

## Quarterly Activities Report June 2021

### Highlights:

#### Project Execution

- Binding Lithium Offtake term sheet signed with LG Energy Solution to supply 10,000 metric tonnes per year of lithium hydroxide (*post June 2021 Quarter*).
- Direct Lithium Extraction (DLE) Pilot Plant designed, built and commissioned by the Vulcan in-house chemical engineering team.
- DLE plant now successfully operating with >90% recoveries, to demonstrate lithium extraction from geothermal brine.
- Spin-off and IPO initiated of non-core, Scandinavian battery metals projects into a new dedicated vehicle, “Kuniko Limited”.
- Key consultants Hatch Ltd. and GLJ Ltd. have been engaged to assist Vulcan with its Definitive Feasibility Study (DFS) (*post June 2021 Quarter*).
- New exploration license granted in Upper Rhine Valley (*post June 2021 Quarter*).

#### ESG Excellence & Team Growth

- Former senior EY Global Renewables Partner Josephine Bush joined the Vulcan Board as a Non-Executive Director, making Vulcan’s Board composition 2/3 female.
- Binding agreement signed to acquire 100% of geothermal surface consultancy company Global Engineering and Consulting GmbH, adding 35 expert personnel to Vulcan.
- Lithium process expert Dr Stephen Harrison appointed as Chief Technical Officer and Daniel Tydde appointed as Company Secretary and In-House Legal Counsel.
- The Company was admitted to the Global Battery Alliance (GBA), an umbrella partnership made up of 70 members working towards a sustainable battery value chain globally.
- The Company became certified as carbon neutral by Climate Active for Australian operations, in line with its mission to become the world’s first Zero Carbon Lithium™ Project.
- Experienced chemicals industry executive Markus Ritzauer as CFO of Vulcan’s German operations, effective from 1 September (*post June 2021 Quarter*).

### Highlights

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

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

EU’s **largest** lithium resource.

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

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

### Corporate Directory

Managing Director  
Dr Francis Wedin

Chairman  
Gavin Rezos

Executive Director Germany  
Dr Horst Kreuter

Non-Executive Director  
Ranya Alkadamani


Non-Executive Director  
Annie Liu

Non-Executive Director  
Dr Heidi Grön

Non-Executive Director  
Josephine Bush

Company Secretary  
Daniel Tydde

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# VULCAN ENERGY ZERO CARBON LITHIUM™

## About Vulcan

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



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## Activities During the Quarter

### Project Execution

#### DLE Pilot Plant & DFS

Vulcan (“Vulcan”, “the Company”) has designed, built, commissioned, and is now operating a DLE Pilot Plant to demonstrate lithium extraction from live geothermal brine. The team is focused on demonstrating pre-treatment and DLE processes, as well the durability of the process over hundreds of cycles, which will feed into its Definitive Feasibility Study (DFS).

Vulcan will use the data from the Pilot Plant to inform and finalise design of a larger, Demonstration Plant, which will also contribute information towards the DFS. Vulcan’s technology partners and internal experts have indicated that key process operations will scale up to commercial scale with minimal risk from the Demonstration scale.

In May, the company announced that the pilot plant team had successfully achieved target specification for Direct Lithium Extraction (DLE) feed into its pilot plant. They also achieved target recovery of greater than 90% for lithium chloride from Upper Rhine Valley brine. The laboratory team also successfully demonstrated, via the first step of test work, post-treated DLE brine to be materially the same composition, within analytical error, as production brine, excluding extracted lithium and silica.

Next steps will include:

- Ramp up of DLE pilot plant to 24/7 operation.
- Production of lithium chloride solution to be converted to lithium hydroxide.
- Production of samples for potential customers/offtakers.
- Further work on post-treatment of brine.

*Post June 2021 Quarter to date:*

- Key consultants Hatch Ltd. and GLJ Ltd. have been engaged to assist Vulcan with its Definitive Feasibility Study (DFS).
- New exploration license granted in Upper Rhine Valley.
- Binding Lithium Offtake term sheet signed with LG Energy Solution to supply 10,000 metric tonnes per year of lithium hydroxide.

**Vulcan’s in-house technical team continues to methodically execute on and progressively de-risk its Zero Carbon Lithium™ Project development in a stepwise manner.**

### ESG Excellence & Team Growth

#### Binding agreement to acquire Global Engineering & Consulting GmbH

In April, the Company announced that a binding agreement had been signed to acquire 100% of geothermal surface consultancy company Global Engineering and Consulting GmbH (“gec-co”: <https://www.gec-co.de/en/>), subject to shareholder approval. Gec-co has a world-leading engineering team of 35 personnel, with significant experience in surface development of geothermal projects in Germany and world-wide, with offices in Augsburg, Bremen, and Karlsruhe. This followed from Vulcan’s recent agreement to acquire sub-surface development company GeoT. Combined, the Vulcan group will have an unparalleled surface and sub-surface geothermal development team to execute on its Zero Carbon Lithium™ Project.



## Company Appointments

Former senior EY Global Renewables Partner Josephine Bush joined the Vulcan Board as a Non-Executive Director. Ms. Bush was a member of the EY Power and Utilities Board. She led and delivered the EY Global Renewables and Sustainable Business Plan and spearheaded a series of major Renewable Market Transactions, including Public Listings, Global Reorganisations and Cross Border Tax structuring assignments. Ms. Bush is a Chartered Tax Advisor, holds an MA Law degree from St Catharine's College, Cambridge, and brings a wealth of experience in ESG strategic advisory and execution through her years working in the renewables and green sector across multiple jurisdictions.

The company appointed Lithium process expert Dr Stephen Harrison as Chief Technical Officer. Dr. Harrison has a diverse multi-industry background in electrochemistry and lithium extraction, with thorough knowledge of all steps of industry process/product commercialisation in the lithium industry dating back to 1998. Dr Harrison was CTO of Simbol Materials for seven years where he oversaw their patent DLE process. Dr. Harrison holds a PhD Chemical Engineering from the University of Newcastle-upon-Tyne and Master of Science (M.Sc.), Electrochemical Science, from the University of Southampton.

The company also appointed Daniel Tydde as Company Secretary and In-House Legal Counsel. Mr Tydde brings over 15 years' experience across a wide range of corporate, commercial and finance areas including, corporate regulatory compliance; corporate governance; equity and debt capital raisings; asset and share sales and purchases; initial public offerings; corporate restructuring and reorganisations; and litigation. Most recently, Daniel held a senior position at Steinepreis Paganin and prior to that, worked at Clayton Utz and Phillips Fox (now DLA Piper). Daniel holds a Bachelor of Laws and a Bachelor of Commerce from the University of Notre Dame Australia.

**Vulcan continues to assemble a best-in-class team of professionals in the fields of geothermal renewable energy project development, and lithium extraction, across its two business sectors.**

## Global Battery Alliance & Climate Active

The Company has been accepted as a Member of the Global Battery Alliance (GBA) an umbrella partnership made up of 70 members working towards a sustainable battery value chain globally. Industry members include BMW Group, BASF, BP, Google, Renault Group, LG Chem, Umicore, Volkswagen Group and Volvo Group. Vulcan joins SQM and Wesfarmers as members



1. credit <https://www.weforum.org/global-battery-alliance/home>

from the lithium sector. The GBA follows ten guiding principles, covering issues from the circular recovery of battery materials, ensuring transparency of greenhouse gas emissions and their progressive reduction, to eliminating child and forced labour. The GBA is also developing the Battery Passport, a global solution for securely sharing information and data to prove responsibility and sustainability to consumers with a "quality seal", while enabling resource efficiency across the battery life cycle. Vulcan will be participating in advancing projects and initiatives around battery materials traceability and transparency that will shape the industry.



Vulcan's Australian business has been certified as carbon neutral by Climate Active for the Australian operations. Climate neutral certification confirms that a carbon neutral claim is based on best practice, international standards and represents genuine emissions reduction. Climate Active has a network of Members who have achieved this certification through rigorous process and testing, this means that these certified organisations and their customers can be sure they are genuinely carbon neutral. The Australian Government's carbon neutral certification is the most rigorous and credible carbon neutral certification available in Australia.

Vulcan is seeking similar certification for its German operations.

<https://www.climateactive.org.au/buy-climate-active/certified-members/vulcan-energy-resources>

**These represent important steps as part of Vulcan's stated mission to decarbonise the lithium supply chain.**

### **Spin-off of non-core Scandinavian battery metals projects**

In June, the Company announced the lodgement of the Kuniko Limited IPO Prospectus to raise \$7,886,213 (before costs) to form a new standalone 'Zero Carbon Copper, Nickel, Cobalt' company. The spin-off of the Scandinavian projects enables the Company to be fully focused on development of its core Zero Carbon Lithium™ combined renewable energy and lithium chemicals Project in Germany.

Focus will be on Kuniko's 262km<sup>2</sup> Ni-Co-Cu license portfolio:

- Nickel: Ni-Cu-Co projects in the historically important Feøy and Romsås mining districts located in south-western Norway.
- Cobalt: Co-Cu-Au project, part of the historically important Skuterud mining district of central-southern Norway, previously the largest cobalt mining area in the world.
- Copper: Undal Cu-Zn-Co project and Vangrøfta Cu-Co-Au projects located in the Trondheim region of central Norway.

Kuniko will initially be led by Vulcan Chairman, Gavin Rezos, as Executive Chair. On or before 15 September 2021, Antony Beckmand, a highly experienced senior mining executive who has over 25 years' experience in financial and executive roles within the mining industry including significant experience in Norway, will commence as Chief Executive Officer of Kuniko.



**The spin-off of Kuniko allows the Vulcan team to be fully focused on the development of its Zero Carbon Lithium™ Business, whilst creating value for the Company's shareholders.**



### Additional ASX Disclosure Information

1. **ASX Listing Rule 5.3.1:** Exploration and Evaluation expenditure during the Quarter was \$1,002k. Expenditure was on engineering studies on the Vulcan Zero Carbon Lithium™ Project as well as interpretation of existing 3D seismic and planning for 3D seismic in its license areas.
2. **ASX Listing Rule 5.3.2:** Development expenditure during the Quarter was \$470k which related to the construction of a DLE Pilot Plant as well engineering studies towards the design of a larger demonstration plant and purchase of technical equipment.
3. **ASX Listing Rule 5.3.3:** There were no licenses acquired or disposed during the Quarter. Subsequent to the end of the Quarter, the Company completed the acquisition of Global Geothermal Holding UG (GGH). GGH is the holder of the granted Taro license in the Upper Rhine Valley Region of Germany. GGH also holds other exploration license applications in the Upper Rhine Valley region. Please refer to ASX announcement 15 February 2021 for further details.
4. **ASX Listing Rule 5.3.5:**  
Payments to related parties of the Company and their associates during the Quarter per Section 6.1 of the Appendix 5B total \$135k. This is comprised of an allocation of the Managing Director remuneration of \$19k, Non-Executive Director fees of \$86k as well as consulting fees of \$30k to Alto Group Inc., a company related to one of the Non-Executive Directors. Please see the Remuneration Report in the Annual Report for further details on Director's Remuneration.  
Payments to related parties of the Company and their associates during the Quarter per Section 6.2 of the Appendix 5B total \$75k. This amount is an allocation of the Managing Director's remuneration for work done on exploration activities associated with the Vulcan Lithium Project. Please see the Remuneration Report in the Annual Report for further details on Director's Remuneration.

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**For and on behalf of the Board**

Daniel Tydde

Company Secretary

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

**Disclaimer**

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

Vulcan does not undertake any obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after today's date or to reflect the occurrence of unanticipated events. No representation or warranty, express or implied, is made as to the fairness, accuracy, completeness or correctness of the information, opinions or conclusions contained in this announcement. To the maximum extent permitted by law, none of Vulcan, its Directors, employees, advisors or agents, nor any other person, accepts any liability for any loss arising from the use of the information contained in this announcement. You are cautioned not to place undue reliance on any forward-looking statement. The forward-looking statements in this announcement reflect views held only as at the date of this announcement.

This announcement is not an offer, invitation or recommendation to subscribe for, or purchase securities by Vulcan. Nor does this announcement constitute investment or financial product advice (nor tax, accounting or legal advice) and is not intended to be used for the basis of making an investment decision. Investors should obtain their own advice before making any investment decision.

**Competent Person Statement:**

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

**Appendix One: Vulcan Zero Carbon Lithium™ Project License Summary**

Name	Area (ha)	Status	Expiry date	Ownership at End of Quarter	Change in Ownership
Ortenau	37,360	Granted	06/2023 (extended by 2 years)	100%	N/A
Mannheim	14,427	Granted	09/2021 (extension ongoing)	100%	N/A
Taro	3,268	Granted	04/2022	100%	+49%
Ludwig	17,716	Application	N/A	100%	N/A
Heßbach	5,848	Application	N/A	100%	N/A
Rheinland-Pfalz MoU Area <sup>1</sup>	1,900	Granted		MoU to earn in to 80% after formation of formal JV	N/A
Lampertheim*	10,803	Granted	07/2024	100%	+100%

Granted subsequent to end of Quarter, 1/07/2021

**Appendix Two: Norwegian Projects License Summary – spin-out and IPO in progress**

TENEMENTS	REG NO.	STATUS	GRANTED	AREA (KM2)	Ownership at end of Quarter
Undal 101	1059/2018	Granted	05/07/2018	10.00	100%
Undal 102	1058/2018	Granted	05/07/2018	10.00	100%
Nyberget 101	1056/2018	Granted	05/07/2018	10.00	100%
Nyberget 102	1057/2018	Granted	05/07/2018	10.00	100%
Vangrofta 102	1161/2018	Granted	27/08/2018	10.00	100%
Skuterud 101	0285/2020	Granted	19/10/2020	4.01	100%
Skuterud 102	0286/2020	Granted	19/10/2020	4.01	100%
Skuterud 103	0287/2020	Granted	19/10/2020	4.01	100%
Skuterud 104	0288/2020	Granted	19/10/2020	7.01	100%
Skuterud 105	0289/2020	Granted	19/10/2020	4.01	100%
Skuterud 106	0290/2020	Granted	19/10/2020	8.02	100%
Skuterud 107	0291/2020	Granted	19/10/2020	5.01	100%
Skuterud 108	0292/2020	Granted	19/10/2020	8.02	100%
Skuterud 109	0293/2020	Granted	19/10/2020	5.01	100%
Skuterud 110	0294/2020	Granted	19/10/2020	3.01	100%
Romsås 101	0298/2020	Granted	26/10/2020	10.00	100%
Romsås 102	0299/2020	Granted	26/10/2020	10.00	100%
Romsås 103	0300/2020	Granted	26/10/2020	10.00	100%
Romsås 104	0301/2020	Granted	26/10/2020	10.00	100%
Romsås 105	0302/2020	Granted	26/10/2020	10.00	100%
Romsås 106	0303/2020	Granted	26/10/2020	10.00	100%
Romsås 107	0304/2020	Granted	26/10/2020	10.00	100%
Romsås 108	0305/2020	Granted	26/10/2020	10.00	100%
Romsås 109	0306/2020	Granted	26/10/2020	10.00	100%
Feøy 101	0307/2020	Granted	27/10/2020	9.00	100%
Feøy 102	0308/2020	Granted	27/10/2020	9.00	100%
Feøy 103	0309/2020	Granted	27/10/2020	10.00	100%
Feøy 104	0310/2020	Granted	27/10/2020	9.00	100%
Feøy 105	0311/2020	Granted	27/10/2020	10.00	100%
Feøy 106	0312/2020	Granted	27/10/2020	10.00	100%
Feøy 107	0313/2020	Granted	27/10/2020	6.25	100%
Feøy 108	0314/2020	Granted	27/10/2020	7.50	100%
			Total	262.87	

<sup>1</sup> Refer ASX announcement 19/11/2019