production team, ensuring operational readiness for start of commercial production. Vulcan's CLEOP will also serve as a product testing facility for its offtake partners.

Demonstration to commercial operation represents a manageable scale-up factor of 1:50 in terms of column size, as the Lithium Extraction Plant (LEP) will be operating twelve trains of Direct Lithium Extraction units. This size of Direct Lithium Extraction plants is already in production in South America and China. The planned commercial Central Lithium Plant (CLP) electrolysis cells will have a multiplication factor, not scale-up factor, as electrolysis cells are not scaled up further but multiplied.

*Figure 8 In-house designed Lithium Extraction Optimisation Plant.*

On 23 November 2023, Vulcan officially opened its LEOP in Landau, Germany, in a ceremony attended by local community, shareholders, politicians, strategic partners, and industry[68]. The start of operations at LEOP will signify the first lithium chemicals which will be produced in Europe with an entirely locally sourced value chain (Figure 8). The renewable heat in the lithium brine resource will also enable Vulcan to produce with a carbon neutral footprint and co-production of renewable energy. The Company has successfully tested and piloted lithium production in the URVBF for nearly three years, including at its pilot plants in Insheim.

In September 2023, Vulcan, together with industry representatives, including Infraserv GmbH & Co. Höchst KG CEO Dr Joachim Kreysing, officially "broke ground" at the Company's CLEOP at Frankfurt Höchst's Industrial Park, one of the largest chemical parks in Europe. Vulcan's CLEOP will focus on optimising operating conditions in preparation for its commercial Phase One CLP, which will be constructed in the same Industrial Park. CLEOP will convert the lithium chloride from Vulcan's LEOP into LHM, to be used in battery production once operations are commercial. Site works progressed well during the reporting Period, with commissioning expected to start in 2024.

Lithium production will be conducted in two stages, starting at the integrated Geothermal and Lithium Extraction Plant (G-LEP), and proceeding to a single facility near Frankfurt, the CLP. LHM product will be produced and marketed from the CLP.

The Phase One area is well located, close to existing road infrastructure and within relatively flat valley terrain. The Phase One area is mixed land use with rural, urban, agricultural, industrial, and park land. Vulcan has been diligent in ongoing planning development with consideration of existing land uses in consultation with local communities and landowners.

## PHASE ONE BRIDGING STUDY RESULTS

During the reporting Period, Vulcan released the positive results of its Bridging Engineering Study, which has a significant positive impact on Phase One execution[69] (Figure 9).

### 1. THE PHASE ONE BRIDGING ENGINEERING STUDY ENABLED HIGHER PROJECT DEFINITION:

- Reduced uncertainty provides Class Two cost estimate, ready to award key contracts.
- Key land parcels acquired for initial execution phase.
- Preparatory works conducted on first site.
- EPCM tender process very advanced, contractor to be named in first half year of 2024.
- Key permits are on track, having been received or have been submitted.

### 2. LOW RISK: THE COMPANY TO FOCUS ON ONE CORE PRODUCTION AREA, THEREFORE REDUCING RISK:

- Improved Field Development Plan (FDP) from two production areas down to one core

[68] https://v-er.eu/blog/2023/11/23/zero-carbon-lithium-optimisation-plant-opening/
[69] https://www.investi.com.au/api/announcements/vul/7e316105-420.pdf

production area that is already commercially producing brine.
- Reduction of two upstream lithium plants to one central plant.
- Simplified modular upstream design enabling easier operation and maintenance.

### 3. REDUCED CAPEX:

- ~€100m reduction down to est. €1,399m, combining assets, whilst moving to higher project definition.

### 4. LOWEST COST:

- Further decline in OPEX to est. €4,022/t LHM, one of the lowest on the industry cost curve, while maintaining green credentials.

### 5. ROBUST FINANCIALS:

- Maintained est. NPV at €3.9Bn (A$6.5Bn) pre-tax and €2.6Bn (A$4.3Bn) post-tax, and €705m target annual revenues. 4.2y payback, despite drop in lithium prices.

### EXECUTION READY:

- Class Two cost estimate, ready to award key EPCM contracts.
- More than 10,000 hours of successful in-house A-DLE piloting completed.
- €50m optimisation plants starting in 2024.
- Debt and project level equity financing with strong support has been commenced.

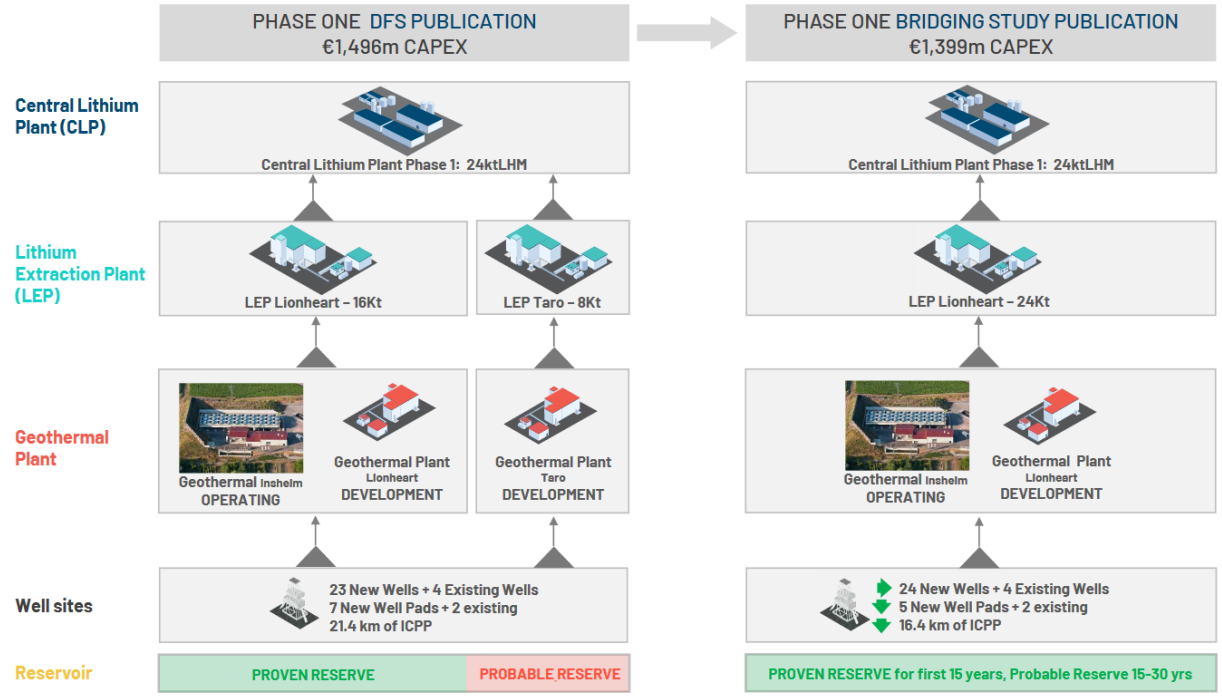



*Figure 9 Improvement on the Phase One project structure.*

### STAKEHOLDER ENGAGEMENT

Throughout its execution phase, Vulcan will continue to increase its extensive stakeholder engagement activities to ensure the community comes along with Vulcan on the journey, as follows:

- Vulcan communicates via various channels: Media coverage (print and online), regular ASX reports, German FSE reports, regional project websites, and social media, local on the ground events, information sessions and community consultants.
- In the project regions, the regional management organises information events and guided tours on site. The team travels to local communities with an info truck and info trailer to raise awareness of the project and answer any questions.
- Vulcan has information centres that are open during the week where the public can find out more about the Project and ask questions. Appointments can be made by arrangement.
- Vulcan is in close dialogue with the population through various information and communication campaigns, thus contributing to transparency and acceptance among the population.
- Particular attention is paid to the local project regions: for example, Vulcan provides information via information stands at various weekly markets in the region. Citizens can also access information via the Vulcan citizens' hotline or at the local information centres in Landau and Karlsruhe, Germany.
- Vulcan also has a comprehensive Stakeholder Engagement Plan that includes grievance mechanisms.

## 2.2.5 FUTURE PHASE DEVELOPMENT

Vulcan plans to develop its licence areas (Figure 6) in a phased approach. After Phase One, further phases are planned to fully leverage the large licence area that Vulcan has secured. The Project plans for multiple upstream surface facilities for geothermal and lithium extraction operations to be fed from multi-well pads. Vulcan has also secured space for additional capacity expansion at its planned CLP, where it has secured a site at the Höchst Industrial Park near Frankfurt[70].

To that effect, 3D seismic survey works were carried out on the ground in one of Vulcan's planned lithium and geothermal energy development areas in the Mannheim district of the URVBF[71]. These works followed earlier approval in 2022 of the main operating plans by the state directorate, after a thorough review process, which involved the relevant municipalities, technical agencies, and associations. In April 2022, Vulcan signed a renewable heat offtake agreement with MVV, the utility provider for the city of Mannheim[72]. This seismic survey is the first step to develop new heat and power plants, which, from 2026 onwards, aim to supply up to 350,000 MWh/year of heat into the heating grid of Mannheim.

[70] https://www.investi.com.au/api/announcements/vul/ea0f36ba-dab.pdf
[71] https://v-er.eu/de/blog/2023/02/24/vulcan-schliesst-erfolgreich-3d-seismik-in-mannheim-und-der-region-ab/
[72] https://www.investi.com.au/api/announcements/vul/fccbdb90-d23.pdf

In addition, Vulcan has been granted a new licence for expansion into Frankfurt, designated "Luftbrücke", covering a region of Frankfurt am Main, an area with potential industrial customers like the Höchst Industrial Park and Frankfurt Airport[73]. Given Frankfurt's high heat demand, there are significant commercial and decarbonisation opportunities for Vulcan via geothermal renewable energy development in the Luftbrücke area. In this licence are, initial exploration via an airborne gravimetric and magnetic survey by the federal state of Hessen is planned for 2024.

With the URVBF located on either side of the Rhine River, Vulcan is also planning to further expand its activities to the French side of the URVBF, which accounts for roughly one third of the URV, containing both geothermal energy and lithium-rich brine. Historical data and sampling coming from existing geothermal operations in the region indicate brine composition in Alsace, France, is materially the same as the brine composition across the border at Vulcan's operations in Germany, meaning Vulcan's sustainable lithium production process is applicable across the whole field. With Vulcan's French entity, Vulcan Energie France SAS (VEF), registered in Strasbourg with an office in Haguenau, Vulcan is growing an experienced French team. During the reporting Period, the Company applied for a geothermal licence, designated "Kachelhoffa", and a lithium exploration licence, designated "Kachelhoffa minéral", in the region, with 492,04km$^2$ size in total and located in the region of Mulhouse. Vulcan will look to access additional licence areas in 2024. VEF is in discussions with local companies in Alsace to develop combined geothermal energy and lithium projects, and support industrials and municipalities to decarbonise their heating supply.

Vulcan's corporate team, spanning the Company's Australian, French, and German offices, are committed to delivering Vulcan's integrated renewable energy and lithium development strategy.

## TECHNOLOGY

Over the past three years, Vulcan has conducted more than 10,000 hours of successful in-house pilot plant performance testing, showing high lithium recoveries and thousands of cycles of absorbent life with no degradation.

With Pilot Plant One (PP1) operational since 2021 and larger Pilot Plant OneA (P1A) in operation since 2022, Vulcan has conducted several activities to de-risk A-DLE on the URV brine. These activities include three years of successful test work from 2021-2023, as well as several thousand non-stop cycles both at brine pressure and no pressure.

Vulcan uses its proprietary in-house lithium production technology, VULSORB®, which has shown a high-performance relative to "off the shelf" products. The manufacturing process for VULSORB® is environmentally friendly, with most of the reagents recycled and with opportunities for Vulcan to use its own produced lithium to manufacture future adsorbent technology once in production, thus further reducing Vulcan's carbon footprint and operating costs while fulfilling EU's circular economy goals. The Company has also deployed its technology at its LEOP.

[73] https://www.investi.com.au/api/announcements/vul/b495a96f-650.pdf

Vulcan has piloted that the sustainable lithium production process, A-DLE, which accounts for 10% of global commercial lithium production today[74], and shown that it can be successfully applied in the URV, and powered by geothermal renewable energy. This means that Europe can produce its own locally sourced lithium for EVs and do so with a carbon neutral footprint.

VULSORB® is a variation of the type of lithium extraction adsorbents originally developed thirty years ago and used commercially worldwide for lithium extraction from brine for the last 25 years. This Technology Readiness Level (TRL) approach for lithium extraction can be used in most lithium-rich brines globally, provided salinity in the brine is high enough, and there is sufficient heat to drive the process, with a brine pre-treatment step to increase adsorbent durability, which can be adjusted depending on local brine chemistry. Vulcan's VULSORB® enables the lithium to be selectively extracted from the brine, providing a pure lithium chloride eluate which can then be electro-chemically converted to LHM for use in lithium-ion batteries in the European cathode, battery, and automotive industries. This process is much faster and more efficient, with a lower carbon footprint, than the legacy industry method of using large-scale evaporation and large quantities of chemical reagents to extract the lithium and process the product into lithium hydroxide monohydrate. A-DLE happens in hours, rather than up to 18 months as is the case with legacy extraction methods.

Vulcan is poised to improve the lithium supply chain with the global deployment of its high performing lithium production technology, VULSORB®. As a cutting-edge technological asset, VULSORB® has the potential to propel Vulcan's decarbonisation efforts beyond its current use in the URVBF, setting the standard for present and future A-DLE projects. With this strategic approach, Vulcan is at the forefront of providing sustainable solutions that resonate far beyond its immediate operational footprint.

During the reporting Period, the Vulcan technology team moved into an expanded laboratory. With its state-of-the- art equipment for wet and solid-state analyses, including full in-house inductively coupled plasma optical emission spectrometry (ICP-OES) and Ion chromatography (IC) analytical capability, this innovation hub has enabled Vulcan to expand its core competencies and centralise its proprietary lithium processes and deliver the required information for Vulcan's Phase One Bridging Engineering Study.

[74] Fastmarkets 2023-2030 DLE Forecast

## 2.2.6 CORPORATE

### FUNDING

During the reporting Period year, the Company successfully raised €67m (A$109m) gross proceeds through a single tranche placement to institutional investors[75].

### A$200 MILLION LETTER OF SUPPORT RECEIVED FROM EXPORT FINANCE AUSTRALIA[76]

During October 2023, Vulcan announced that it has received a conditional, non-binding Letter of Support from Export Finance Australia (EFA) for up to A$200 million (~€120 million) for the upcoming financing of Phase One of its integrated renewable energy and ZERO CARBON LITHIUM™ Project. This letter of support further compliments the in-principal support provided by Government-backed Export Credit Agencies (ECAs) from France, Italy, and Canada, including an indication that Vulcan would be designated as a strategic project of national importance in France.

## 2.2.7 SEGMENT INFORMATION

The consolidated entity is organised into three operating segments based on geographical location: in Germany, other European countries, and Australia. These operating segments are based on the internal reports that are reviewed and used by the Key Management Personnel (who are identified as the Chief Operating Decision Makers (CODM)) in assessing performance and in determining the allocation of resources. There is no aggregation of operating segments. The CODM reviews EBITDA (earnings before interest, tax, depreciation, and amortisation). The accounting policies adopted for internal reporting to the CODM are consistent with those adopted in the financial statements. The information reported to the CODM is provided on a monthly basis.

### TYPES OF PRODUCTS AND SERVICES

Germany – the supply of geothermal energy, exploration, and development relating to the integrated renewable energy and ZERO CARBON LITHIUM™ Project, engineering services, drilling personnel outsourcing and technology development. France and Italy – exploration relating to geothermal energy and lithium. Australia – administration and definitive feasibility study cost.

[75] https://www.investi.com.au/api/announcements/vul/e2227a34-fe3.pdf
[76] https://www.investi.com.au/api/announcements/vul/91c7d896-b8e.pdf

## 2.3 FINANCIAL OVERVIEW

The financial results of the Group for the financial year ended 31 December 2023 are as follows:

### 2.3.1 EARNINGS PERFORMANCE

Summary of Results for the Year ended 31 December 2023 and the Six months ended 31 December 2022

| | Financial Year to 31 Dec 23 | Six months to 31 Dec 22 |
|---|---|---|
| | € '000 | € '000 |
| Revenue from continuing operations | 6,783 | 3,622 |
| Other income | 1,191 | 213 |
| Gain on discontinuation of equity accounting | 3,874 | - |
| Loss from equity accounts investments | (456) | (249) |
| Other own work capitalised | 18,877 | 3,489 |
| Raw materials and purchased services | (2,593) | (3,119) |
| Employee benefit expenses | (30,170) | (8,097) |
| Depreciation and amortisation expenses | (5,869) | (2,299) |
| Impairment expenses | (1,144) | - |
| Share Based Payment expense | (1,688) | (711) |
| Other expenses | (21,294) | (6,735) |
| Net foreign exchange profit/(loss) | 299 | (105) |
| Finance income | 3,558 | 615 |
| Interest Expense | (172) | (177) |
| Loss before income tax expense | (28,804) | (13,553) |
| Income tax benefit/ (expense) | 1,841 | 103 |
| Loss after income tax for the Period | (26,963) | (13,450) |
| EBITDA | (26,321) | (11,692) |

## REVENUE FROM CONTINUING OPERATIONS

During the financial year ended 31 December 2023, the Group's revenue increased to €6.8 million (six-month short financial year ended 31 December 2022: €3.6 million). The Group had drilling personnel revenue of €2.6 million from the recently acquired Comeback Personnel GmbH which Vulcan took control of effective 1 February 2023 (six-month short financial year ended 31 December 2022 – Nil) and Insheim geothermal energy revenue of €4.1 million (€3.1 million six-month short financial year).

## OTHER INCOME

Other income comprised principally of government grants.

## FINANCE INCOME

The Group also had interest income of €3.6 million on cash held for the financial year ended 31 December 2023 (six-month short financial year ended 31 December 2022: €0.6 million).

## OTHER OWN WORK CAPITALISED

In July 2021, Vulcan completed the acquisition of Global Engineering and Consulting GmbH, now Vulcan Energy Engineering GmbH (VEE) and GeoThermal Engineering GmbH, now Vulcan Energy Subsurface Engineering GmbH (VES). Time spent by engineers from VEE and VES on Vulcan projects has been capitalised to exploration and evaluation expenditure or plant and equipment. Furthermore, Vercana staff cost relating to refurbishing work has also been capitalised. In addition, any Vulcan Energie Ressourcen GmbH staff that have worked on Vulcan projects are also capitalised. These costs are reflected as Other Own Work capitalised in the Consolidated Statement of Profit and Loss for the financial year total €18.9 million (short financial year ended 31 December 2022: €3.5 million).

## GAIN ON DISCONTINUATION OF EQUITY ACCOUNTING

During the financial year, Vulcan began fair valuing its investment in Kuniko Ltd which was previously equity accounted. The fair value accounting treatment arose due to Vulcan's diluted investment in Kuniko Ltd during the financial year. The treatment resulted in a gain of €3.9 million during the financial year.

## EXPENSES

Raw materials and purchased services decreased to €2.6 million for the financial year ended 31 December 2023 (short financial year ended 31 December 2022: €3.1 million).

Employee costs were €30.2 million for the financial year to 31 December 2023 and €8.1 million for the six months to 31 December 2022. The increase was attributable to the level of full-time equivalent staff which increased from 184 to 371 during the year.

Depreciation increased during the financial year to 31 December 2023 to €5.9 million from €2.3 million for the six months to 31 December 2022, reflecting the additional six month reporting Period and additional capital items purchased during the year.

During the financial year to 31 December 2023, there was an impairment expense of €1.1 million related to the impairment of goodwill relating to the acquisition of Vulcan Energy Engineering GmbH (formerly Global Engineering & Consulting GmbH) as staff are now focussed solely on Vulcan projects.

Other expenses increased to €21.3 million for the financial year ended 31 December 2022 (short financial year ended 31 December 2022: €6.7 million). The increase was made up of:

- Consulting and legal fees which increased to €10.7 million from €1.4 million. These costs included but are not limited to:
  - Project financing advisory fees.
  - Project finance due diligence costs including lenders technical advisory fees, Environmental Social Impact Assessment fees and legal fees.
  - Legal fees associated with the May 2023 capital raise, in particular prospectus preparation for FSE purposes.
  - Consulting fees relating to Vulcan's Standalone Sustainability Report, Life Cycle Assessment, and accounting assistance in relation to the purchase price allocation for the recently acquired drilling services personnel business Comeback Personaldienstleistungen GmbH.
- Administration expenses which increased to €4.6 million from €2.1 million.
- Occupancy costs increased to €2.6 million from €1.3 million, these costs include reservation costs for the Group's planned Central Lithium Plant site in Frankfurt.
- Compliance and regulatory costs increased to €0.8 million from €0.3 million.

Non-cash share-based payments relating to long term incentives amounted to €1.7 million for the financial year ended 31 December 2023 and €0.7 million for the six-month short financial year ended 31 December 2022. Share based payment related to performance rights granted to executive and non-executive staff during the current and prior periods.

## LOSS BEFORE INCOME TAX

The net loss before tax was €28.8 million for the financial year and €13.6 million for the six-month financial year to 31 December 2022. The loss increased due to the additional six-month reporting period as well as an increase in employee benefit costs associated with full time equivalent staff rising from 184 to 371 during the financial year as well as an increase in occupancy costs principally due to the lease of additional buildings and reservation costs associated with the CLP proposed site in Frankfurt.

## EBITDA

EBITDA was -€26.3 million for the financial year ended 31 December 2023 and -€11.7 million for the six-month short financial year to 31 December 2022. The decrease in EBITDA on a pro rata basis from the previous financial year was reflective of the increased activity in development of the Company's integrated renewable energy and ZERO CARBON LITHIUM™ Project, including the addition of technical and administrative staff.

EBITDA for Germany was -€20.4 million, Australia -€5.8 million and Other European -€0.1 million.

## 2.3.2 CASH FLOWS AND FINANCIAL POSITION

### CURRENCY MANAGEMENT OF THE VULCAN GROUP

The financial management of the Vulcan Group is conducted in Australia and Germany. The primary objectives of Vulcan's financial management are to establish a sustained increase in corporate value and ensure the Group's liquidity. The management of currency risk helps to reduce volatility in its earnings.

The Company converted, at spot price, a large portion of its available funds in Australian Dollars to Euros during the financial year ended 31 December 2023 to mitigate any foreign currency risk. The Australian dollar funds were derived from equity raisings, most notably in the 2021 and 2023 calendar years.

### LIQUIDITY AND CAPITAL EXPENDITURES OF THE VULCAN GROUP

| **Vulcan Group Summary Statements of Cash Flows** | **12 months To 31 Dec 23 €000's** | **6 months To 31 Dec 22 €000's** |
|---|---|---|
| Net cash used in operating activities | (24,331) | (7,418) |
| Net cash used in investing activities | (92,460) | (31,768) |
| Net cash used in financing activities | 62,755 | (462) |
| Cash and cash equivalents at beginning of the Period | 134,107 | 175,416 |
| Effect of exchange rate fluctuations | (1,343) | (1,661) |
| Closing cash on 31 December | 78,728 | 134,107 |

### NET CASH USED IN OPERATING ACTIVITIES

The net operating cash outflow from continuing operations for the financial year ending 31 December 2023 amounted to €24.3 million compared to €7.4 million for the six months to 31 December 2022. The increase in outflow on a pro rata basis reflects the additional operational costs associated with the growth of German operations, including an increase in full time equivalent staff.

### NET CASH USED IN INVESTING ACTIVITIES

Investing activities in the financial year led to a cash outflow of €92.5 million compared to €31.8 million for the six-month short financial year to 31 December 2022. Significant cash outflows for the financial year included:

- Construction costs towards completion of the LEOP and the CLEOP (€24.3 million).
- Refurbishment of two electric drill rigs (€20.0 million).
- Capitalised exploration costs including the acquisition of 3D seismic and drilling data,

geological studies and well planning costs for the upcoming Schleidberg well (€18.7 million).
- Acquisition of land relating to upcoming production locations (€3.2 million).
- Bridging Engineering Study costs (€8.0 million).
- Engineering works for Phase One plants (€8.0 million).

### NET CASH FROM FINANCING ACTIVITIES

During the financial year, the Group completed a €67 million institutional placement, supported by existing shareholders.

## ASSET AND CAPITAL STRUCTURE OF THE VULCAN GROUP

| | **31 Dec 2023 €000's** | **31 Dec 2022 €000's** |
|---|---|---|
| Current assets | 86,071 | 139,850 |
| Non-Current Assets | 210,812 | 110,285 |
| Total Assets | 296,883 | 250,135 |
| | | |
| Equity | 268,281 | 233,161 |
| Current liabilities | 20,785 | 11,039 |
| Non- Current Liabilities | 7,817 | 5,935 |
| Total Liabilities | 28,602 | 16,974 |
| Total equity and liabilities | 296,883 | 250,135 |

Current assets decreased by €53.8 million to €86.1 million due to funds spent on the construction of the Lithium Extraction Optimisation Plant and Central Lithium Electrolysis Optimisation Plant, refurbishment of electric drill rigs, as well as expenditure on DFS and Bridging Engineering Study costs.

Non-current assets increased by €100.5 million to €210.8 million. The increase was principally due to:

- Construction costs towards completion of the Lithium Extraction Optimisation Plant and the Central Lithium Electrolysis Optimisation Plant (€24.3 million).
- Refurbishment of two electric drill rigs (€20.0 million).
- Capitalised exploration costs including the acquisition of 3D seismic and drilling data, geological studies and well planning costs for the upcoming Schleidberg well (€18.7 million).
- Acquisition of land relating to upcoming drill locations (€3.2 million).
- Bridging Engineering Study costs (€8.0 million).

- Ordering of long lead items and engineering costs relating to new Phase One plants (€8.0 million).
- Prepayments for casing relating to upcoming drilling (€6.0 million).

Current liabilities increased by €9.7 million to €20.8 million primarily due to an increase in trade and other payables, attributable to an increase in development activity for the integrated renewable energy and ZERO CARBON LITHIUM™ Project, as well as an increase in lease liabilities and provisions.

Non-current liabilities marginally increased to €7.8 million from €5.9 million during the financial ended 31 December 2023 principally due to deferred income relating to research and development.

## CAPITAL EXPENDITURES

| | **12 months to 31 Dec 2023 €000's** | **6 months To 31 Dec 22 €000's** |
|---|---|---|
| Software | 328 | 137 |
| Plant & Equipment | 1,955 | 2,000 |
| Assets under Construction | 66,163 | 18,166 |
| Land and Building | 3,211 | - |
| Exploration & Evaluation | 18,776 | 10,400 |
| TOTAL | 90,433 | 30,703 |

## SOFTWARE

The Group invested in financial and geological software systems during the financial year.

## PLANT AND EQUIPMENT

The Company acquired assets in relation to the Natürlich Insheim Plant as well as office equipment.

## ASSETS UNDER CONSTRUCTION

During the financial year ended 31 December 2023, the Group spent:

- €24.3 million on construction towards completion of the Lithium Extraction Optimisation Plant and the Central Lithium Electrolysis Optimisation Plant.
- €20.0 million on the refurbishment of two electric drill rigs.
- €8.0 million on the Bridging Engineering Study.
- The Group also incurred costs on early works engineering for a planned geothermal plant.

### LAND AND BUILDINGS

During the financial year, the Group acquired land parcels relating to upcoming production well locations in Schleidberg, Trappelberg, and 40 Morgen (€3.2 million). With these acquisitions, Vulcan has secured the land for five out of seven production well sites for Phase One, including the already producing site.

### EXPLORATION AND EVALUATION ASSETS

The largest expenditures for exploration and evaluation during the financial year ended 31 December 2023 were the acquisition of 3D seismic and drilling data, geological studies, and well planning costs for the upcoming Schleidberg well.

### CAPITAL EXPENDITURE SEGMENTS

In accordance with segments disclosed in the Company's Consolidated Financial Statements, capital expenditure can be categorised as follows:

- Germany - Plant and Equipment (€71.7 million).
- Exploration and Evaluation:
    - Germany (€16.6 million).
    - Australia (€2.0 million).
    - Other European (€0.1 million).

## 2.3.3 KEY PERFORMANCE MEASURES USED BY THE VULCAN GROUP

### FINANCIAL PERFORMANCE MEASURES

Vulcan determines the following financial key performance indicators used for internal management of the Group. These key performance indicators are reflective of the development stage of Vulcan and its integrated renewable energy and ZERO CARBON LITHIUM™ Project.

| | **12 months To 31 Dec 2023 € million** | **6 months To 31 Dec 2022 € million** |
|---|---|---|
| Cash Position | 78.7 | 134.1 |
| Operating expenditures | 62.5 | 21.1 |
| Capital expenditures | 90.4 | 30.7 |

### CASH POSITION

On 31 December 2023, the Company maintained a position of €78.7 million. Cash decreased during the financial year from €134.1 million to €78.7 million reflecting costs incurred in developing the Company's integrated renewable energy and ZERO CARBON LITHIUM™ Project, most notably capital expenditure on the construction of the Lithium Extraction Optimisation Plant and Central Lithium Electrolysis Optimisation Plant, refurbishment of electric drills, 3D

seismic, and associated exploration, as well as the recently published Bridging Engineering Study.

Cash was held in Australia (€49.5million), Germany (€29.0 million), Other European countries (€0.2 million).

## OPERATING EXPENSES

Operating expenditures are the ongoing cost of running a business. These include raw materials for the Natürlich Insheim power plant and purchased services, employee benefits, depreciation and amortisation, share-based payments, impairment, and other expenses.

Operating expenses for the financial year ended 31 December 2023 were €62.5 million, compared with €21.1 million for the six-month financial year ended 31 December 2022. Operating expenses increased on a pro-rata basis reflecting the ramp up of Vulcan's operations in Germany including personnel increasing from 184 FTE to 371 FTE in the year.

Operating expenses relating to Germany were €52.5 million and Australia €10.0 million.

## CAPITAL EXPENDITURE

Capital expenditures are the purchase of goods or services that will be used to improve a company's performance in the future. Capital expenditure includes investment in tangible and intangible fixed assets before depreciation and disposals. During the financial year ended 31 December 2023, the Company incurred €90.4 million on capital expenditure (6 months to 31 December 2022: €30.7 million). Please refer to section 2.3.2 for a breakdown of the Group's capital expenditure including segmental.

## NON-FINANCIAL PERFORMANCE MEASURES

## BUILDING A WORLD-CLASS TEAM

The Vulcan team continues to grow across geothermal renewable energy and lithium battery chemicals business units and totalled 371 FTE people on 31 December 2023, an increase from 184 FTE on 31 December 2022.

## CARBON NEUTRAL POSITION

As Vulcan scales up, the Company will continue to expand its data reporting and be able to provide year on year comparisons.

Vulcan will continue to work on achieving carbon neutral certification across all operations through each year in the four-year period and remaining in the lowest quartile for absolute GHG emissions (Scope 1, 2, 3) comparative to peers.

# 3. MATTERS SUBSEQUENT TO THE REPORTING PERIOD

## FINANCING UPDATE

The Company continues its debt and project level equity financing process, supported by BNP Paribas, following positive market sounding in 2023 from commercial banks, development banks, and government-backed export credit agencies. Vulcan aims to complete its finance program in H2, 2024.

After preliminary due diligence, Vulcan's Phase One integrated renewable energy and ZERO CARBON LITHIUM™ Project appears potentially suitable for an EIB financing and the Project has advanced to the "Under Appraisal" stage. EIB has proposed financing up to €500m (~A$825m), pending completion of due diligence, credit approval and legal agreement, and subject to EIB's governing bodies approval. It is expected to serve as a cornerstone to complement ongoing debt funding discussions with leading export credit agencies and international banks.

In April 2023, Nobian and Vulcan signed a Term Sheet to review potential areas of cooperation. The agreement followed a longer cooperation to assess the feasibility of producing lithium hydroxide monohydrate from lithium chloride in Germany. The initial finance structure saw the financing of its upstream and downstream lithium projects separately, and the Term Sheet contemplated Nobian participating at the downstream lithium hydroxide project level only. Following feedback from its financiers and other stakeholders, Vulcan has decided to fund its upstream and downstream developments in an integrated lithium and renewable energy Project (Integrated Project) in order to gain more operational synergies. Due to the changed Project structure by Vulcan, Nobian has decided not to participate further in the equity financing process for the Integrated Project. Whilst Nobian recognises Vulcan's decision to raise equity at the Integrated Project level; at the same time, it also impacts Nobian's potential role in the Project as a strategic partner. Nobian and Vulcan will continue to explore other forms of commercial collaboration.

## APPOINTMENT OF VULCAN GROUP CHIEF FINANCIAL OFFICER

Appointment of Ms Felicity Gooding to the role of Group Chief Financial Officer (CFO) for the Vulcan Group. Ms Gooding is a Senior Finance executive and leader with over 20 years' experience in strategic and financial analysis, debt funding (including acting as joint project leader in obtaining expansion finance for Fortescue Limited totalling US$3.5b), corporate finance, mergers and acquisitions, management and financial accounting, and governance within Australia, Singapore, London, and Washington DC.

## RETIREMENT OF MARK SKLETON

Mr Mark Skelton retired from the Board as Non-Executive Director of the Company effective 1 February 2024. Mr Skelton joined the Board of Vulcan in April 2022 whilst the Company was evolving from a development company into a project execution company. During his time on the Board, Mr Skelton contributed to building a strong executive leadership team across Vulcan, and

specifically, the buildout of the project execution team, which has already made significant strides with completion of the construction of the LEOP.

# 4. OUTLOOK, OPPORTUNITIES, AND RISKS

## LITHIUM OUTLOOK FOR THE NEXT 12 MONTHS

It is predicted EV sales will remain on a steady upward trajectory in 2024[77], albeit with a lower (23%) YoY growth rate forecast than in 2023 (36%), as the uncertain economic climate, particularly relatively high interest rates, continue to weigh on buyers' decisions.

Due to the underperformance relative to European expectations, the EV factory ramp-up is anticipated to be delayed or slowed down in 2024. Supply additions from restarts, expansions, and greenfield projects starting in 2022, with rapid supply increases in China have been drivers in the market swing from a supply deficit to a surplus in 2023.

Looking forward to 2024, new supply is being ramped up while some high-cost production is being cut. Fastmarkets expects lithium supply to increase by 30% in 2024[78]. Lowering the price could affect a demand increase, thus ramping up raw product requirements. However, the most likely sentiment is that market participants expect downstream lithium demand to remain relatively weak, with no imminent concerns about supply shortages.

Over the longer term, Fastmarkets expects volatility to remain a factor in the lithium market because supply generally increases in waves. The forecast contained in Table 5, is based on annual average prices. There will be periods throughout the year when the price will be above and below the yearly average. Due to a forecast tightening of the market and switch back to deficits by 2032, Fastmarkets forecasts the price to begin increasing to incentivise a supply response to plug gaps.

Due to the preference for lithium nickel cobalt manganese oxide (NCM) battery chemistries in Europe, Fastmarkets predicts lithium hydroxide monohydrate will continue to express a premium over carbonate. However, if lithium iron phosphate battery (LFP) were to grow market share further, this premium could be eroded, and prices would likely converge. Fastmarkets' long-term price forecast (min 56.5% LiOH)($/kg, EU & US)[79] and combined with Vulcan's pricing mechanisms concluded in its offtake agreements see Vulcan less impacted by current lithium pricing (Table 4).

Vulcan believes, for companies who are building projects and for long-term investors, the growth in lithium batteries, particularly for EVs, is a structural shift. Therefore, provided a lithium company has a low operating cost to remain profitable in a lower pricing environment, as per Vulcan's position, the outlook continues to be very positive. Vulcan has a strong lithium offtaker

[77] https://www.fastmarkets.com/insights/battery-materials-market-facing-oversupply-and-macroeconomic-headwinds-in-2024-2024-preview/
[78] https://www.fastmarkets.com/insights/battery-materials-market-facing-oversupply-and-macroeconomic-headwinds-in-2024-2024-preview/
[79] Long-term Lithium Price Forecast, Fastmarkets reports prepared exclusively for Vulcan, September 2023.

customer base, including with Vulcan's second largest shareholder Stellantis, therefore price volatility in lithium pricing is likely to have less of an effect.

| Years | Forecast average price realised combining Fastmarkets price forecast and Vulcan's offtake agreements pricing mechanisms (€/t) |
|---|---|
| Average | 27,625 |
| 2026 | 30,000 |
| 2027 | 26,000 |
| 2028 | 25,000 |
| 2029 | 26,000 |
| 2030 | 25,000 |
| 2031 | 25,000 |
| 2032 | 29,000 |
| 2033 | 35,000 |

*Table 4 Fastmarkets forecasted lithium pricing, "Long-Term Lithium Price Forecast". Fastmarkets report September 2023, prepared for Vulcan Energy Resources.*

### GEOTHERMAL RENEWABLE ENERGY

On 18 January 2024, the European Parliament overwhelmingly endorsed a call for an EU strategy for geothermal energy in a vote with 531 in favour (two against)[80]. With just 0.2% of electricity generated from geothermal energy, Europe sees this renewable energy source as an untapped opportunity to develop. On a federal level, the German Government set out a vision to boost the country's geothermal potential tenfold to 10 terawatt-hours and add another 100 geothermal projects by 2030[81]. By this time, Vulcan also aims to provide geothermal renewable heat production for 1 million people, enabling a significant shift from imported energy sources. Throughout 2023, Vulcan was called to represent geothermal energy at a European level in Brussels due to the Company's extensive internal experience. Vulcan believes the increased focus on geothermal energy as well as the continued push for domestic supply chain resilience of critical raw materials is a significant tailwind for Vulcan as an integrated renewable energy and lithium company.

## 4.1 CORPORATE OUTLOOK

### OPERATIONS

Vulcan plans to produce the first lithium chloride to specification in Q2, 2024. At the same time, commissioning is targeted to start at its CLEOP. Early in the second half of 2024, Vulcan aims to produce the first tonnes of lithium hydroxide monohydrate at its CLEOP. Construction at Vulcan's commercial integrated Geothermal and Lithium Extraction Plant (G-LEP) is targeted to commence by the end of 2024.

[80] https://www.euractiv.com/section/energy/news/eu-parliament-calls-for-european-strategy-on-geothermal-energy/
[81] https://www.cleanenergywire.org/news/geothermal-energy-get-relaunch-germany-government-seeks-new-heating-sources#:~:text=At%20the%20beginning%20of%20his,projects%20in%20the%20next%20years

### CASH POSITION

With a cash position of €78.7 million as at December 2023, the Company believes that it is reasonably foreseeable that the consolidated entity will continue as a going concern.

### CAPITAL EXPENDITURE

For the financial year 2024, the Vulcan Group plans to substantially increase its capital expenditure after project financing is secured to develop Phase One of its integrated renewable energy and ZERO CARBON LITHIUM™ Project.

### OPERATING EXPENSES

Increase in operational expenditure will largely follow the planned increase in headcount to ensure the start of the execution of Phase One of its integrated renewable energy and ZERO CARBON LITHIUM™ Project.

### BUILDING A WORLD CLASS TEAM

Throughout the reporting Period, Vulcan undertook a recruitment drive as the Company accelerated its Phase One Project execution plans. Vulcan has built an experienced leadership team for aligned industry sectors which will lead into the future. Recruitment will increase once Phase One financing is secured.

### CARBON NEUTRAL POSITION

As Vulcan scales up, the Company will continue to expand its data reporting and be able to provide year on year comparisons. Vulcan will continue to work on achieving carbon neutral certification across all operations through each year and remaining in the lowest quartile for absolute GHG emissions (Scope 1,2,3) comparative to peers.

## 4.2 RISKS REPORT

### 4.2.1 RISK MANAGEMENT SYSTEM

Vulcan's approach to opportunity and risk management is underpinned by the Company's focus on integrity across the industry globally. Vulcan commits to being respectful, authentic, and trustworthy to each other and to external groups. The integrated renewable energy and ZERO CARBON LITHIUM™ Project is highly complex and involves many known and unknown risks, some of which are beyond the Company's control. Vulcan is committed to ensuring it has the right measures in place to mitigate these risks, and the right team to execute on the project and to capitalise on opportunities.

## AUDIT, RISK AND, ESG COMMITTEE

The role of the Audit, Risk, and ESG Committee is to assist the Board in monitoring and reviewing any matters of significance affecting financial reporting, including sustainability related and climate related reporting, financial statements, accounting policies, compliance, and disclosure practices. During the financial year, the committee members were Josephine Bush (Chair), Gavin Rezos, and Dr Heidi Grön. The Committee oversees the Company's risk management systems, practices, and procedures to ensure effective risk identification and management, as well as compliance with internal guidelines and external requirements. This includes climate related and broader sustainability related risks and management's performance.

The Committee Charter, which is available on the Company's website at https://v-er.eu sets risk parameters and defines the Audit, Risk, and ESG Committee's function, composition, mode of operation, authority, and responsibilities. In line with the Committee Charter, the Committee had a regular review of the Company's risk management framework in its May 2023 meeting. The Board undertook a full day risk review in Karlsruhe (Germany) in September 2023, and another review in November 2023 immediately prior to the Bridging Engineering Study release. Other key responsibilities include internal control processes and control framework (including controls as it relates to sustainability and ESG integration), internal and external audit, and management and disclosure of business, ESG, and economic risks.

## PEOPLE AND PERFORMANCE COMMITTEE

The People and Performance Committee (PPC) comprises of Ranya Alkadamani (Chair), Gavin Rezos and Annie Liu, of which two are independent. The PPC meet regularly through the year. The role of the PPC is to develop remuneration strategy, framework, and policy and provides Executive and NED remuneration recommendations to the Board. The CEO attends certain Committee meetings by invitation, where management input is required. The CEO is not involved in the final decision related to their own remuneration arrangements.

## PROJECTS OVERSIGHT COMITTEE

The Projects Oversight Committee (POC) is responsible for regularly reviewing the status of nominated projects and applying appropriate corporate governance frameworks and risk management. Given the status of Vulcan's progress, the Board considered that the establishment of this committee, with specific focus on the development and execution of the program of projects, was beneficial to allow for more risk specific oversight and to apply appropriate corporate governance framework and risk management. The POC committee members during the reporting Period were Mark Skelton (Chair), Dr Günter Hilken, Dr Heidi Grön. In addition, this committee reviews and advises whether projects have appropriate leadership and direction complimentary to maintaining an appropriate awareness of the strategic objectives of the Company, and whether the processes utilised in the governance and management of the projects align with complimentary processes used at the business and Company level e.g. risk management.

## EXECUTIVE PROJECT STEERCO

During the Period, an operational management committee, called the Executive Project SteerCo, was formed, as Vulcan transitioned from a development company to an integrated project development, execution, and operations company. The Managing Director and CEO has been instrumental in defining the project execution strategy and building out the team to achieve this, with projects to be delivered under a single integrated projects group which will provide a consistent approach to:

- Delivery (project execution, contract strategy, engineering standards, strategic sourcing).
- Integrating schedules and visibility of critical paths.
- Interfaces being effectively managed.
- Risks and opportunities defined and managed (including sustainability related and ESG risks and opportunities).
- Control processes to give strategic management and insights.

Strong project governance is applied via an Executive Project SteerCo and Project Directorate that oversee and manage the project delivery teams (Figure 10).

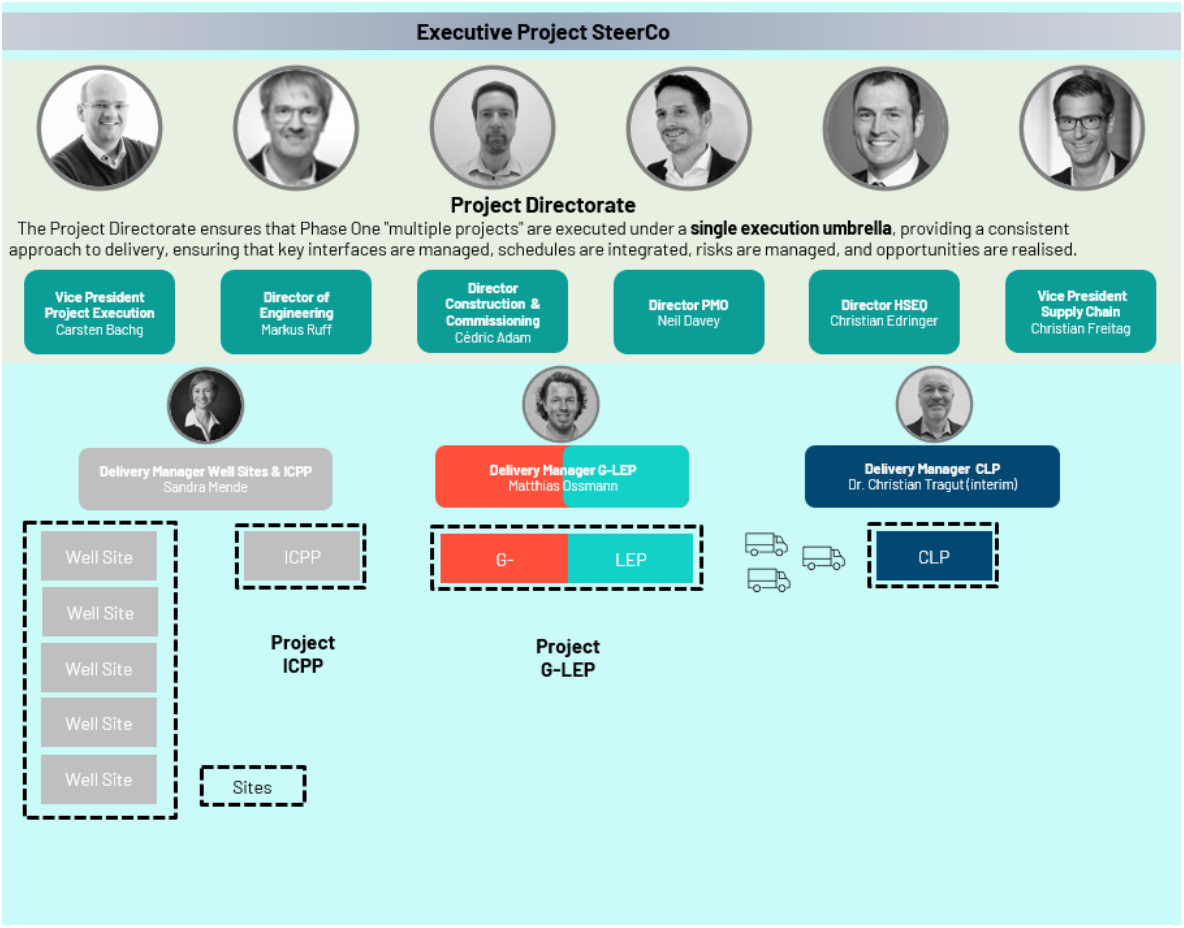



*Figure 10 Projects Execution Governance Framework.*

Vulcan's Managing Director and CEO, Cris Moreno is the project sponsor and chairs the Executive Project SteerCo, which governs, supports, and steers the Project Directorate. The Project Sponsor will report Capital Project updates to the Vulcan Board and Projects Oversight

Committee, while a dedicated Project Director will lead the Project Directorate, ensuring overall Projects requirements, budgeting and milestones are met, and be the single point accountable for all Capital Projects until handover to production. The Head of ESG will sit within the Executive Project SteerCo and assist with reporting on sustainability aspects of project execution to the Board. The proposed strategy will deliver operational integrity, will maximise site synergies, and will help deliver on cost competitiveness.

## INTERNAL CONTROL SYSTEM FOR GROUP ACCOUNTING AND FINANCIAL REPORTING

Vulcan's leadership team is responsible for internal controls within the business. Examples of the internal controls at Vulcan include the segregation of duties for recording and payment of invoices, dual payment authorisations in all jurisdictions and pre-approval for goods and service purchase requisitions in accordance with the delegations of authority. During the financial year, the Company also established a Supply Chain Council to review and approve major purchase orders and contracts.

Vulcan Energie Ressourcen GmbH, as the holding company for the German operating entities, received ISO 14001:2015 Environmental Management System (EMS) and 9001 Quality Management System (QMS) certification in Q3, 2023. Certification to these standards is international good practice and will help ensure Vulcan's internal systems are robust. Vulcan undertakes reconciliations of its bank, supplier statements, and credit cards. Understanding which items have cleared or not yet posted allows the Company to determine any potential fraud or errors. The preparation of the financial statements requires management to make judgements, estimates, and assumptions that affect the reported amounts in the financial statements.

Management continually evaluates its judgements and estimates in relation to assets, liabilities, contingent liabilities, revenue, and expenses. Management bases its judgements, estimates and assumptions on historical experience and on other various factors, including expectations of future events, which management believes to be reasonable under the circumstances.

The Group's activities expose it to a variety of financial risks related to the financial instruments on the balance sheet of the Group: market risk (including foreign exchange risk and interest rate risk), credit risk, and liquidity risk. The Group's overall risk management program focuses on the unpredictability of the financial markets and seeks to minimise potential adverse effects on the financial performance of the Group. The Group uses different methods to measure and manage different risks to which it is exposed. These include monitoring levels of exposure to interest rate and foreign exchange risk and assessments of market forecasts for interest rates and foreign exchange prices. Ageing analysis and monitoring of specific credit allowances are undertaken to manage credit risk. Liquidity risk is monitored through the development of future cash flow forecasts.

Risk management is carried out by the Management and overseen by the Board of Directors with assistance from suitably qualified external advisors. The main financing risks arising for the Group are foreign exchange risk, interest rate risk, credit risk, and liquidity risk. The Board reviews and agrees on policies for managing each of these risks, and they are summarised in Note 33 to the Consolidated Financial Statements included in the Company's Annual Financial Report available on its website at https://v-er.eu.

### 4.2.2 FINANCIAL REPORTING MAIN OPPORTUNITIES AND RISKS IDENTIFIED

#### SUPPLY OF PRODUCTS (PROCUREMENT, PRODUCTION, LOGISTICS)

**RISK (MEDIUM)**

Interruptions to its supply chain or long delivery times: technically related supplies can impact the timely execution of Vulcan's Phase One Project. The unprecedented global supply chain issues during the COVID crisis and after the start of the war in Ukraine are largely overcome. However, attention to the supply chain remains high on Vulcan's agenda. Vulcan appointed a Vice President of Supply Chain on December 1, 2023, and will continue building this function.

The Company is in the process of analysing risks associated explicitly with delays and raw materials cost increases. This planning includes regular budget and forecast allocation and project updates with the leadership team and the Board. Assigning specific enterprise risk management to team members and extending the internal financial accounting capabilities is also one of the measures Vulcan has implemented alongside the Target Operating Model 360 recommendations.

**OPPORTUNITY (HIGH)**

Local supply of geothermal renewable energy and heating assists Germany's transition to decrease reliance on imported energy. This tailwind puts Vulcan in a strong position to benefit from government support and funding to increase renewable energy generation. Disruptions to the global supply chain and European Union regulation surrounding carbon pricing and the potential for border control adjustments for imported products mean that European OEMs prefer local suppliers with less disruption risk. Vulcan is in advanced negotiations with the city of Landau on a heat offtake agreement for the renewable heat produced in Phase One.

#### FINANCE

**RISK (MEDIUM)**

Conservative credit markets: while risks to financial stability may appear less acute, they remain elevated[82]. Attention has shifted towards the impact of tight monetary and credit conditions. Despite such risks, financial markets have remained resilient. This strength reflects expectations of a soft landing, with limited impacts on economic growth as inflation recedes to moderate levels. Over the last year, Vulcan commenced its debt and project level equity financing

[82] https://www.ecb.europa.eu/pub/financial-stability/fsr/html/ecb.fsr202311~bfe9d7c565.en.html

program supported by BNP Paribas, following positive market sounding in 2023 from commercial banks, development banks, and government-backed export credit agencies. This included an A$200 million (~€120 million) non-binding Letter of Support from Export Finance Australia (EFA) and an indication of strong ECA support from Canada, Italy, and France during 2023. On 22 February 2024, Vulcan's Phase One integrated renewable energy and ZERO CARBON LITHIUM™ Project was listed on the European Investment Bank's (EIB) website as "Under Appraisal"[83], with the EIB signalling financial support of up to €500 million, pending completion of due diligence, credit approval and legal agreement, and subject to EIB's governing bodies approval.

### OPPORTUNITY (MEDIUM)

Reduced capital expenditure: the BES results published in November 2023 saw a decrease in planned capital expenditure for the integrated renewable energy and ZERO CARBON LITHIUM™ Project from previous DFS levels, mainly due to consolidating two geothermal and two lithium extraction plants into one facility[84]. The Company's cost position relative to its peers is competitive. The Company believes the integrated renewable energy and ZERO CARBON LITHIUM™ Project is crucial for Europe, both from an energy security perspective and due to the need to have a local, reliable supply of critical raw materials such as lithium. With these macro-policy tailwinds in the Company's favour, Vulcan expects to be able to fund the integrated renewable energy and ZERO CARBON LITHIUM™ Project at a cost that is reasonable for the Company's shareholders. In addition, Vulcan has applied for public funding schemes, such as the Temporary Crisis and Transition Framework (TCTF) and the 'Innovation Fund', which is one of the world's largest funding programmes for the demonstration of innovative low-carbon technologies. While the Company's focus is on debt and project level equity, it seeks to include different funding programmes into the overall financing process.

## REGULATORY CHANGES

### RISK (LOW)

Lithium reclassification: as noted in the "Lithium and economic situation of the chemical industry" section, a proposal has been put forward to the European Commission by the European Chemicals Agency (ECHA), to reclassify lithium as a Category 1A chemical, on a similar level as cobalt. The reclassification could increase regulatory requirements around controlling, processing, packaging, and storage of lithium. Vulcan, together with European OEMs and lithium battery supply chain companies and institutions, has raised its concerns with the European Union and member states. The Company believes that rejecting the proposal is an opportunity for the EU to demonstrate further its commitment to building out a local, European lithium supply chain, which is consistent with recent targets and actions.

### OPPORTUNITY (HIGH)

Positive regulatory changes for the lithium industry: the lithium-ion battery industry and the renewable energy industry are likely to favour Vulcan's integrated renewable energy and ZERO

[83] https://www.eib.org/en/projects/pipelines/all/20200749
[84] https://www.investi.com.au/api/announcements/vul/7e316105-420.pdf

CARBON LITHIUM™ Project. This includes the European Battery Regulation, which mandates more environmentally sustainable batteries to be produced and sold in the EU in the coming years; European countries' commitment to phase out the sale of fossil fuel vehicles between 2025 and 2035, depending on location, which will have a very significant impact on lithium-ion battery demand and therefore lithium demand in Europe; the Carbon Border Adjustment Mechanism, which is tipped to be extended to include chemicals in the future, and will favour domestic, lower carbon forms of production of chemicals like lithium. As Commissioner Thierry Breton noted, "we (Europe) prefer to import from third countries and turn a blind eye to the environmental and social impact that occurs there, not to mention the carbon footprint of the imports"[85]. Germany's increasing commitment to phasing out fossil fuels, achieving energy independence, and achieving climate neutrality, has accelerated since the forming of the new German Coalition government and the Russian invasion of Ukraine. Such favourable regulatory changes in lithium, EV batteries, and renewable energy provide an opportunity for Vulcan as a renewable energy producer and sustainable lithium chemicals developer.

## SOCIAL AND MACROECONOMIC TRENDS AND GEOPOLITICAL RISK

### RISK (LOW)

Social acceptance: While there remain some minority opponents of geothermal energy in the region, just like there are opponents of wind power and solar power, Vulcan generally has strong local support for its Phase One Project, as demonstrated by multiple city council approvals for its plans. Vulcan's Phase One is well positioned for public acceptance due to a favourable outcome of the Environmental and Social Impact Assessment (ESIA), which was carried out in H2, 2023 in the context of the Project financing preparations. Furthermore, after an initial review, the European Investment Bank (EIB) put Vulcan's integrated renewable energy and ZERO CARBON LITHIUM™ Project on its web page list of "Under Appraisal" on February 22, 2024[86]. Vulcan has a close working relationship with the local permitting authorities in which it operates, and the focus will be on maintaining this trusted relationship in the future.

### OPPORTUNITY (HIGH)

Europe's Critical Raw Materials Act (CRMA): the development of the European CRMA at the end of 2023[87] is a strong signal to ensure less dependency on China and greater EU industrial sovereignty. The deal, reached with the European Council and the Commission in record time, aims to ensure the EU's access to a secure, diversified, affordable, and sustainable domestic supply chain of raw materials to pursue its green transition for the automotive industry and remain competitive for the long term. In January 2024, the European parliament overwhelmingly endorsed a call for an EU strategy for geothermal energy in a vote with 531 in favour (two against)[88]. With just 0.2% of electricity generated from geothermal energy, Europe sees this renewable energy source as an untapped opportunity to develop. On a federal level, the German Government has set out a vision to boost the country's geothermal potential tenfold to 100

[85] https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_22_3643
[86] https://www.eib.org/en/projects/pipelines/all/20200749
[87] https://www.reuters.com/markets/commodities/eus-hunt-critical-minerals-2023-12-18/
[88] https://www.euractiv.com/section/energy/news/eu-parliament-calls-for-european-strategy-on-geothermal-energy/

terawatt-hours and add another 100 geothermal projects by 2030[89]. By this time, Vulcan also aims to provide geothermal renewable heat production for one million people, enabling a significant shift from imported energy sources. As an integrated renewable energy and ZERO CARBON LITHIUM™ business, Vulcan sees this accelerated push for geothermal renewable energy as a tailwind for its Project Phase One, Two, and beyond to provide affordable baseload renewable energy and employment to local communities.

## CLIMATE RELATED RISK

### RISK (LOW)

Climate-related risks continue to be considered as the Company advances the integrated renewable energy and ZERO CARBON LITHIUM™ Project. These risks can take the form of physical impacts, such as acute weather events (flooding, drought) and chronic weather events (an increase in precipitation or mean temperature), as well as transitional risks, as governments and countries adapt to new conditions due to climate change. Further information can be found in the Company's TCFD and EU Taxonomy Report, including the Company's first climate scenario modelling, considering two climate scenarios, Net Zero Emissions (NZE) and Stated Policies Scenario (STEPS). The low-risk exposure of Phase One of Vulcan's integrated renewable energy and ZERO CARBON LITHIUM™ Project to climate change was confirmed in the ESIA report in November 2023[90].

### OPPORTUNITY (HIGH)

Carbon neutral standard set from the beginning: Vulcan's strategy and project development has been built around achieving "carbon neutrality" with its integrated renewable energy and ZERO CARBON LITHIUM™ Project. Therefore much of what would be considered as a risk for most companies can be seen as an opportunity for Vulcan. Vulcan is located within the European Union, whose climate related legislation is some of the most supportive globally to making a transition and meeting it's 2050 carbon neutral targets. Already a renewable energy producer, Vulcan will also become a sustainable lithium producer at a time when EV uptake is at its most ambitious. Vulcan's lithium resource is one of the largest in the world and plans to supply at least 24,000 tonnes of battery grade lithium hydroxide monohydrate annually at full capacity of Phase One. The favourable environmental footprint of Vulcan's integrated renewable energy and ZERO CARBON LITHIUM™ Project was confirmed in another study by Minviro.

## RESOURCES / RESERVES

### RISK (MEDIUM)

Lithium resources and reserves indicated must be considered as estimates only until such reserves are extracted and processed. Vulcan's resources are based on strong temporal (many brine samples taken over time) but limited spatial data points due to the deep nature of the reservoir. Grades of lithium in brine produced may vary negatively from the amount anticipated.

[89] https://www.politico.eu/article/europe-geothermal-energy-boom-eu-digs-deep-replace-russia-gas/
[90] https://www.investi.com.au/api/announcements/vul/3290f6ef-51a.pdf

At the end of 2023, Vulcan announced an increase to Europe's largest lithium Resource. Vulcan's URVBF lithium Resource has increased to 27.7 million tonnes of contained Lithium Carbonate Equivalent (Mt LCE) @ 175 mg/L, from 26.6Mt LCE @ 174 mg/L, to reflect a larger resource in the Phase One area. Although data can only indicate an estimate, indications are for a large, long-term resource.

### OPPORTUNITY (MEDIUM)

Vulcan utilises its team's considerable local geological expertise, as well as state-of-the-art 3D seismic data and where possible, its existing production/re-injection wells, to construct the most accurate models it can. Vulcan reports on its estimates of Mineral Resources and Ore Reserves in compliance with the JORC Code, the ASX Listing Rules German Securities Trading Act, European Regulation No. 596/2014, and other applicable regulations. Vulcan's resource estimates and reserves are signed off by external consultants GLJ Ltd. and Groundwater Insight Ltd. There may be upside to Vulcan's modelled lithium-in-brine amounts, and furthermore, there may be an opportunity to add further resources and reserves in Vulcan's other licence areas throughout the URVBF in the future. Compared to the PFS mineral resource estimation, Vulcan has increased its mineral resource estimate to 27.7 million tonnes of LCE in 10 out of 16 licence areas.

## PERSONNEL

### RISK (MEDIUM)

The ability to execute Vulcan's Phase One plan is in part dependent on its ability to retain and attract key personnel. During the reporting Period, Vulcan appointed key executives from related industries to further the organisation's knowledge and credibility in delivering its Phase One integrated renewable energy and ZERO CARBON LITHIUM™ Project. Vulcan will make every reasonable effort to retain key personnel, but there can be no guarantee that it will be able to maintain its executive team. There is also a risk that the Group may need to pay a higher-than-expected cost to acquire or retain the necessary talent in the current or future market conditions.

## CYBER SECURITY

### RISK (MEDIUM)

Data integrity, availability, and reliability within the Company's information technology systems may be subject to intentional or unintentional disruption. Given the increasing level of sophistication and scope for potential cyberattacks, these attacks may lead to significant breaches of security that could jeopardise Vulcan's sensitive information and financial transactions or shut down systems for some time. Vulcan's information technology team have implemented several risk mitigation processes to do what they can to protect the Company and its stakeholders are best protected from the possibility of a cyber security breach.

## ADSORPTION

### RISK (MEDIUM)

Adsorption–Type Direct Lithium Extraction (A-DLE): Lithium extraction from brine using sorption is used commercially, but each brine chemistry is different, and risks remain when adapting methods to each brine.

### OPPORTUNITY (HIGH)

Industry-leading lithium production technology: Vulcan has unique, in-house expertise on the operation of adsorbents for lithium extraction, which is an asset when expanding production to other lithium brine resource areas. Vulcan has conducted three years of pilot plant testing, equating to more than 10,000 hours of data, which proves the Adsorption-Type Direct Lithium Extraction works well with Vulcan's brine. Vulcan has made significant progress in 2023 with its in-house developed adsorbent VULSORB®. Test cycles under different conditions have revealed important insights, for example a notable reduction of the lithium bleed. Vulcan may have the opportunity to licence its technology and sell its adsorbent technology.

## PERMITTING

### RISK (MEDIUM)

Permitting process: The integrated renewable energy and ZERO CARBON LITHIUM™ Project may be affected by delays in receiving the necessary approvals from all relevant authorities and parties. Multiple different permits will be needed to enter commercial operation for geothermal production on a larger scale and lithium production. A significant cornerstone for Phase One of the Project was the approval of the City Council of Landau in December 2023 to enter contract negotiations with Vulcan for the sale of the industrial land plot of D12, which will host Vulcan's commercial-scale Geothermal and Lithium Extraction Plant. Furthermore, Vulcan has received approval from the mining authority for the primary and special operating plans at its first new well site in Schleidberg, where preparations of the site started in H2, 2023. Vulcan has a team of experts in geothermal development who have developed numerous projects in the past and will continue to keep stakeholders updated on the timetable. Vulcan has received encouragement from federal state and federal governments that renewable energy project permitting times will be reduced as a priority. Furthermore, government policies are moving to support the domestic production of strategic raw materials, which is in Vulcan's favour. So far, Vulcan has received multiple preliminary EIA approvals in line with its development plans.

## LITHIUM MARKET

### RISK (MEDIUM)

Lithium prices are subject to unpredictable fluctuations, driven partly by changes in the balance of global supply and demand. Fluctuations in market demand and commodity prices for lithium, due to

new market or technology developments and other factors may adversely impact Vulcan's financial results and future cash flows. Vulcan has limited its exposure to lithium price fluctuations by flooring the lithium prices for parts of its future sales volume in the offtake contracts with OEMs.

### OPPORTUNITY (MEDIUM)

Study with high level of engineering definition: the BES has confirmed Vulcan's integrated renewable energy and ZERO CARBON LITHIUM™ Project will operate with a very low OPEX due to three key factors:

- Vulcan's "feedstock" is expected to be low-cost and have a dual purpose: lithium extraction and energy production in the form of renewable heat and electricity.
- Vulcan plans to use adsorption to isolate lithium as opposed to using large volumes of chemicals such as sulfuric acid to dissolve a rock feedstock or soda ash for brine.
- Vulcan plans to use electrolysis to upgrade chloride into a high purity hydroxide using renewable energy, with no heavy reagent usage such as sodium hydroxide or lime.

| RISK | RELATED TO SEGMENT |
|---|---|
| Supply of products | Germany |
| Finance | All |
| Regulatory changes | All |
| Social and macroeconomic trends | All |
| Climate related | All |
| Resources and reserves | Germany, other European countries |
| Personnel | All |
| Cyber Security | All |
| Adsorption | Germany |
| Permitting | Germany, other European countries |
| Lithium Market | All |

*Table 5 Risks related to segments.*

## OVERALL ASSESSMENT OF OPPORTUNITIES AND RISKS BY MANAGEMENT

The Board of Management assesses Vulcan's risk and opportunities management system as adequate and believes it puts shareholders and stakeholders in a position to make a fair assessment on risks and opportunities of Vulcan's business.

# 5. TAKEOVER RELEVANT INFORMATION

## INFORMATION ON SUBSCRIBED CAPITAL

### 1. The composition of the subscribed capital, separately showing the rights and duties that each class entails as well as the proportion of the capital held.

The issued capital of Vulcan Energy Resources Limited comprises[91]

- 172,073,008 fully paid ordinary shares (**Shares**); and
- 1,551,268 unquoted performance rights (**Performance Rights**) (of various classes).

Refer also to the ASX Additional Information and Remuneration Report sections of Vulcan Energy Resources Limited's (**Vulcan or the Company**) Annual Reporting Suite 1 January 2023 to 31 December 2023 (**2023 Annual Report**).

The Shares are governed by the Company's constitution, the Australian Corporations Act, the ASX Listing Rules and Australian general law. All Shares carry full dividend rights. Each Share carries one vote at a meeting of the Company's shareholders. Except for the restrictions set forth in lock-up agreements of the Company from time to time, the Shares are freely transferable, subject to formal requirements, the registration of the transfer not resulting in contravention of or failure to observe the provisions of a law of Australia and the transfer not being in breach of either the Australian Corporations Act or the ASX Listing Rules. In the case of insolvency, a person's liability as a shareholder is limited to any amount unpaid on their Shares.

Each Performance Right, subject to the satisfaction of the applicable vesting criteria before the expiry date, entitles the holder to elect to receive one Share for nil consideration by notifying the Company of such election.

### 2. Restrictions on voting rights or on the transfer of shares of stock, also as may result from agreements made among shareholders, insofar as the company's board of management is aware of them.

Subject to any rights or restrictions for the time being attached to any class or classes of shares, at a meeting of the Company's shareholders (each a **Shareholder**):

- Each Shareholder entitled to vote may vote in person or by proxy, attorney, or corporate representative.
- On a show of hands, every person presents who is a Shareholder or a proxy, attorney or corporate representative of a Shareholder has one vote.
- On a poll, each Shareholder who is present in person or by proxy, attorney, or corporate representative has one vote in respect of each Share held by that person, or in respect of which

[91] The number of Shares on issue remained the same at the date of this report and 31 December 2023, however the performance rights on issue reduced to 1,430,209 as at the date of this report.

that person is appointed a proxy, attorney, or corporate representative (but, in respect of partly paid shares, will have such number of votes as bears the same proportion to the total of such shares registered in the Shareholders' name as the amount paid (not credited) bears to the total amounts paid and payable (excluding amounts credited).

**3. Direct or indirect participating interests in the capital that comprise more than ten per cent of the voting rights.**

Refer to the ASX Additional Information section of the 2023 Annual Report.

**4. The holders of shares of stock endowed with special rights granting powers of control and a description of such special rights.**

Not applicable. See sections (1) and (2) above for details of the rights attaching to the Company's securities.

**5. The nature of the voting control if employees hold a share in the capital and do not directly exercise their rights of control.**

The employees participating in the capital of the Company may exercise their control rights directly themselves.

**6. The stipulations of the law and of the statutes regarding the appointment of the members of the board of management and their removal from office, as well as the stipulations regarding amendments to the statutes.**

Subject to the Company's Constitution, the Company may elect a person as a Director by resolution passed at a general meeting of Shareholders. A Director elected at a general meeting of Shareholders is taken to have been elected with effect immediately after the end of that meeting unless the resolution by which the Director was appointed or elected specifies a different time.

At the Company's annual general meeting of Shareholders each year, one third of the Directors (other than the Managing Director) or, if their number is not a multiple of three, then the number nearest one-third, must retire from office (and each such Director who retires is eligible to seek re-election at that annual general Shareholders' meeting).

In addition, no Director (except the Managing Director) may hold office without re-election past the longer of (i) the third annual general meeting of Shareholders following their appointment or election, and (ii) three years.

The Directors to retire at each annual general meeting of Shareholders are those who have been in office the longest since their last election. Where persons have become Directors on the same day, unless otherwise agreed amongst themselves, the Directors to retire by rotation will be determined by drawing lots.

The Directors may also, at any time, appoint a person to be a Director, either to fill a casual vacancy or as an addition to the existing Directors. Any Director so appointed holds office only until the next annual general meeting of Shareholders and is then eligible for re-election (but will not be taken into account in determining the Directors who are to retire by rotation (if any) at that meeting).

Any proposed modification of the Company's Constitution must be approved by a special resolution of the Company's Shareholders (that is, passed by at least 75% of the votes cast by Shareholders entitled to vote on the resolution).

**7. The powers of the board of management, particularly regarding the possibility of issuing shares of stock or repurchasing them.**

The role of the Company's Board of Directors is to provide overall strategic guidance and effective oversight of management.

Subject to any specific requirements under the Australian Corporations Act, the ASX Listing Rules or the Company's Constitution, the Board of Directors may exercise all the powers of the Company (including the power to issue shares) except for those which require approval of the general meeting of shareholders. The Company's Board of Directors is permitted under the Company's Constitution to delegate any of their powers to one or more persons or committees.

Under Australian law, the Directors of the Company are subject to certain duties, including to act in good faith in the interests of the Company, to act for a proper purpose, not to fetter their discretion, to exercise care, skill, and diligence, to avoid conflicts of interest, not to use their position to their advantage, and not to misappropriate company property. Pursuant to section 14.1 of the Company's Constitution, the Company's Board of Directors is to comprise not less than three and not more than nine Directors (excluding any alternate Directors). The quorum for a meeting of the Board of Directors is two Directors.

Under the Australian Corporations Act, the Company does not have an authorised share capital, and there is generally no limit under the Australian Corporations Act or the Constitution on the power of the Directors to issue Shares or other securities.

Subject to specified exceptions, the ASX Listing Rules restrict a company admitted to the official list of ASX from issuing, or agreeing to issue, more than 15% of the company's total number of securities (calculated according to a prescribed equation) in any rolling 12-month period without obtaining shareholder approval.

**8. Material agreements of the parent undertaking that are subject to a change of control clause in the event of a takeover bid and the effects resulting therefrom.**

Not included.

**9. Compensation agreements the parent undertaking has concluded with the members of the board of management or with employees for the case of a takeover bid.**

The Company currently has no specific compensation agreements with its board, management, or employees in the case of a successful takeover bid other than under the terms of the Executive Service Agreement with Robert Ierace who will cease employment with the Company on 31 March 2024. Under Mr Ierace's Executive Service Agreement, in the case of a takeover bid which is recommended by the Board, he has the choice to terminate his agreement after the bid has been accepted, but subject to a maximum of 2 months' notice after the acceptance date or to work for a maximum of 3 months after the acceptance date and then be paid out an additional 3 months' salary plus outstanding leave and bonuses.

# 6. FURTHER INFORMATION

## 6.1 CORPORATE GOVERNANCE STATEMENT

As a sustainability-centric company, Vulcan is committed to the highest standards of corporate governance practice and regulatory compliance and promotes ethical and responsible decision making.

As an ASX listed Company, Vulcan's Board of Directors believes that the Company's policies and practices comply with the recommendations set out in the ASX Corporate Governance Principles and Recommendations – 4th Edition (Recommendations).

A copy of Vulcan's 2023 Corporate Governance Statement can be found on the Company's website at https://v-er.eu

## 6.2 DIVERSITY

As part of an industry that relies heavily on STEM skills, Vulcan sees that there is a significant gender split in the pool of potential hires (in line with German STEM education statistics) which show that women are still a minority of students in these courses[92]. Vulcan endeavours to continuously improve diversity statistics across the business and is proud to have surpassed the gender diversity target of 40% female representation at the board level during the Period. Looking forward, the Company has identified that the leadership team is a key target area for improvement in coming years. Due to its reliance on heavy-manual labour, Vulcan's in-house drilling company Vercana, is unsurprisingly less gender diverse than other parts of the business. For this reason, it is important to disaggregate diversity statistics, so as not to obscure the performance of other Vulcan divisions.

Diversity statistics at the end of the reporting Period:

- Vulcan employees: 72% (64%*) Male | 28% Female (36%*)
- Board: 56% Male | 44% Female
- Leadership: 86% Male | 14% Female

Current diversity statistics:

- Vulcan: 77% (65%*) Male | 23% Female (35%*)
- Board: 50% Male | 50% Female
- Leadership: 79% Male | 21% Female

*Excluding Vulcan's drill team.

Further information about the Company's business wide diversity targets can be found in Vulcan's FY23 Sustainability Report and 2023 Annual Report at www.v-er.eu.

[92] 6.5% fewer students starting a STEM course in the academic year of 2021 - German Federal Statistical Office (destatis.de)

## 6.3 RESPONSIBILITY STATEMENT BY THE COMPANY'S LEGAL REPRESENTATIVE

To the best of our knowledge, and in accordance with the applicable reporting principles, the consolidated financial statements give a true and fair view of the net assets, liabilities, financial position results of the Group, and the Group Management Report includes a fair review of the development and performance of the business and the position of the Group, together with a description of the principal opportunities and risks associated with the expected development of the Group.

Dr Francis Wedin
Executive Chair
27 March 2024