

Zero Carbon Lithium®

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To achieve the outcomes of Vulcan's Pre-Feasibility Study, initial funding in the order of €700m (including contingency) will be required, and a further €1,138m will be required for Phase 2. It should be noted that, as with any project at this stage, the ability to develop the project may depend on the future availability of funding, and while the Company believes it has reasonable basis to assume that future funding will be available and securable, this is not guaranteed. Industry best practice exploration for deep geothermal brine occurs using 2D and 3D-seismic data acquisition, analysis and interpretation, which Vulcan has completed. As stated in the text of this announcement, in deep geothermal brine projects, the first well drilled is also the first production well, so it follows that financing for the production well drilling is expected to occur first, after a definitive feasibility study is completed. Vulcan Executive Director Dr. Horst Kreuter is an expert in developing deep geothermal projects in Germany and worldwide, including having started the first geothermal development company in Germany, therefore Vulcan's Board has direct experience and has been involved in examples of how the funding process works in this type of project. There are numerous examples of projects financed in this way, prior to drilling, within the same area as Vulcan in the Upper Rhine Valley. Over the past 16 months, the Company has significantly advanced discussions with traditional debt and equity financiers in Europe, including some of the largest European-Union backed, state-owned and private development banks in Europe. This has resulted in written support already being provided by some of these institutions for the provision of senior debt for the project, based on the project progress to date. The Project further benefits from being one of only two lithium projects financially and administratively supported by EU-backed group EIT InnoEnergy, which is the founder and steward of the European Battery Alliance, that counts among its members the most significant financiers of battery metals, battery and electric vehicle projects in Europe including the European Investment Bank. InnoEnergy has placed Vulcan on its Business Investment Platform, through which it is further assisting Vulcan with conversations with European financiers. The size and location of the deposit, together with other strong project fundamentals, in the middle of large end users associated with European electric vehicles that is driving lithium demand makes the project a strategic asset as evidenced by the large interest shown in the Project by public/private banks, financiers, end users and large lithium specialist companies to-date. An improvement in market conditions since work commenced and a perceived high growth outlook for the global lithium market enhance the Company's view of the fundability of the Project. Based on this, the Board is confident the Company will be able to finance the Project through a combination of syndicated senior debt, export credits, industry related hybrid debt, equity and forward sales at the Project level. The size of the Project will necessitate a syndicate of banks and in the current low interest rate European market the Project represents a higher yield opportunity. The Company is also considering the bond market in view of the increasing market and availability of ESG bonds seeking opportunities which meet ESG criteria and have longer term yields. The Board has relevant experience in funding large scale projects with Mr Rezos, the Chairman, having been involved in funding large scale mining projects and energy projects as a former Investment Banking Director of HSBC Holdings with direct project finance, syndicated debt, export credits, bond and equity experience in multiple jurisdictions, including Europe. Mr Rezos was also a non-executive director of Iluka Resources Limited at the time of funding and developing the large-scale Jacinta Ambrosia and Murray Basin projects. Dr Horst Kreuter, has been involved in developing and funding a number of geothermal projects in Germany. For the reasons outlined above, the Board believes that there is a "reasonable basis" to assume that future funding will be available and securable.

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.com. The information in this presentation that relates to the Pre-Feasibility Study for the Vulcan Lithium Project and Maiden JORC Ore Reserve is extracted from the ASX announcement "Positive PFS & Maiden JORC Ore Reserve: Zero Carbon Lithium® Project", released on 15 January 2021 which is available on www.v-er.com. 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.

Lithium Industry Overview

EU: FASTEST GROWING LITHIUM MARKET IN THE WORLD

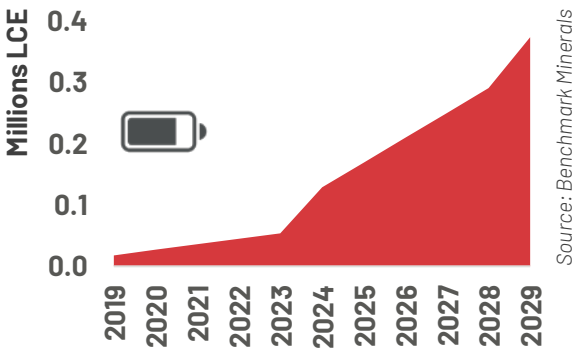
Industry:

- More investment into EVs in the EU than China
- >500GWh target battery capacity in the EU by 2030
- Almost 400Kt of LiOH required in Europe by 2030

Policy:

- Generous incentives for EV buyers
- Subsidies for battery investments and debt support

LiOH DEMAND IN EUROPE



SUPPLY CHAIN RISKS LEAD TO REGIONALISATION

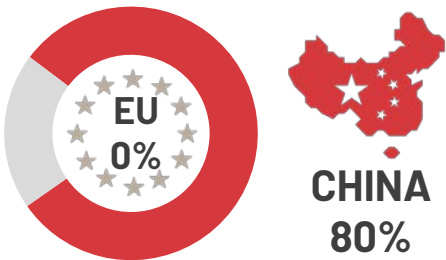
Industry:

- Investment to develop a fully integrated supply chain in the EU
- Automakers back integrating themselves into battery and cathode production
- Actively looking to secure lithium produced in Europe

Policy:

- Creating of the European Battery Alliance
- Lithium declared as Critical Raw Material
- EU funds support selected lithium projects

CHINESE CONTROL – LiOH SUPPLY



HIGH CARBON FOOTPRINT OF EXISTING SUPPLY CHAIN

Industry:

- VW, Daimler, BMW, etc. aiming for carbon neutrality
- Traceability measures implemented across automakers' supply chain

Policy:

- EU's new battery passport to ensure responsible mineral sourcing
- EIB lending policy supporting projects relating to the supply of critical raw materials needed for low-carbon technologies

CARBON INTENSITY



Hard Rock

WATER DEPLETION



Salar Brine

Source: Minviro

Vulcan – Zero Carbon Lithium®



World-first Zero Carbon Lithium® Project



Geothermal & DLE in Germany



Dual revenue
Green energy & lithium



In the heart of the fastest growing lithium market in the world



Largest JORC lithium Resource in Europe



Potential for very low OPEX operation



Agreement with German geothermal operators



Team of world leading experts



Project financially supported by the EU

LITHIUM BUSINESS

€2.8Bn NPV¹ Pre-tax

31% IRR¹ Pre-tax

40Ktpy LiOH¹

€474M starting CAPEX²

€2,640/t LiOH OPEX³

ENERGY BUSINESS

€0.7Bn NPV⁴ Pre-tax

16% IRR⁴ Pre-tax

74MW Power

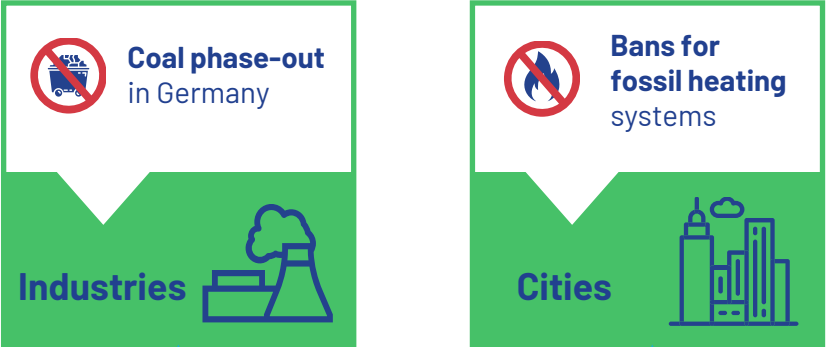
€226M starting CAPEX²

€0.066/kWh OPEX⁴

¹Lithium Business only, 8% DCR ²Phase 1 only, ³Excluding royalties, ⁴Energy Business only, 6% DCR

Vulcan's Renewable Energy & Lithium Project

Germany



European Union



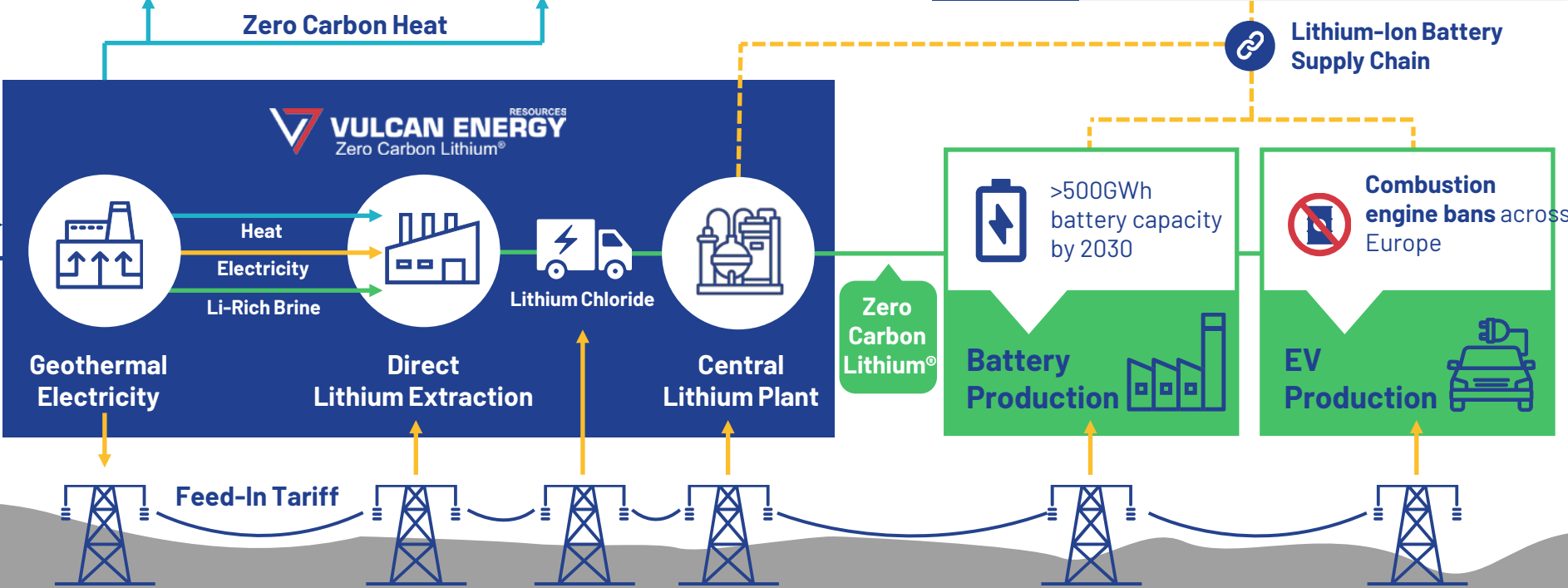
Regulations & Initiatives

EU New Battery regulation

European Battery Alliance

EU Recovery Plan

EU Green Deal



Personal use only

Environmental, Social and Governance Alignment

Environment

First & only Zero Carbon Lithium project in the world:

- Producing lithium & renewable energy
- Potential for negative carbon footprint
- No fossil fuel burnt
- Supplying E-Mobility
- Supporting the energy transition
- Strategy aligned to the EU Green Deal



Social

Supporting local and European economy with sustainable employment:

- To potentially generate 166 direct jobs and 1,245 indirect jobs for >30 years
- Helping the automotive industry to transition from ICE to E-Mobility
- Developing an ethical and sustainable supply chain
- Reinforcing the position of the EU in the global market
- Supporting the EU Recovery Plan

Governance

Listing, location & implementation of strong measures:

- ASX listed: strong requirements to ensure transparency, accountability & regular reporting to shareholders
- Germany ranks in the Top 10 least corrupt countries worldwide
- Full product transparency, responsibly sourced and traceable lithium in Germany
- Early adopter of RegTech applications to empower compliance through digitization
- Early adopter of ESG Monitoring Tools and Benchmarking Performance

Europe: Fastest Growing Lithium Market

Europe:

- More investment into EVs than in China
- Fastest growing lithium-ion battery production center in the world
- Fastest growing market for lithium hydroxide



ZERO local supply of lithium hydroxide to feed this demand

80% of global supply is controlled by China

Linked to two main concerns:

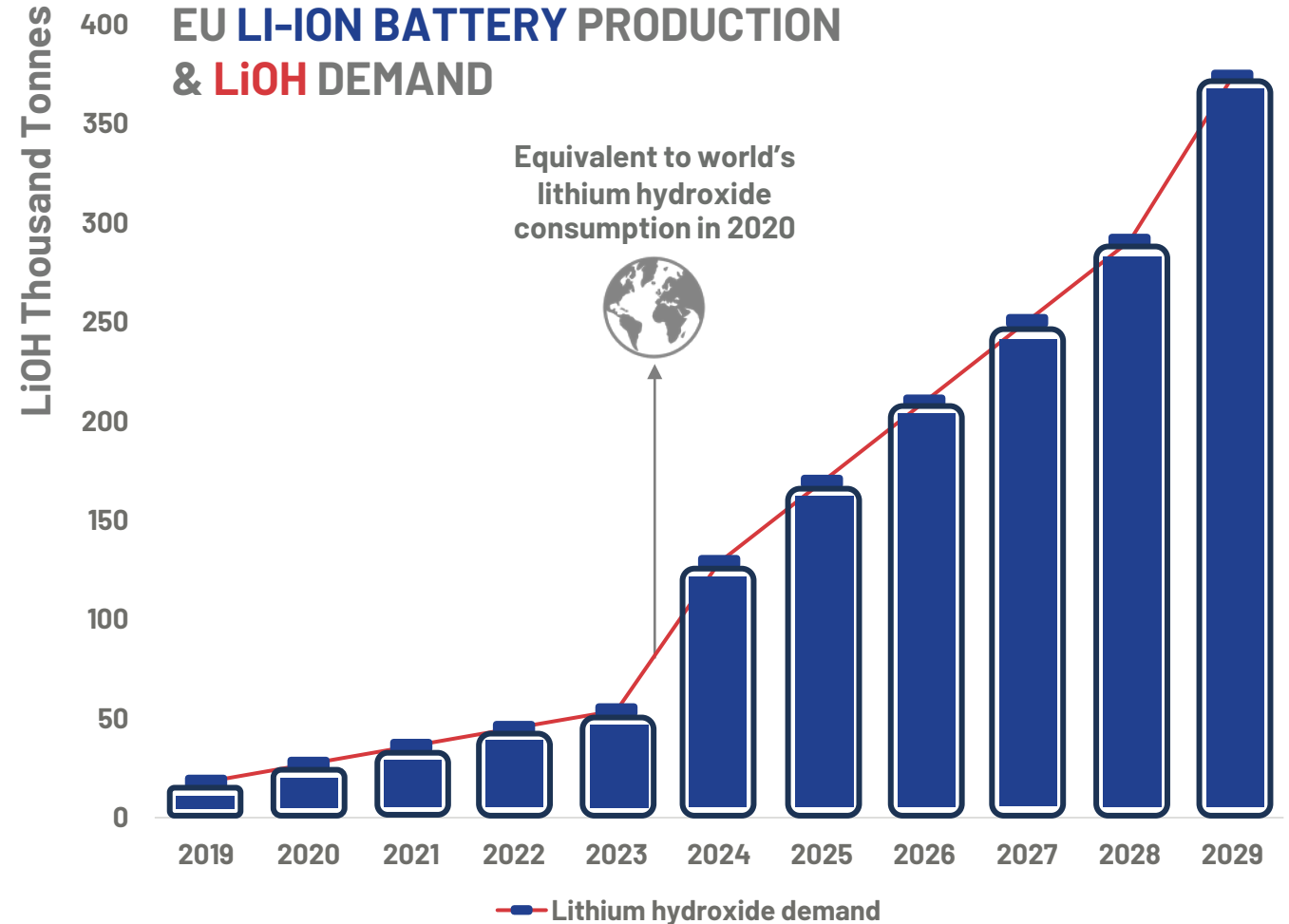
- Supply chain risk
- Environmental impact



DAIMLER

Volkswagen promises:
"CO₂-neutral production including supply chain"

Daimler promises to:
"make our fleet of new cars CO₂-neutral"



Benchmark Mineral Intelligence

The New EU Battery Regulation

New measures announced in December 2020 including:

1. Responsible sourcing : New mandatory procedures to ensure sustainable and ethical sourcing of raw materials such as lithium.

2. CO2 footprint : All batteries sold in Europe must declare their carbon footprint. This will come in 3-step approach : 1/ Declaration (2024), 2/ Classification (2026), 3/ Threshold (2027). Batteries with the highest carbon footprint will be banned in Europe.

3. Traceability: All raw materials used in batteries to be procured according to OECD recognized guidelines for sustainable sourcing. Thanks to blockchain technology, each battery will have a digital passport tracking all components upstream.

Maroš Šefčovič – European Commission VP : *“The new EU battery CO2 regulation will have an immediate impact on the market, which up until now has been driven only by price”.*

Thierry Breton – EU commissioner: *“We are 100% dependent on lithium imports. The EU, if finding the right environmental approach, will be self-sufficient in a few years, using its resources”.*

Other EU measures and initiatives supporting lithium:



EU list of Critical Raw Materials & European Raw Materials Alliance



EIB new energy lending policy supporting projects relating to the supply of critical raw materials



European Battery Alliance





Our Zero Carbon Lithium[®] Project

We Scoured the Globe to Find the Right Project

We had the lithium expertise to know that Zero Carbon Lithium® production was possible using modern extraction methods, provided a deep geothermal brine reservoir could be found that had the following geological conditions:

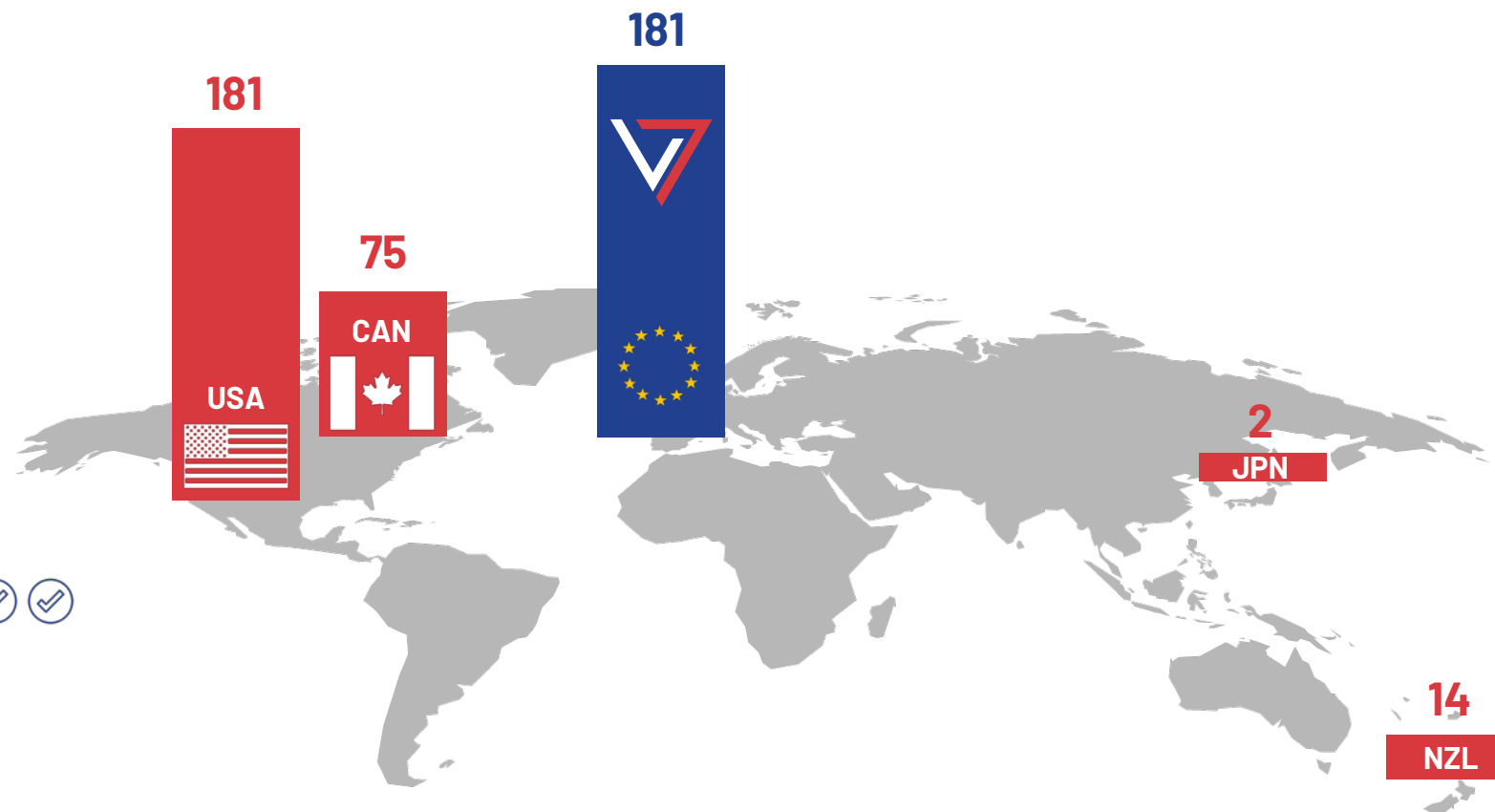
- 1 Renewable heat
- 2 High lithium grades
- 3 High brine flow rate

Our research showed that this could be done in just two places:

- 1 The Upper Rhine Valley in Germany ✓ ✓ ✓
- 2 The Salton Sea in California

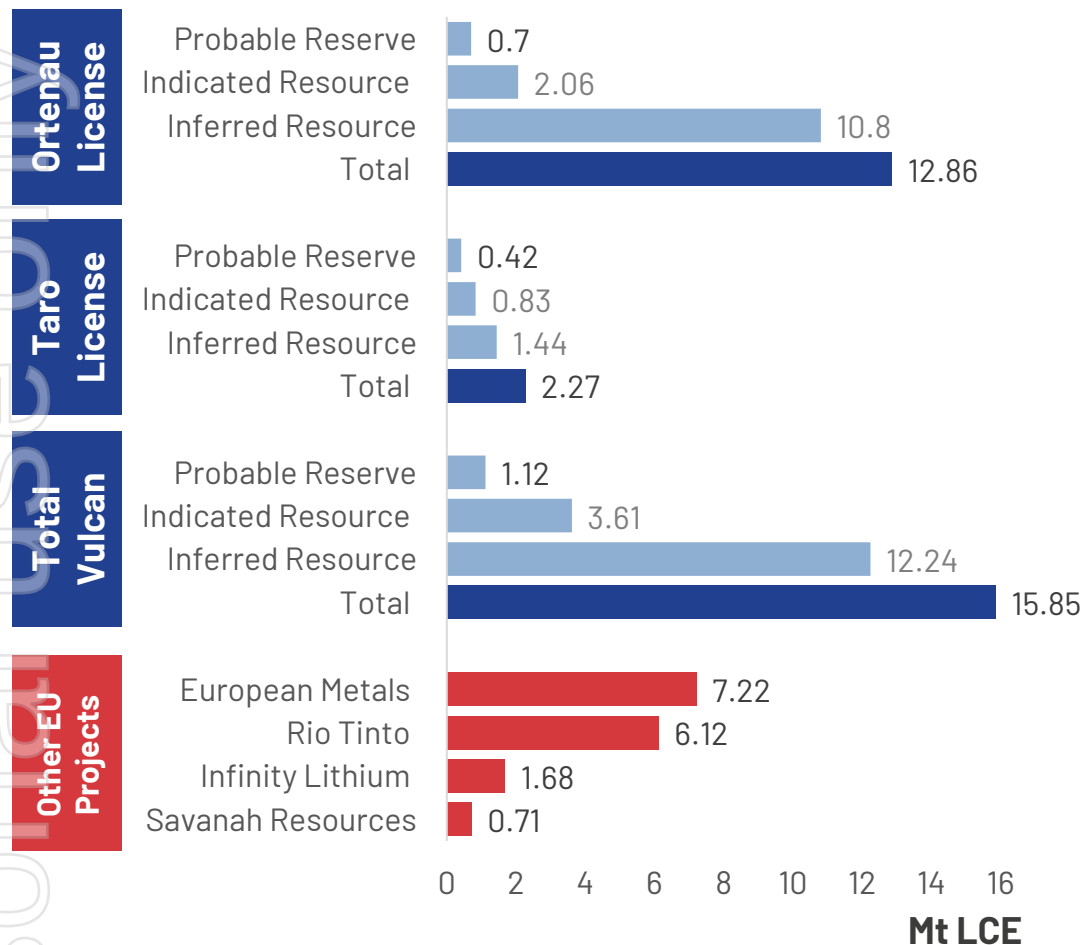
We chose Germany and Europe.

LITHIUM CONCENTRATION IN BRINE (MG/L LITHIUM)



Note: Refer to Appendix 4

Largest Lithium Resource in Europe



SUFFICIENT TO SUPPLY
>400 MILLION ELECTRIC
VEHICLES



- Very large license package >1,000km²
- **3 exploration permits granted** and several applications
- Largest lithium resource in Europe: **15.85Mt LCE**

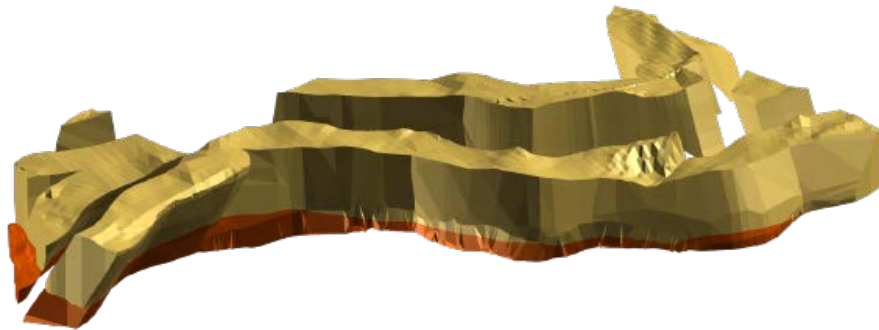
Notes: Vulcan's URVP Li-Brine resource and reserve area in Europe. Mineral resources are not mineral reserves and do not have demonstrated economic viability.

The preceding statements of Reserves conforms to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code) 2012 edition. 100% of the material in the PFS project schedule is included in the Probable Ore Reserves category. The Probable Ore Reserves were calculated assuming the production and processing methods determined for the PFS. Sources for other company data, which have all at the stage of having completed a Pre-Feasibility Study, with varying mixes of Inferred, Indicated and Measured Resources: ASX:EMH 10/2020 presentation, ASX:RIO: 12/2020 release, ASX: INF: 06/2020 presentation, AIM:SAV: 11/2020 presentation. Refer to Appendix 4

Project Resource

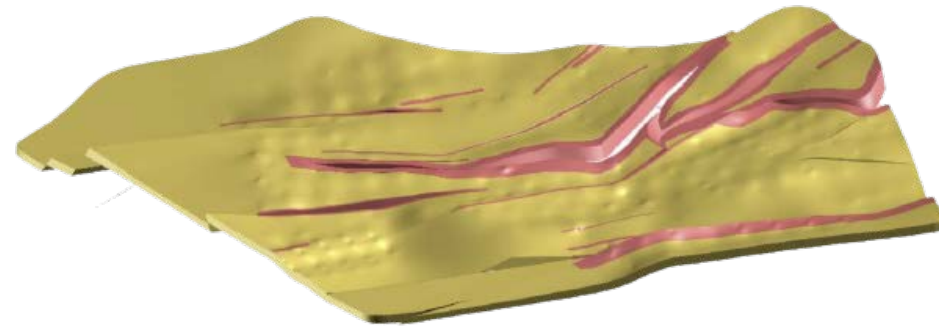
Snapshot of 3D geological model from 3D seismic data in the Taro license

Geothermal and DLE plants B1 & B2
2.27Mt LCE Resource



Snapshot 3D geological model from 2D seismic data in the Ortenau license

Geothermal and DLE plants C1, C2 & C3
12.86Mt LCE Resource



At the Center of Fastest Growing Lithium Market

**500GWH LITHIUM-ION
BATTERY CAPACITY
PLANNED BY 2030**

x50



Brandenburg, 2021
At least 20GWh



Brandenburg, 2021
RAMP UP TO 8-12 GWh



Salzgitter, 2024
16 GWh, LATER 24 GWh



Bitterfeld, 2022
16 GWh



Erfurt, 2022
14 GWh LATER 100 GWh



Wroclaw, 2018
6 GWh, LATER 70 GWh



Sunderland, 2010
2.5 GWh



Konin, 2021
CATHODE MATERIALS



Willstätt, 2020
1 GWh



Nysa 2020
CATHODE MATERIALS



Germany & France, 2022
16 GWh, LATER 48 GWh



Komaron 1 + 2, 2020
7.5 GWh, LATER 23.5 GWh



Überherrn, 2023
24 GWh



Göd, 2018
3 GWh, LATER 15 GWh



Germany, 202X
4 GWh, LATER 8 GWh



Mo I Rana, 2023
32+2GWh



Schwarzheide, 2022
CATHODE MATERIALS



Agder, 2024
8GWh, later 32GWh



Bratislava, 2024
10GWh



Norway, TBC
Unknown



St Athan Wales, 2023
10GWh, later 35GWh



Europe, TBC
Unknown



Skellefteå, 2021
32 GWh LATER 40 GWh

Commercially Mature Technologies Combined

Our process replicates existing operations taking place commercially across the world.
What is unique about us is the combination of those different steps.

1

Binary Cycle Geothermal Plant ✓

- Hundreds of geothermal energy plants running **globally**
- 37 deep geothermal energy plants in operation in **Germany**
- **Upper Rhine Valley** well-known area for successful geothermal operations
- Team of **leading experts** in developing and permitting geothermal plants

2

Direct Lithium Extraction Plant ✓

- Direct Lithium Extraction commercially **used for decades**.
- Now operating in **China & Argentina** – accounting for **>10% of global lithium** production
- Adsorbent-type DLE technologies **commercially available** from several suppliers
- We've achieved **>90% lithium recoveries** from initial test work

3

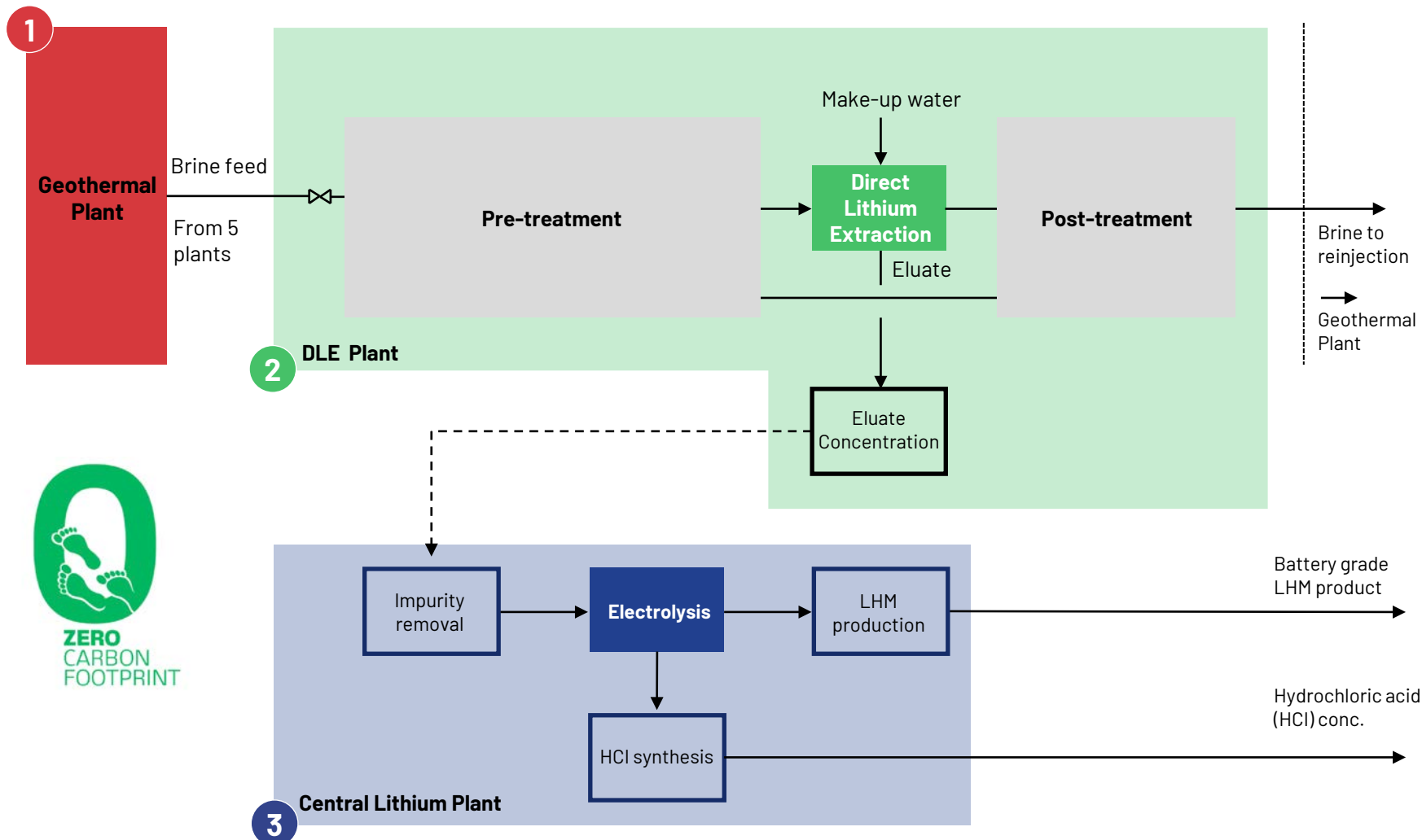
Central Lithium Plant ✓

- Conversion of lithium chloride to lithium hydroxide is using an **electrolysis process**
- Electrolysis has been used by the **chlor-alkali industry** for more than 100 years

Our Zero Carbon Lithium® Process

Vulcan has IP protection around flowsheet

- 1 Hot brine extracted from the ground and generates steam that powers turbines and produces renewable electricity
 - Standard geothermal production wells successfully implemented for decades on salars
- 2 Brine flow is diverted, and lithium is extracted from the solution with a Direct Lithium Extraction (DLE) process.
 - Commercially used for decades
- 3 Lithium chloride sent to lithium refining plant which will be converted LiCl to battery quality LiOH
 - Water is recycled, no toxic wastes, no gases are emitted, heat and power from renewable resources, no fossil fuels are burnt

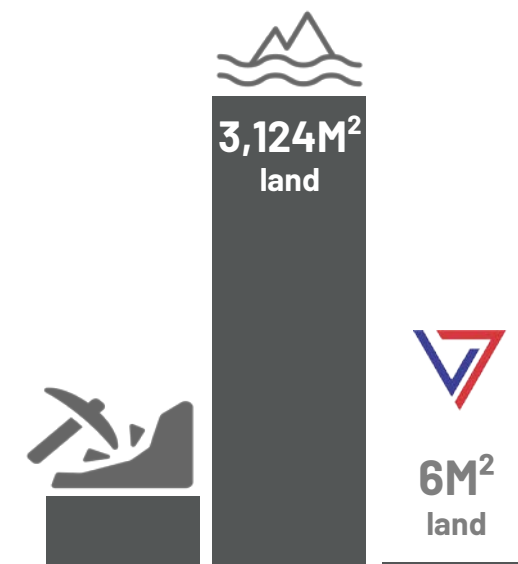
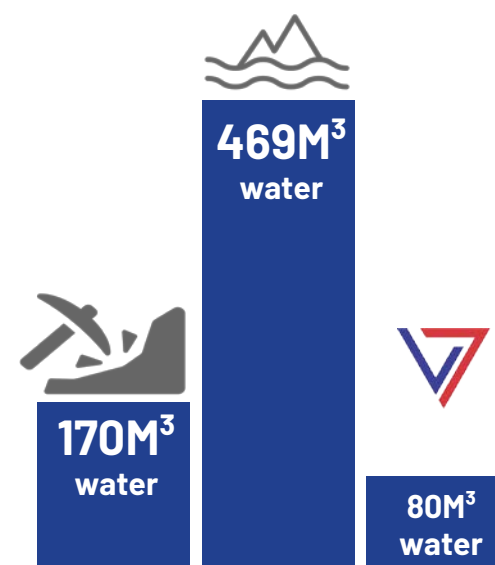
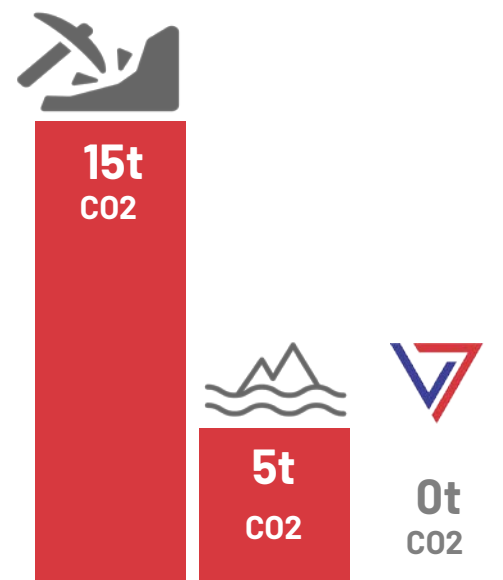


Our Zero Carbon Lithium® Process

Environmental footprint of lithium production routes

PER TON OF LITHIUM HYDROXIDE

-  **Hard rock mining**
60% of world lithium production
-  **Evaporation ponds**
40% of world lithium production
-  **Zero Carbon Lithium®**

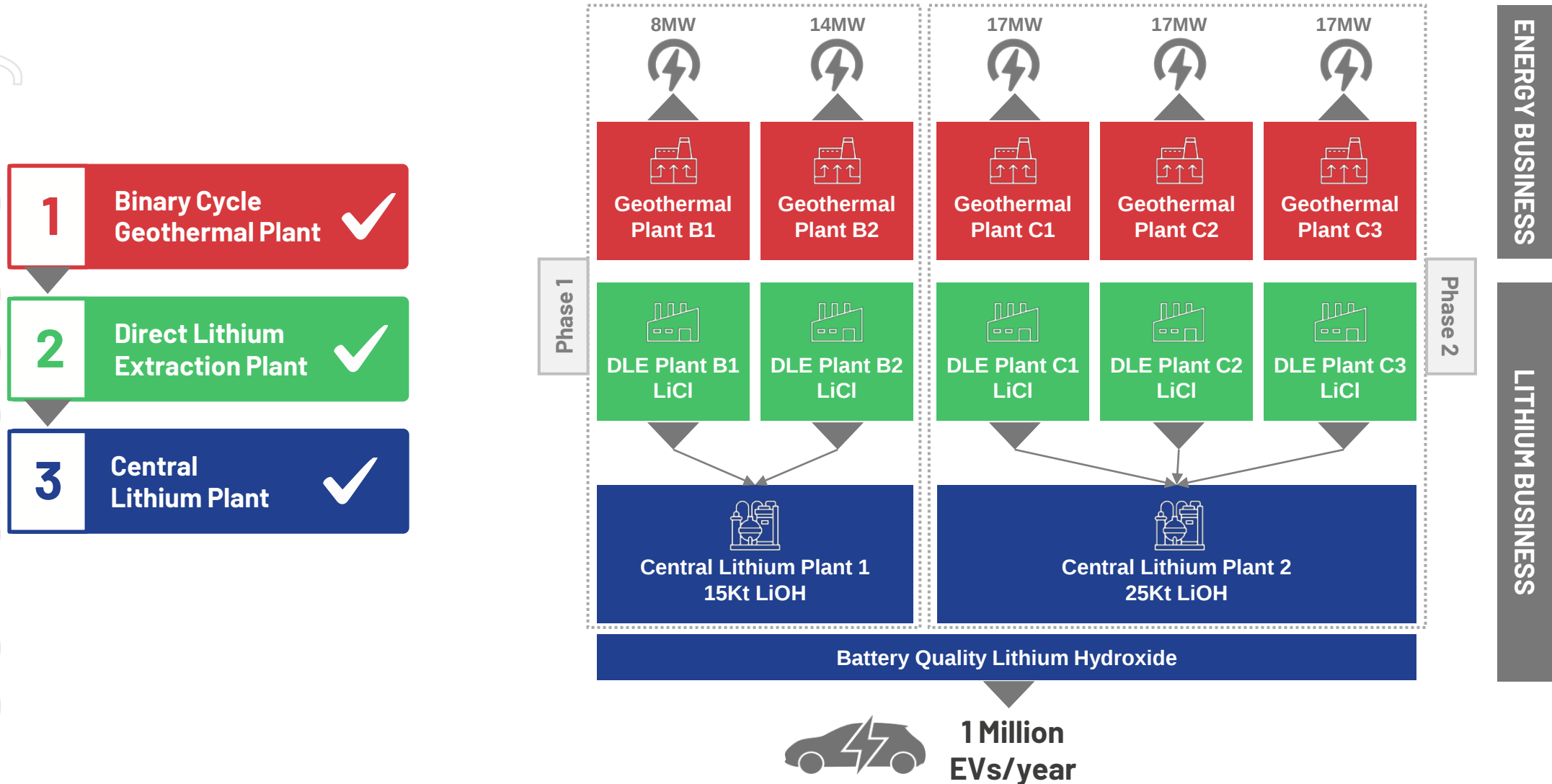


Vulcan draws on naturally occurring, renewable geothermal energy to power the lithium extraction process and create a renewable energy by-product. This uses no fossil fuels, requires very little water and has a tiny land footprint.

Source: Minviro Life Cycle Analysis 2020 & Vulcan Energy's Pre-Feasibility Study

Project Structure: Dual Purpose Renewable Project

Energy Business: Electricity & Heat, Lithium Business: Zero Carbon Lithium®



Project Economics: CAPEX

ENERGY BUSINESS

1 Geothermal Plant

2 geothermal plants:
 • GB1 – 8MW
 • GB2 – 14MW
 Capex: €226M

3 geothermal plants:
 • GC1 – 17MW
 • GC2 – 17MW
 • GC3 – 17MW
 Capex: €438M

5 geothermal plants 74MW
 Capex: €665M



LITHIUM BUSINESS

2 DLE Plant

2 DLE plants:
 • DB1 – 8kt LiOH
 • DB2 – 7kt LiOH
 Capex: €291M

3 DLE plants:
 • DC1 – 8kt LiOH
 • DC2 – 8kt LiOH
 • DC3 – 8kt LiOH
 Capex: €460M

5 DLE Plants
 Capex: €751M



3 CLP

1 Central Lithium Plant
 • CLP1 – 15kt LiOH
 Capex: €182M

1 Central Lithium Plant
 • CLP2 – 25kt LiOH
 Capex: €240M

1 Central Lithium Plant
 • CLP – 40kt LiOH
 Capex: €322M



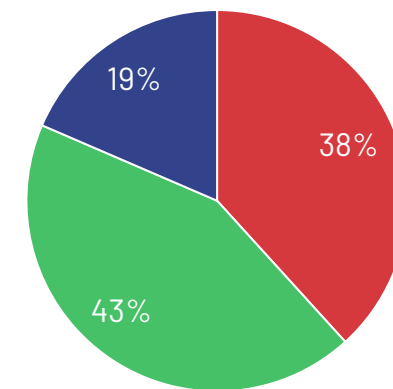
FULL PROJECT

€473M

€700M

€1.1bn

■ Geothermal
 ■ DLE
 ■ CLP

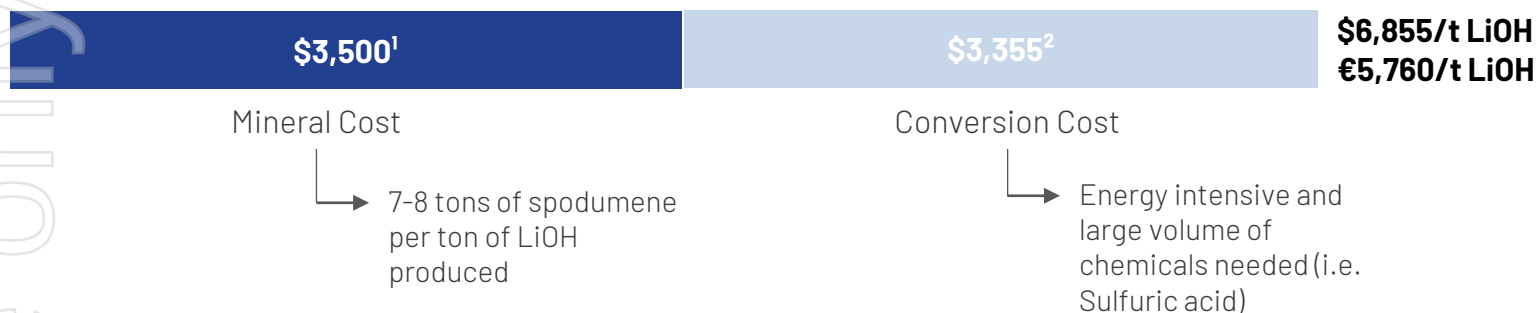


Equivalent per ton of LiOH

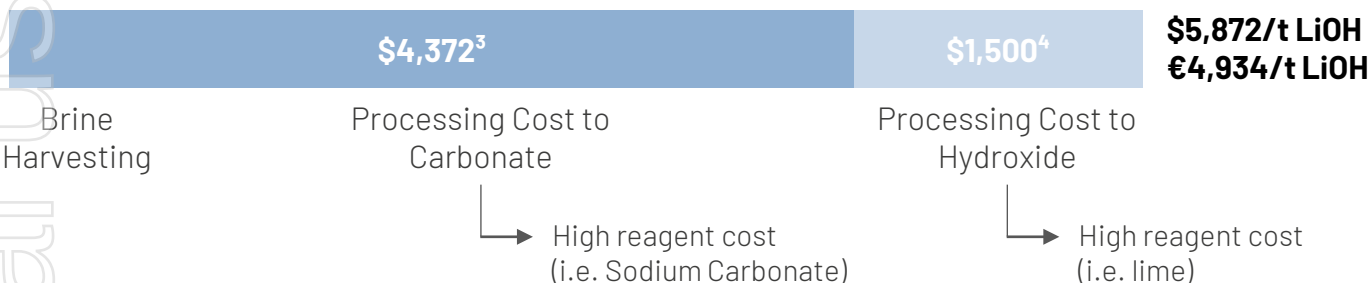
5. Project Economics: OPEX Comparison

Low-cost South American brine and Australian/Chinese mineral conversion vs Vulcan’s process

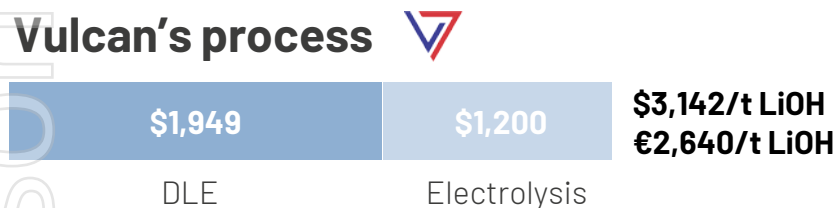
LiOH via hard-rock processing



LiOH via brine processing



Vulcan’s process



¹ Galaxy Resources Annual Report FY 2020, \$502/dmt spodumene FY 2019

² Kidman Resources PFS announcement, October 2018, contingency on Refinery OPEX of 15%. Cash operating cost including royalties.

³ Cash operating costs lithium carbonate, Orocobre 2020 Annual report

⁴ Orocobre 2020 Corporate Presentation – Naraha Lithium Hydroxide plant, Japan



Feedstock

Vulcan’s “feedstock” is low cost and has dual purpose: lithium extraction and energy production in the form of renewable electricity.

Processing

Vulcan uses DLE 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 also uses low-cost energy coming from its geothermal operation.

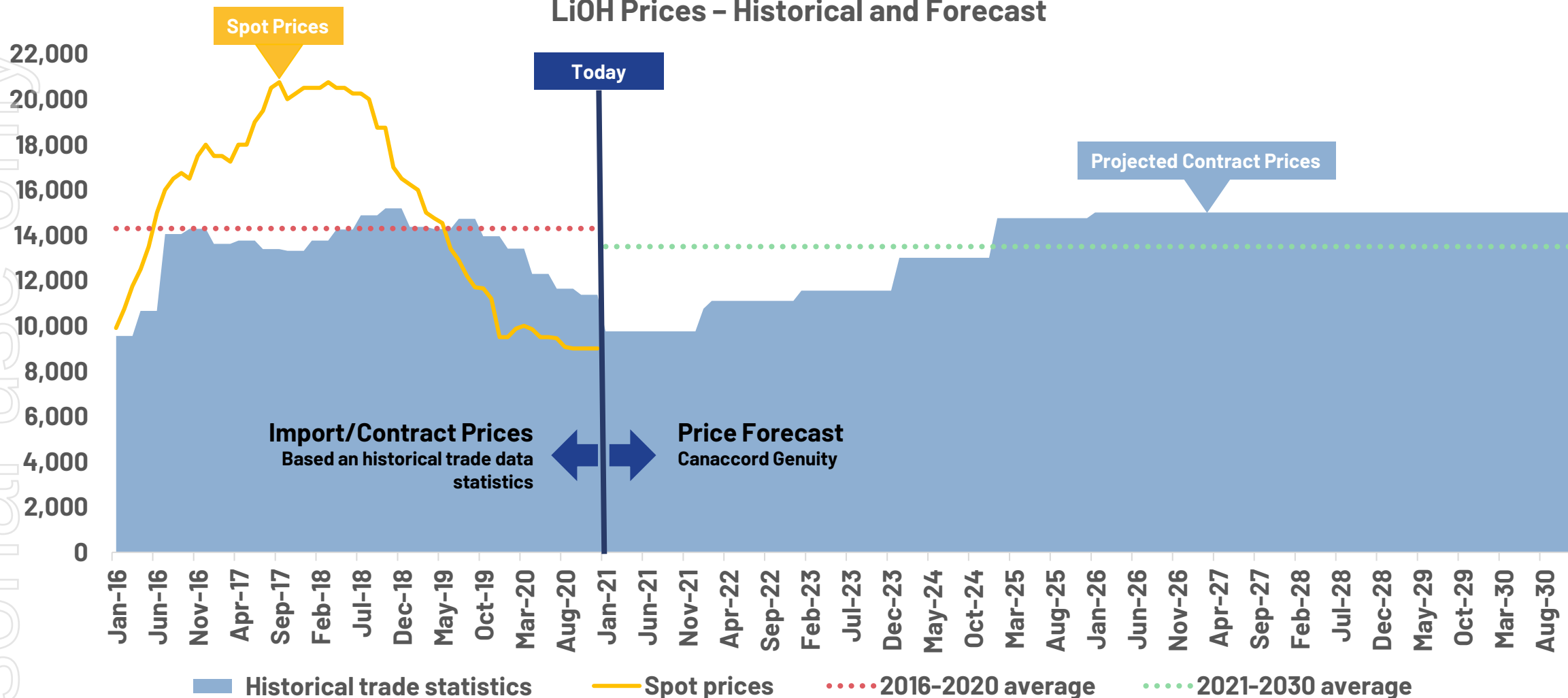
Upgrading

Vulcan uses electrolysis to upgrade chloride into a high purity hydroxide using renewable energy. No heavy reagent usage such as sodium hydroxide or lime.

Project Economics: Lithium Prices – Recovery Mode

Much more stability in global contract prices than in the spot market specific to china

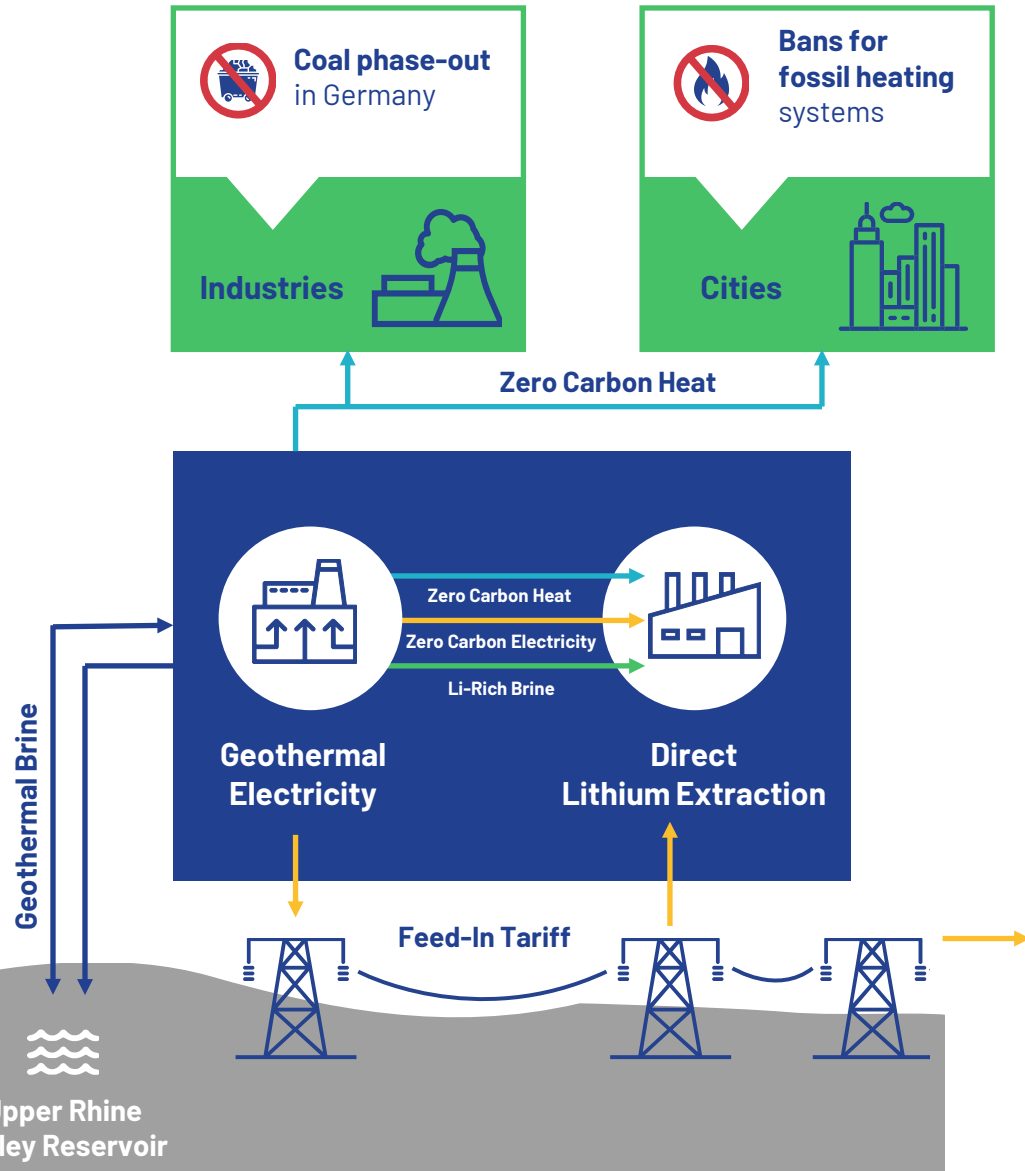
LiOH Prices – Historical and Forecast



Source: Trade statistics compiled from Global Trade Atlas®, Benchmark Minerals, S&P Global, Canaccord Genuity

Project Economics: Energy Revenues

Vulcan's Project is expected to generate dual revenue, from lithium sales geothermal renewable energy



Energy Business Revenues

- **Zero Carbon Heat:** Energy in the form of heat can be sold to a number of public and private customers via pipes, proximity is a requirement
- **Zero Carbon Electricity:** Energy in the form of electricity is sold to the grid. In Germany, geothermal electricity benefits of a Feed-in Tariff guaranteed by the state for 20 years once the project starts, at €25.2c/KWh

Feed-in Tariff
€25.2c
/KWh

Guaranteed
for
20 years

€157M
revenues
per year*

*Based on 74MW capacity

Project Economics: Possible Structures

Full project developed at the same time but separated in two different businesses: Energy and Lithium.

FULL PROJECT - NO PHASING 2024 Start										
ENERGY BUSINESS					LITHIUM BUSINESS					
GB1	GB2	GC1	GC2	GC3	GB1	GB2	GC1	GC2	GC3	
DB1	DB2	DC1	DC2	DC3	DB1	DB2	DC1	DC2	DC3	
CLP					CLP					
40Ktpy LiOH					40Ktpy LiOH					
Revenues €/M/y					500					
Net Op. Cash Fl. €/M/y					394					
NPV Pre-tax €M					2,802					
NPV Post-tax €M					1,897					
IRR Pre-tax					31%					
IRR Post-tax					26%					
Payback (year)					4					
CAPEX €M					1,073					
CAPEX Geo										
CAPEX DLE					751					
CAPEX CLP					322					
OPEX €/KWh or LiOH€/t					2,681					

Phase 1 developed first, separated in two different businesses: Energy and Lithium.

PHASE 1 2024 Start									
ENERGY BUSINESS					LITHIUM BUSINESS				
GB1	GB2	GC1	GC2	GC3	GB1	GB2	GC1	GC2	GC3
DB1	DB2	DC1	DC2	DC3	DB1	DB2	DC1	DC2	DC3
CLP1		CLP2			CLP1		CLP2		
21MW					15Ktpy LiOH				
46					187				
31					140				
155					971				
99					644				
13%					27%				
11%					22%				
4					4				
226					474				
226									
					291				
					182				
0.078					3,201				

Phase 2 developed second, separated in two different businesses: Energy and Lithium.

PHASE 2 2025 Start									
ENERGY BUSINESS					LITHIUM BUSINESS				
GB1	GB2	GC1	GC2	GC3	GB1	GB2	GC1	GC2	GC3
DB1	DB2	DC1	DC2	DC3	DB1	DB2	DC1	DC2	DC3
CLP1		CLP2			CLP1		CLP2		
21MW					15Ktpy LiOH				
111					312				
83					242				
530					1,647				
371					1,111				
18%					32%				
15%					26%				
7					5				
438					700				
438									
					460				
					240				
0.061					2,855				

Notes: Lithium Hydroxide Battery Quality at €12,542 or \$14,925/t

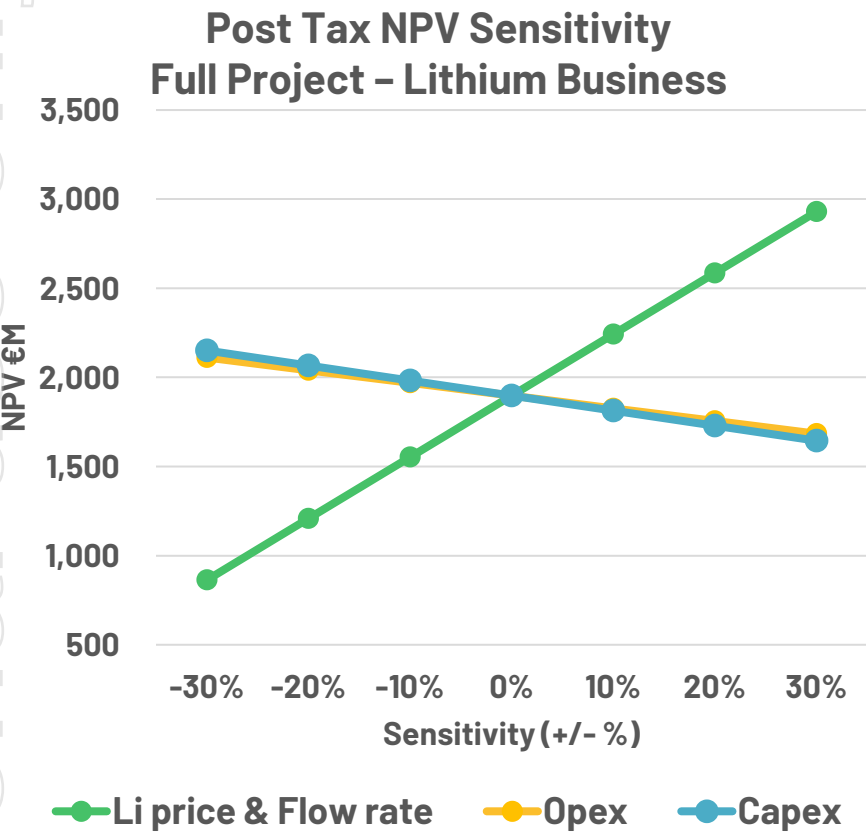
Phase 1 relates to Taro license, Phase 2 to Ortenau license.

Ortenau license is 100% owned by Vulcan. Vulcan has a 51% interest in Taro, with the right to earn at least 80% interest. 22

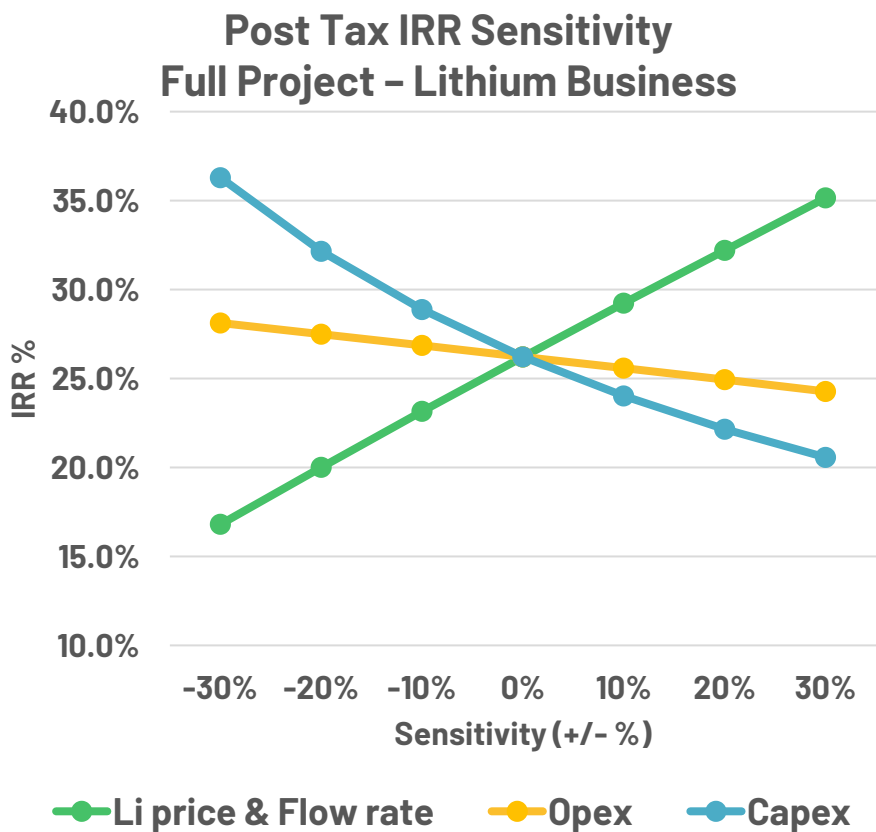
Project Economics: Sensitivities Analysis

Project economics are exceptionally resilient to extreme case scenarios

Full 40kt/y lithium business(DLE&CLP) developed at the same time with no phasing. Not including geothermal.



LITHIUM BUSINESS				
GB1	GB2	GC1	GC2	GC3
DB1	DB2	DC1	DC2	DC3
CLP1		CLP2		
40Ktpy LiOH				
LiOH Price			\$14,925	
LiOH Price			€12,542	
Revenues(€/M/y)			499	
Net Op. Cash Fl.			394	
NPV Pre-tax €M			2,803	
NPV Post-tax €M			1,897	
IRR Pre-tax			31%	
IRR Post-tax			26%	
Payback(year)			4	
CAPEX €M			1,073	
OPEX LiOH €/t			2,681	



Notes: LiOH prices -10%: \$13,498/€11,343, -20%: \$11,998/€10,083, -30%: \$10,498/€8,822

The Vulcan Zero Carbon Lithium® Team: Board

Lithium, renewable energy & project finance experience



Dr. Francis Wedin

**MANAGING DIRECTOR
& FOUNDER-CEO**

- Founder of Vulcan Zero Carbon Lithium® Project. Lithium industry executive since 2014. Previously Executive Director of ASX-listed Exore Resources Ltd.
- Three discoveries of JORC Lithium Resources on two continents including Lynas Find, now part of Pilbara Minerals' Pilgangoora Project in production (ASX:PLS).
- Management & Executive experience in resources sector on four continents; bilingual; dual Swedish & Australian nationality.
- PhD & BSc (Hons) in Exploration Geology & MBA in Renewable Energy.



Dr. Horst Kreuter

**CO-FOUNDER &
EXECUTIVE DIRECTOR –
GEOTHERMAL EXPERT**

- CEO of Geothermal Group Germany GmbH and GeoThermal Engineering GmbH (GeoT). Co-Founder of Vulcan Zero Carbon Lithium™ Project.
- Successful geothermal project development & permitting in Germany and worldwide.
- Widespread political, investor and industry network in Germany and Europe.
- Based in Karlsruhe, local to the project area in the Upper Rhine Valley.



Gavin Rezos

**CHAIR – INVESTMENT
BANKING EXPERT**

- Executive Chair/CEO positions of two companies that grew from start-ups to the ASX 300. Extensive international investment banking experience.
- Investment banking Director of HSBC with senior multi-regional roles in investment banking, legal and compliance functions.
- Currently Chair of Resource and Energy Group and principal of Viaticus Capital.
- Previously Non-Executive Director of Iluka Resources, Alexium International Group and Rowing Australia.



Ranya Alkadamani

**NON-EXECUTIVE DIRECTOR –
COMMUNICATIONS EXPERT**

- Founder of Impact Group International. A communications strategist, focused on amplifying the work of companies that have a positive social or environmental impact.
- Experience in working across media markets and for high profile people, including one of Australia's leading philanthropists, Andrew Forrest and Australia's then Foreign Minister and former Prime Minister, Kevin Rudd.
- Was personally behind the global launches of the Walk Free Global Slavery Index, which reached more than 1 billion people.



Rob Ierace

**CFO / COMPANY
SECRETARY**

- Chartered Accountant and Chartered Secretary with +20 years experience.
- Experience in financial and commercial management including in corporate governance, debt and capital raising, tax planning, risk management, treasury management, insurance, corporate acquisitions and divestment and farm in/farm out transactions.
- BComm degree from Curtin University, a Grad Dip in Applied Corporate Governance from the Governance Institute of Australia and a Grad Cert of Applied Finance and Investment from the Securities Institute of Australia

Management, Technical Team & Consultants

World-renowned geological, chemical & engineering expertise



Dr Katharina Gerber

LITHIUM PROJECT MANAGER

- Awarded her PhD on lithium chemistry magna cum laude (with great distinction) at the University of Bonn.
- Most recently focused on lithium extraction from geothermal brine at the California Energy Commission (CEC). Participates in "California Lithium Valley" initiative.
- Prior to joining the CEC, she conducted research developing and characterizing new electrode materials for lithium-ion batteries.
- Unique combination of expertise in lithium chemistry and lithium extraction from geothermal brine.



Dr. Thomas Aicher

LITHIUM CHEMICAL ENGINEERING LEAD

- Chemical engineering expert part of Vulcan's team in Karlsruhe. 25 years' experience in chemical process innovation and industrial scale-up across a range of industries.
- Awarded a PhD and MSc in Chemical Engineering from the world-renowned Karlsruhe Institute of Technology (KIT). Dr. Aicher was also a visiting scientist at the Massachusetts Institute of Technology (MIT).
- Dr. Aicher was Head of Group at Fraunhofer Institute, one of the most prestigious organizations of applied sciences in Europe, and Process Engineer at Fortune 500 engineering company Fluor Inc.



Vincent Ledoux Pedailles

VICE PRESIDENT – BUSINESS DEVELOPMENT

- Previously Executive Director at Infinity Lithium, where Vincent led the project to become the first to secure EU funding. Vincent was also appointed as a Lithium Expert by the European Commission.
- Previously worked at IHS Markit where he led the lithium and battery materials research team covering the entire industry's supply chain from raw materials to E-mobility.
- Earlier in his career, he worked for Talison Lithium located in Perth, Australia. He also worked for Roskill, an international metals & minerals research and consulting company
- Mr Ledoux-Pedailles is a regular speaker at various industry events across the world



Jochen Rudat

ELECTROMOBILITY EXPERT

- Ex-direct report to Elon Musk
- 10 years' experience at Tesla
- Ex-Telsa Director for Central Europe
- Launched Tesla S, 3, X and Roadster
- Ex-Automobili Pininfarina Chief Sales Officer; Launched Electric Hyper-car
- Experience in the Auto industry including BMW, Porsche and Kia



Alex Grant

DLE TECHNOLOGY EXPERT

- Co-founded Lilac Solutions, one of the world's leading direct lithium extraction technology companies, which raised \$20M from Bill Gates's Breakthrough Energy Ventures.



Thorsten Weimann

GEOTHERMAL PLANT ENGINEERING EXPERT

- Expert in geothermal and drilling technology, with more than 25 years of professional experience.

gec-co
GLOBAL ENGINEERING & CONSULTING

HATCH

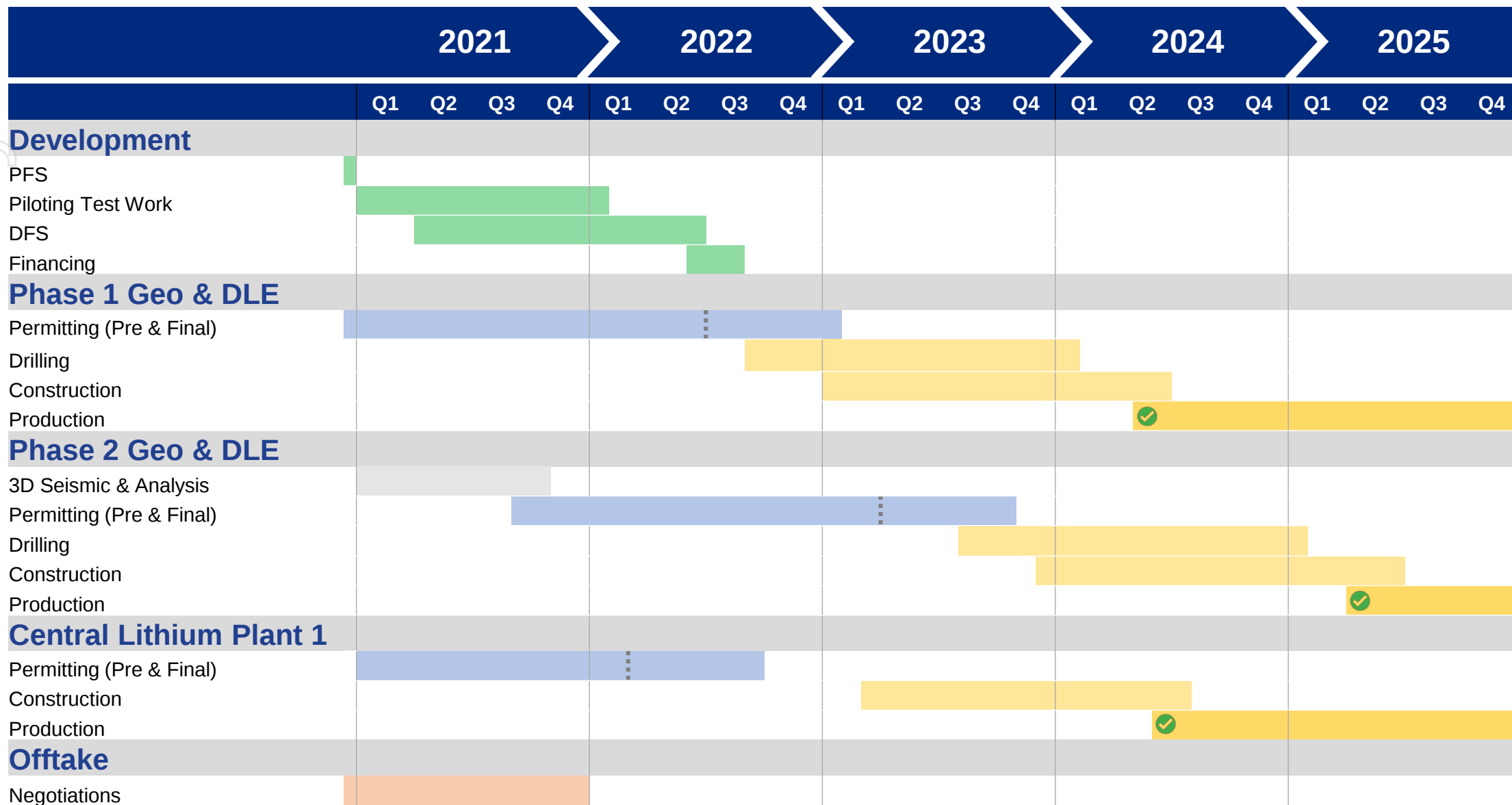
APEX
Geoscience Ltd.

GeoThermal
ENGINEERING

Elke Zimmermann
GEOLOGIST
Dr. Dirk Adelman
SENIOR GEOLOGIST
Dr. Michael Kraml
SENIOR GEOCHEMIST
Dr. Jens Grimmer
SENIOR GEOLOGIST

Tobias Hochschild
SENIOR GEOLOGIST
Prof. Dr. Gerald Ziegenbalg
**CHEMICAL PROCESSING
EXPERT**

Project Timeline



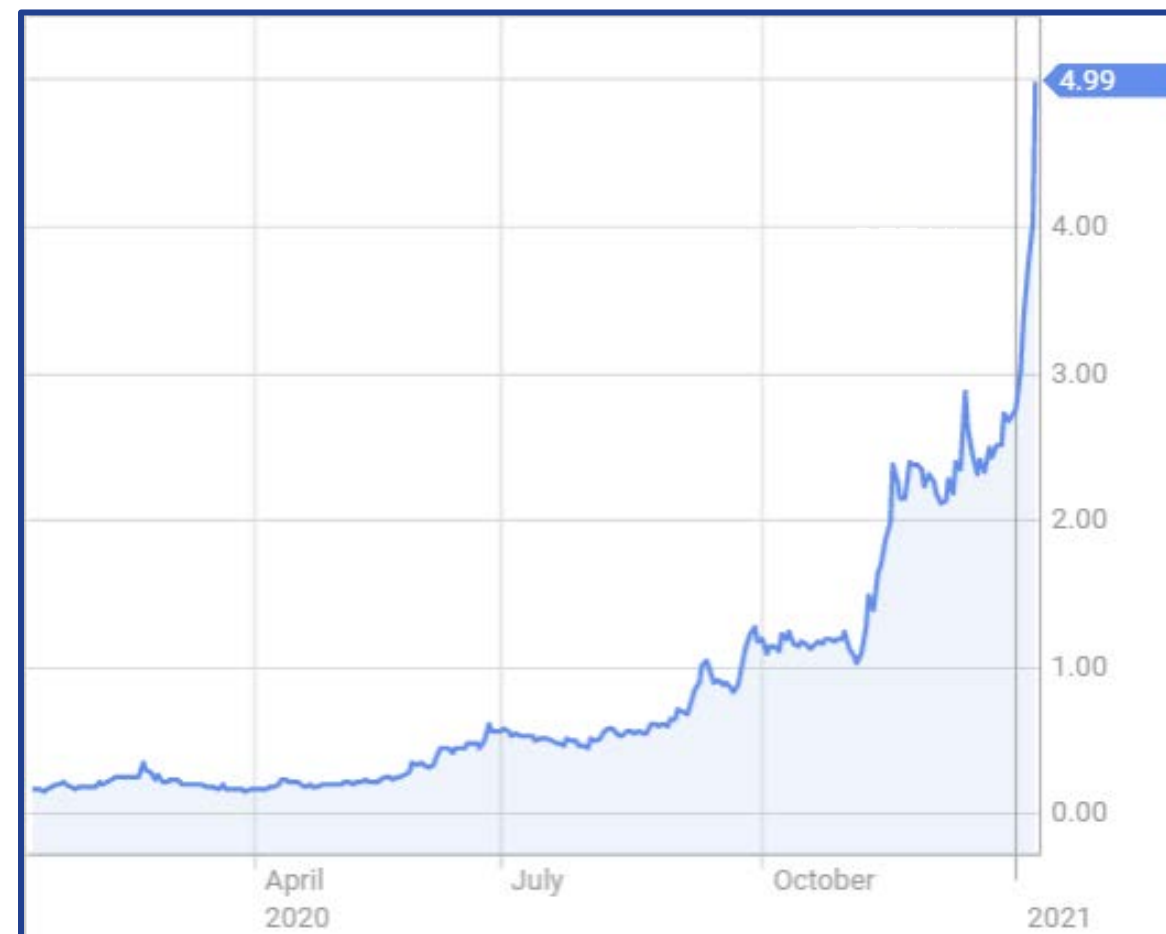
Share Price & Capital Structure

ASX : VUL

Shares on Issue	79,880,997
Options (28.5c expiring in January 2021)	2,541,767
Performance Milestone Shares*	8,800,000
Performance Rights*	12,500,000
Market Capitalization at \$4.99 (undiluted)	~\$399M
Enterprise Value at \$4.99 (undiluted)	~\$393M
Cash Position	~\$5M
Top 20 Shareholders	~51%
Management (undiluted)	~21%

Frankfurt: 6KO

*Refer ASX Announcement 10 July 2019 for further details.



Conclusion



WORLD'S 1ST & ONLY ZERO-CARBON LITHIUM® PROCESS

1

- Purpose-built process to be uniquely Zero Carbon
- Co-generation of geothermal energy from production wells will power lithium extraction
- Negative CO₂/t LiOH H₂O, decarbonising the grid while producing lithium, compared with ~15 tonnes CO₂ for hard-rock



STRONG & RESILIENT PFS ECONOMICS

2

- An approx. 40ktpy Lithium Hydroxide business with a €2.8Bn NPV Pre-tax, 31% IRR, and the lowest OPEX in the world at €2,640/t
- A 74MW renewable geothermal power business with a €0.7Bn NPV Pre-tax, 16% IRR, and an OPEX at €0.066/KWh
- Project economics are resilient to extreme case scenarios



SUPPORTED BY EU FUNDING, REGULATION & INITIATIVES

3

- Agreement signed in May '20 with EU-backed EIT InnoEnergy, the group leading the EBA
- New EU battery regulation supporting sustainable sourcing and banning high CO₂ emitting batteries
- Numerous initiatives put in place in Europe to support the development of lithium production



EUROPE'S LARGEST LITHIUM RESOURCE

4

- JORC Mineral Resource Estimate 15.85Mt LCE Indicated & Inferred
- One of the largest lithium resources in the world
- High Li grades for geothermal brine which has readily available heat & power
- Large enough to be Europe's primary source of battery-quality lithium hydroxide.



LOCATION CENTRE OF FASTEST GROWING MARKET

5

- EU fastest growing lithium market in the world. Unprecedented demand forecast from growth in EVs
- Located in Germany, in the centre of the industry
- Zero local supply of battery quality lithium hydroxide
- Removes dependence on China for this designated critical raw material



LOCAL PARTNERS & WORLD LEADING COLLABORATORS

6

- MoU with German geothermal operators
- Allows for access to producing wells to advance pilot processing



THE RIGHT TEAM FOR THE JOB

7

- Expert multi-disciplinary team local to project area in Germany
- Decades of experience in developing & permitting geothermal brine projects.
- International project finance, lithium market & direct lithium extraction processing expertise



RAPIDLY ADVANCING LITHIUM PROJECT

8

- PFS published in January 2021
- Piloting starting shortly with work in parallel on DFS, permitting and planning
- Targeting short-term production start, in line with lithium supply-demand inflection point.

Appendix

Appendix 1: Vulcan financially supported by the EU

EIT InnoEnergy will marshal its ecosystem and significant EU-wide resources to launch the Zero Carbon Lithium® Project forward:

- Securing project funding, including the use of applicable EU, national or regional grant schemes, and liaising with EU project finance and development banks.
- Driving relationships with European lithium offtakers, aimed at entering into of binding offtake agreements.
- Obtaining and fast-tracking necessary licenses.
- All services are entirely success-based, with no upfront cost to Vulcan.



May '20

Agreement signed with EU-backed body to launch Vulcan Zero Carbon Lithium® Project.


European Commission

 **InnoEnergy**
Knowledge Innovation Community

 **European Investment Bank**

Appendix 2: Vulcan to offset CO2 penalties for automakers

CO₂ emissions linked to lithium production

Hard Rock Mining



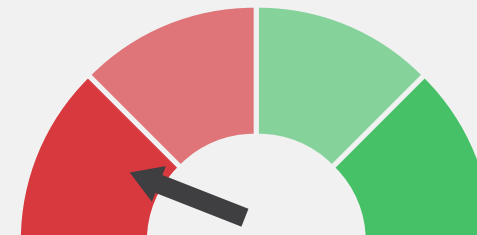
675kg CO₂ per EV
From Lithium Production



VW's target: **28M EVs** by 2028



19M tons of CO₂
From Lithium Production



Carbon Footprint

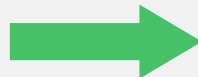
Penalties currently only target vehicles' emissions but not their supply chain.

This is likely to change shortly with new EU legislation and lead to **heavy penalties** if carmakers are not sourcing greener raw materials.

Vulcan Zero Carbon



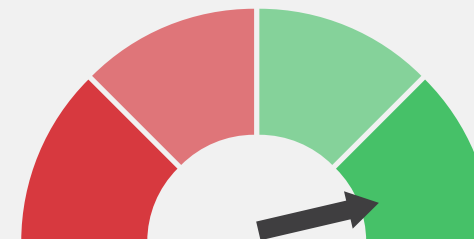
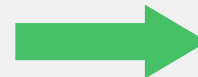
-238kg CO₂ per EV
From Lithium Production



VW's target: **28M EVs** by 2028



-7M tons of CO₂
From Lithium Production



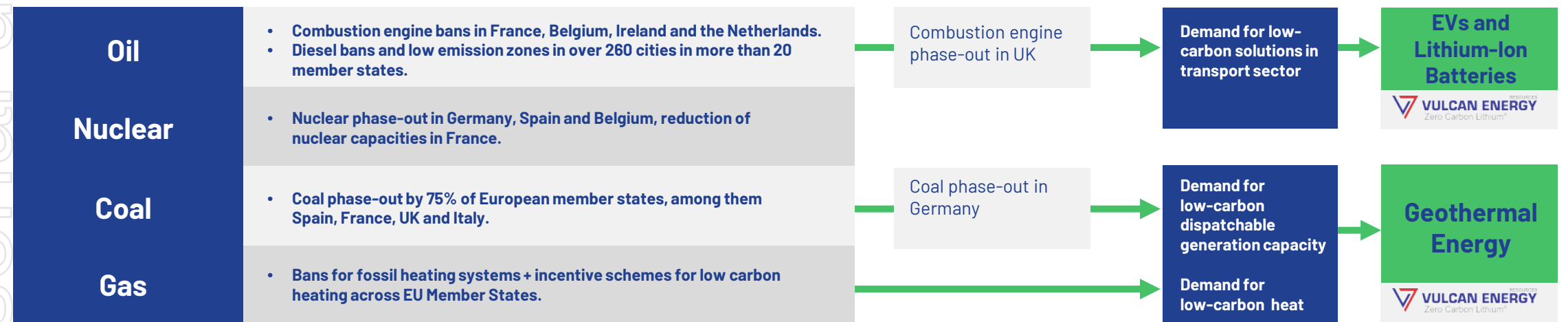
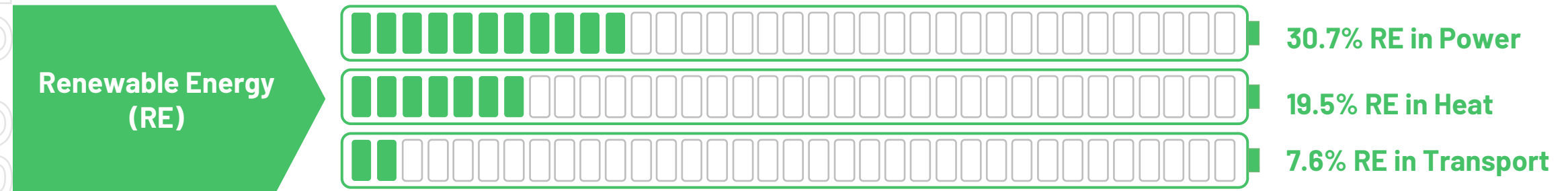
Carbon Footprint

Vulcan's Zero Carbon Lithium® offers a **negative carbon footprint** that will help automakers to reach their sustainability targets by **offsetting CO₂** generated by the rest of their supply chain.

Appendix 3: The fossil-nuclear era in Europe is coming to an end



Europe is aiming for carbon neutrality, but the EU's energy transition is far from being complete:



Appendix 4: Information for slide 10 & 11

Company	Code	Project	Stage	Resource Category	Resources M tonnes	Resource Grade (Li2O)	Contained LCE Tonnes	Information Source
European Metals	ASX: EMH	Cinovec	PFS Complete	Indicated & Inferred	695.9	0.42	7.22	Corporate Presentation Released October 2020
Rio Tinto	ASX: RIO	Jadar	PFS Complete	Indicated & Inferred	139.3	1.78	6.12	ASX Announcement Released 10 December 2020
Infinity Lithium	ASX: INF	San Jose	PFS Complete	Indicated & Inferred	111.3	0.61	1.68	ASX Announcement Released 22 August 2019
Savannah Resources	AIM: SAV	Barroso	DFS Underway	Measured, Indicated & Inferred	27.0	1.00	0.71	Corporate Presentation Released November 2020
Company	Project		Stage	Resource Category	Brine Volume	Resource Grade	Contained LCE Tonnes	Information Source
Controlled Thermal Resources	Hell's Kitchen		PEA Completed	Inferred	Unknown	181mg/l Li	2.7	Company Website
E3 Metals	Clearwater, Rocky and Exshaw		PEA Completed	Inferred	5.5 billion m ³	74.6mg/l Li	2.2	PEA released in December 2020

Elders, W., Cohen, L., (1983) The Salton Sea Geothermal Field, California, Technical Report. Institute of Geophysics and Planetary Physics, University of California
 GeORG (2013) Projektteam Geopotenziale des tieferen Untergrundes im Oberrheingraben Fachlich-Technischer Abschlussbericht des INTERREG-Projekts GeORG. Teil 2: Geologische Ergebnisse und Nutzungsmöglichkeiten
 Pauwels, H., Fouillac, C., Brach M. (1989) Secondary production from geothermal fluids processes for Lithium recovery 2nd progress report. Bureau de Recherches Geologiques et Minieres Service Geologique National
 Pauwels, H. and Fouillac, C. (1993) Chemistry and isotopes of deep geothermal saline fluids in the Upper Rhine Graben: Origin of compounds and water-rock interactions. Geochimica et Cosmochimica Acta Vol. 57, pp. 2737-2749
 Sanjuan, B., Millot, R., Innocent, C., Dezayes, C., Scheiber, J., Brach, M., (2016) Major geochemical characteristics of geothermal brines from the Upper Rhine Graben granitic basement with constraints on temperature and circulation. Chemical Geology 428 (2016) 27-47

The Company is not aware of any new information or data that materially affects the information contained in the above sources or the data contained in this announcement

Thank You