VULCAN ENERGY RESOURCES
Zero Carbon Lithium®

# Zero Carbon Lithium®

## PRE-FEASIBILITY STUDY

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To achieve the outcomes of this 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.

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## 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.

# Table Of Contents




3D visualisation of one of Vulcan's Geothermal and DLE

# 1. Introduction: 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

## 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

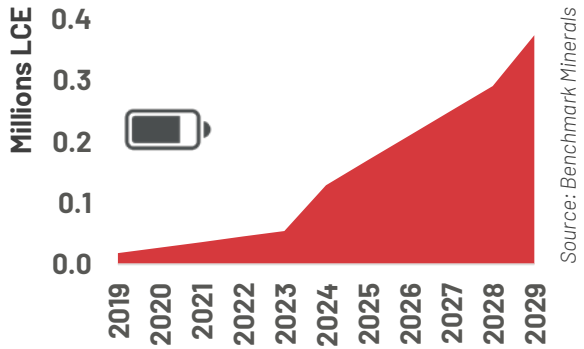
Policy:
- Creating of the European Battery Alliance
- Lithium declared as Critical Raw Material
- EU funds support selected lithium projects

## HIGH CARBON FOOTPRINT OF EXISTING SUPPLY CHAIN

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

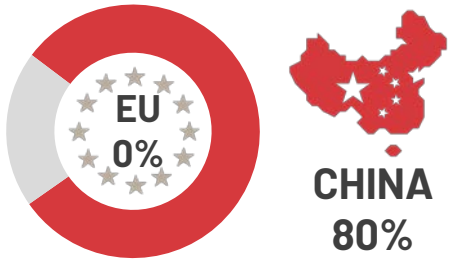
Policy:
- EU's new battery passport to ensure responsible mineral sourcing
- EIB lending policy supporting projects relating to the supply of critical raw materials needed for low-carbon technologies

### LIOH DEMAND IN EUROPE




*Source: Benchmark Minerals*

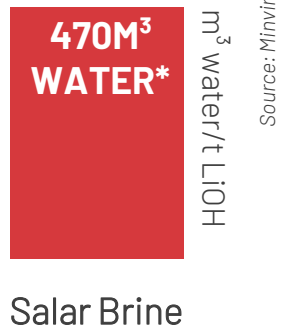
### CHINESE CONTROL – LIOH SUPPLY




*Source: Benchmark Minerals*

### CARBON INTENSITY


### WATER DEPLETION




*Source: Minviro*

# 1. Introduction: Vulcan – Zero Carbon Lithium®

World-first Zero Carbon Lithium® Project

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

Agreement with German geothermal operators

Geothermal & DLE in Germany

Largest JORC lithium Resource in Europe

Team of world leading experts

Dual revenue Green energy & lithium

Potential for very low OPEX operation

Project financially supported by the EU

## LITHIUM BUSINESS

**€2.8Bn NPV[1] Pre-tax**

**31% IRR[1] Pre-tax**

**40Ktpy LiOH[1]**

**€474M starting CAPEX[2]**

**€2,640/t LiOH OPEX[3]**

## ENERGY BUSINESS

**€0.7Bn NPV[4] Pre-tax**

**16% IRR[4] Pre-tax**

**74MW Power**

**€226M starting CAPEX[2]**

**€0.066/KWh OPEX[4]**

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

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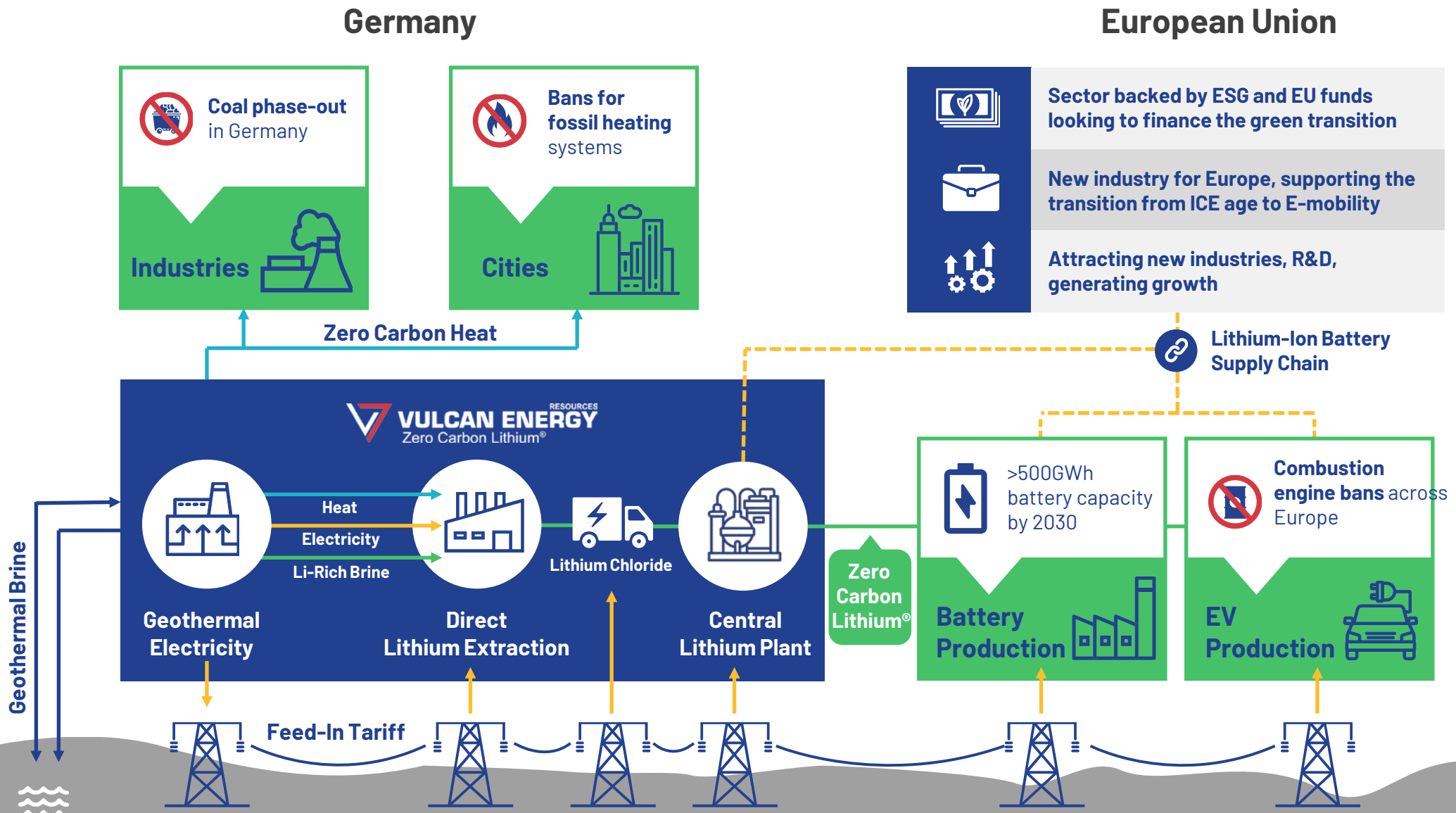
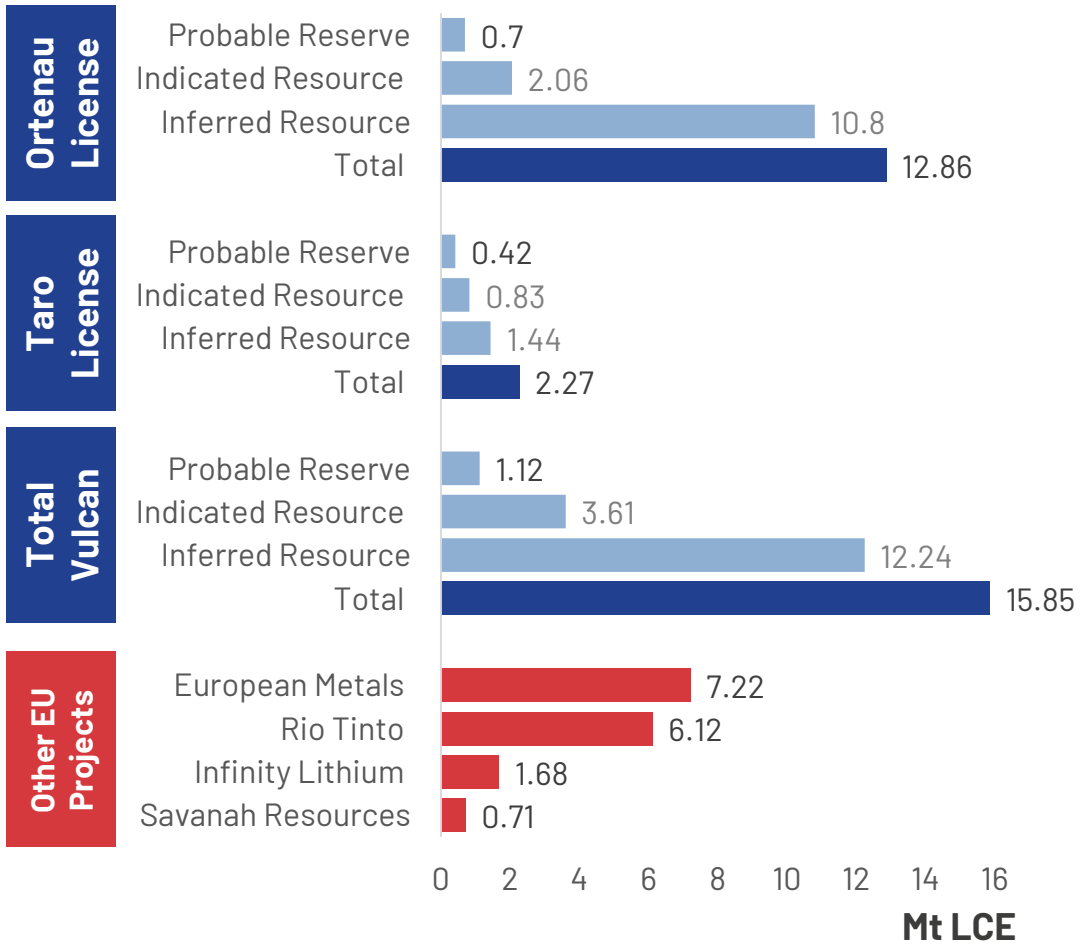
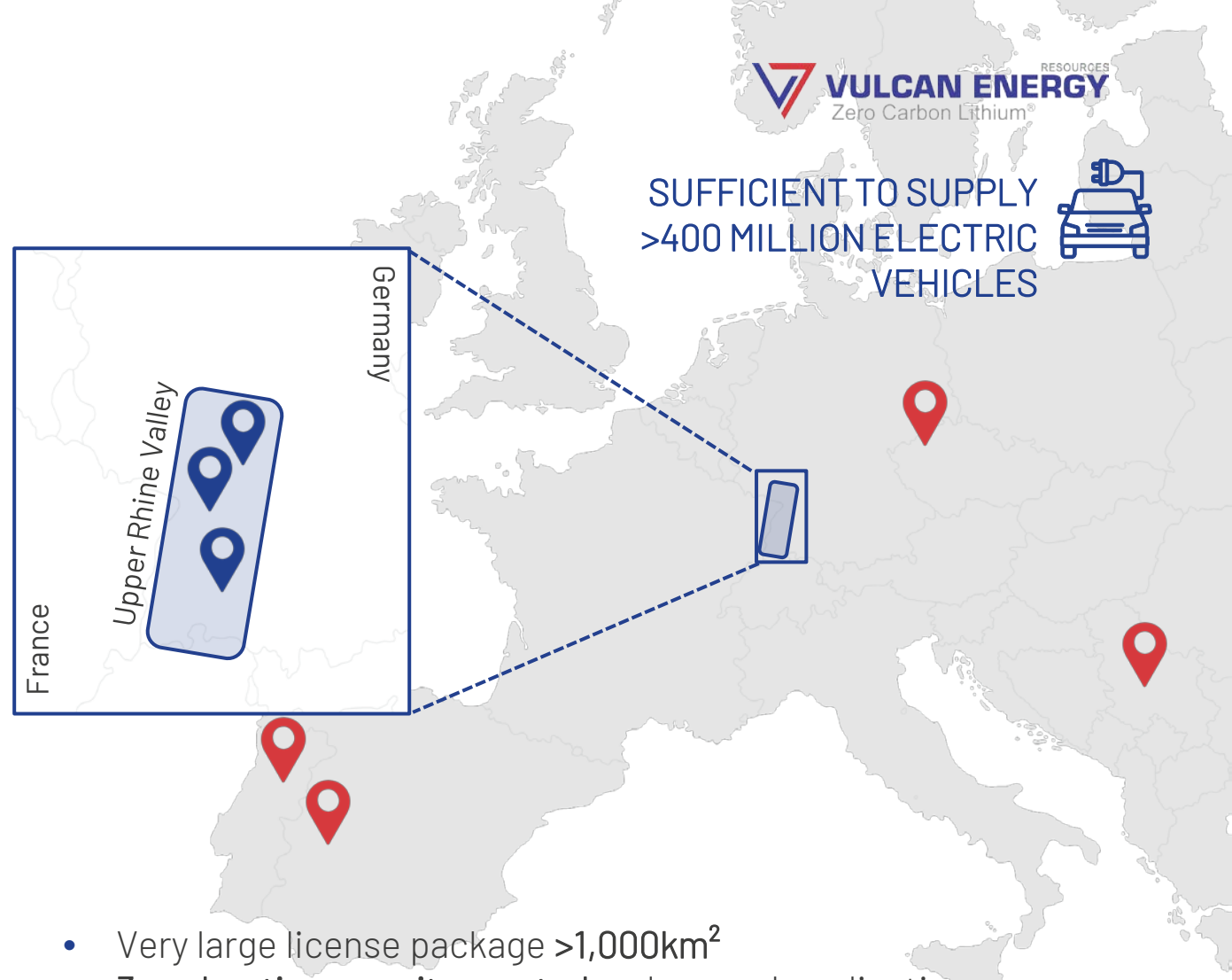
# 1. Introduction: Vulcan's Renewable Energy & Lithium Project



# 2. Project Resource



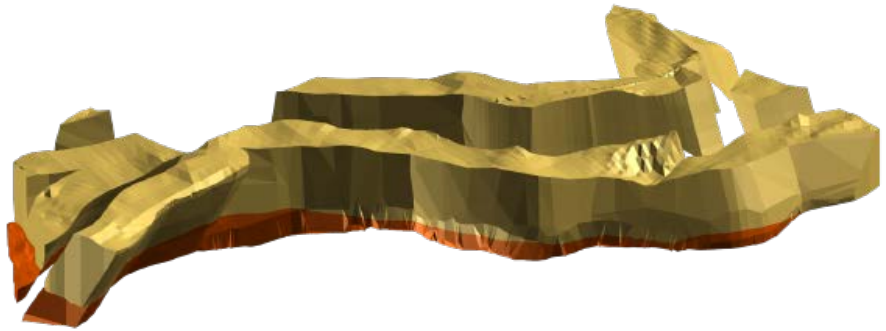




- Very large license package >1,000km²
- **3 exploration permits granted** and several applications
- Largest lithium resource in Europe: **15.85Mt LCE**

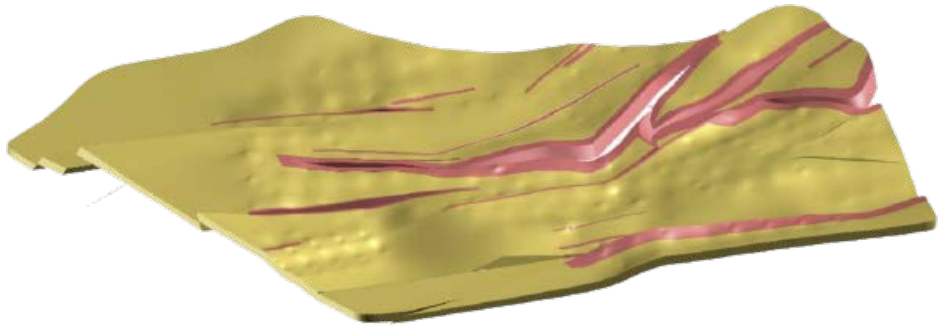
Notes: Vulcan's URVP Li-Brine resource and reserve area in Europe. Mineral resources are not mineral reserves and do not have demonstrated economic viability.
The preceding statements of Reserves conforms to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (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 1

# 2.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



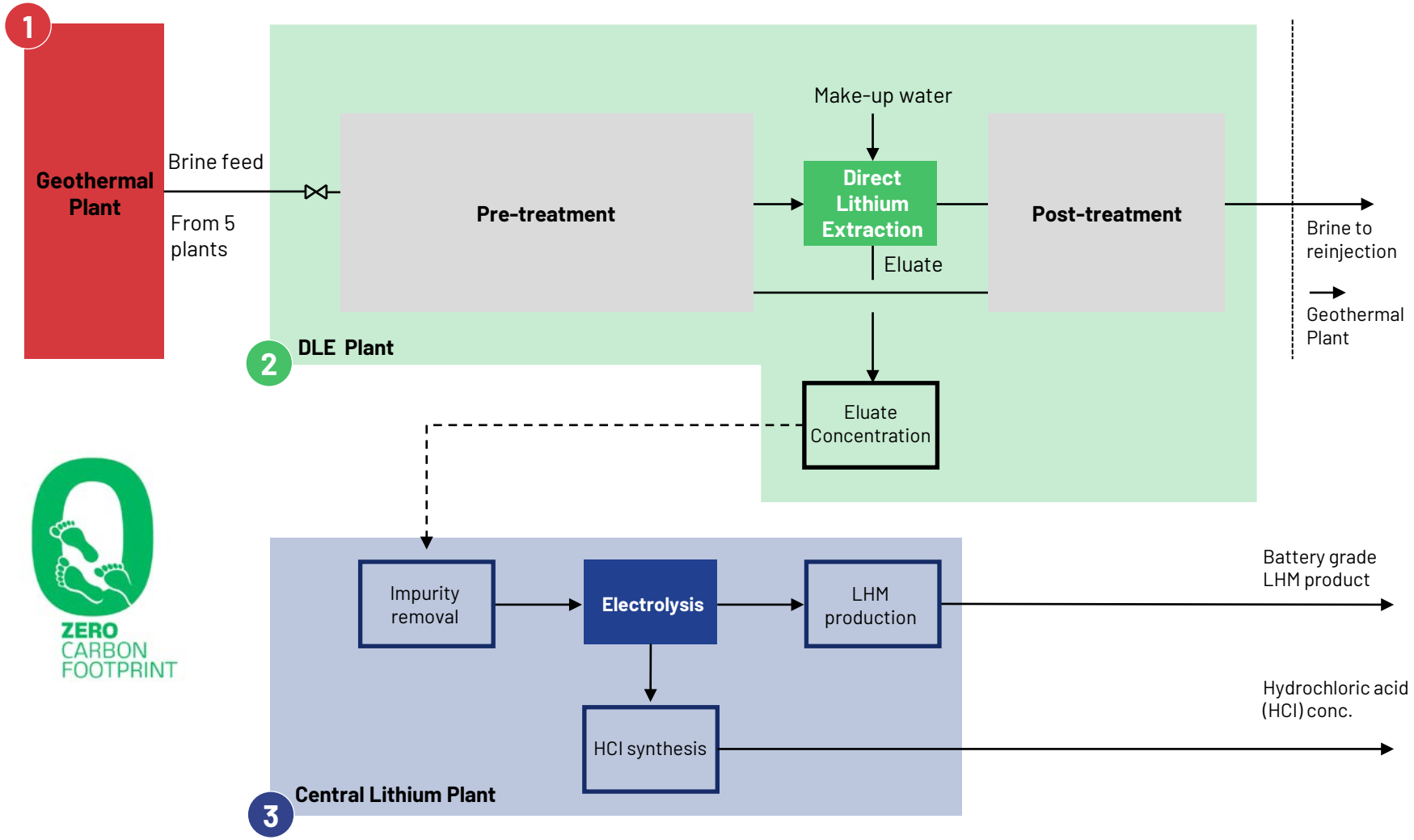
**Snapshot 3D geological model from 2D seismic data in the Ortenau license**
Geothermal and DLE plants C1, C2 & C3
12.86Mt LCE Resource



# 3. Production Process: Full 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

**Vulcan has IP protection around flowsheet**



# 3.Production Process: : Geothermal and DLE Connection

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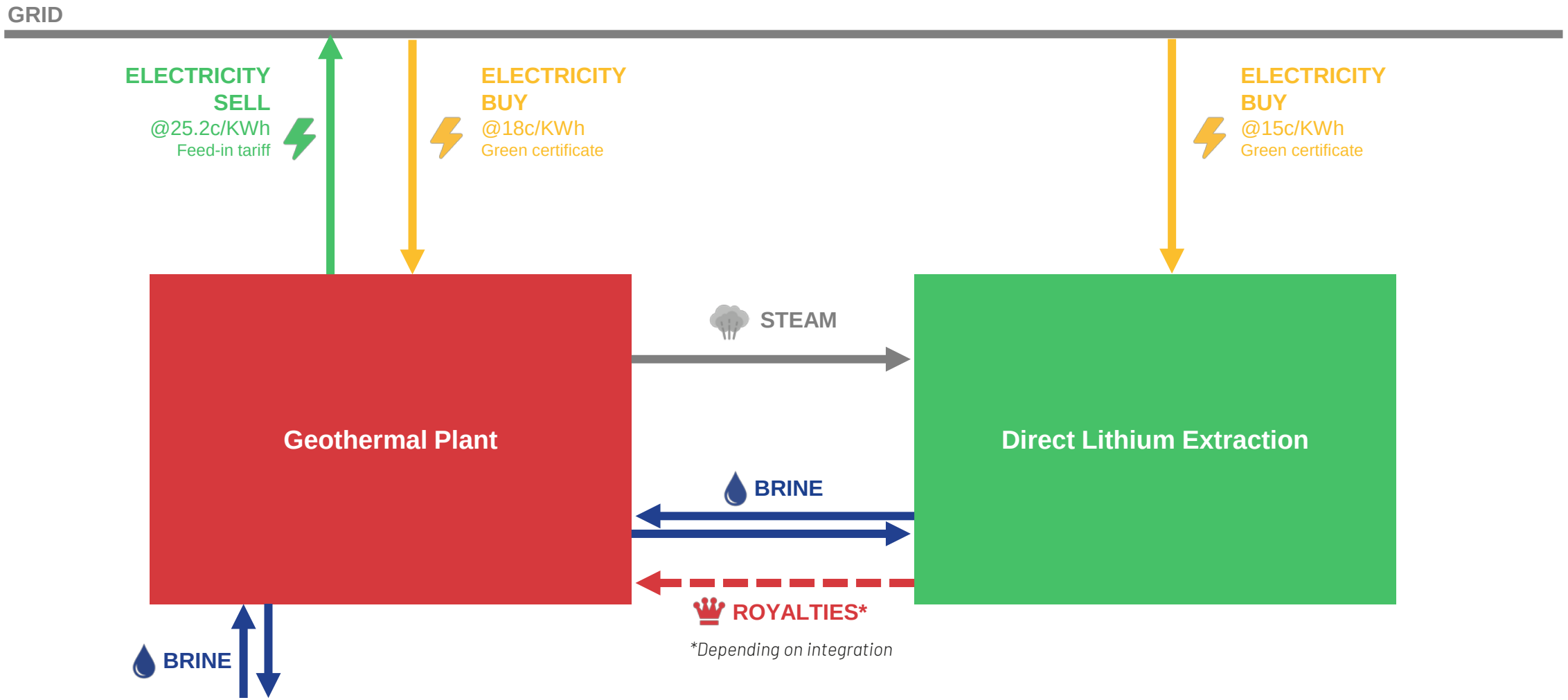
## Connections in between a geothermal, DLE plant, and the grid



# 3.Production Process: Process Flowsheet

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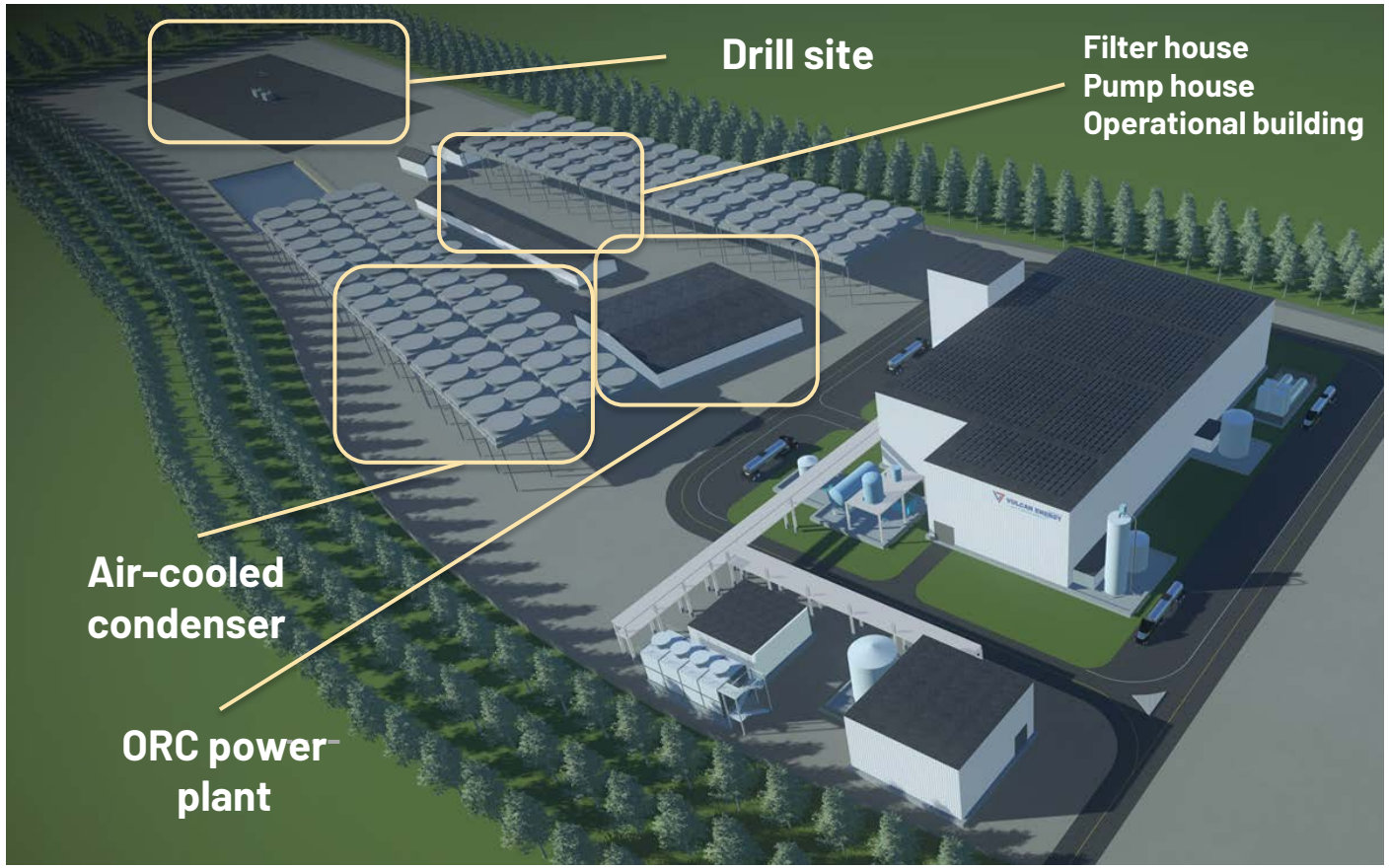
**1** **Binary Cycle Geothermal Plant** ✓



# 3.Production Process: Process Flowsheet

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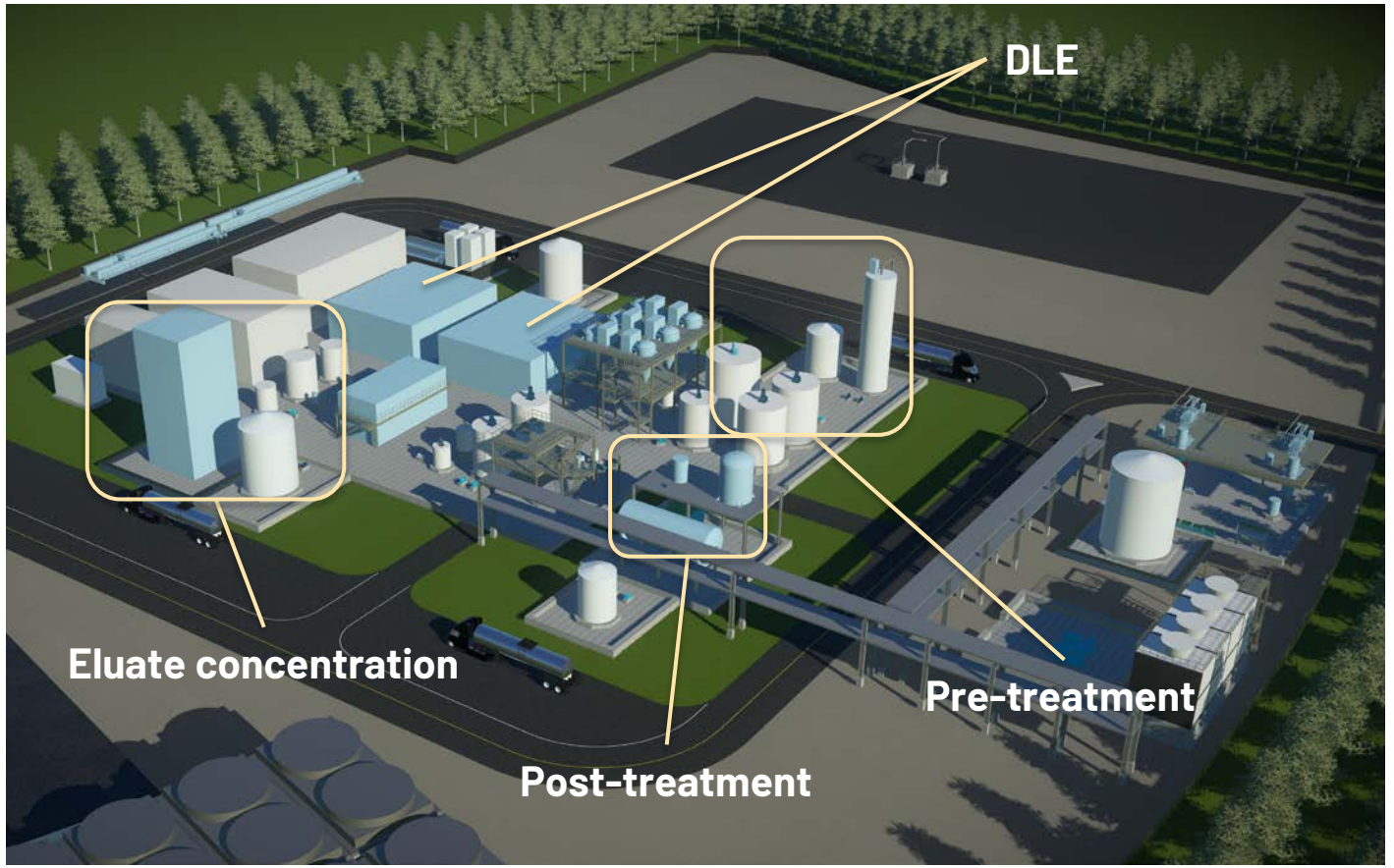
**2** **Direct Lithium Extraction Plant** ✓



# 3.Production Process: Process Flowsheet

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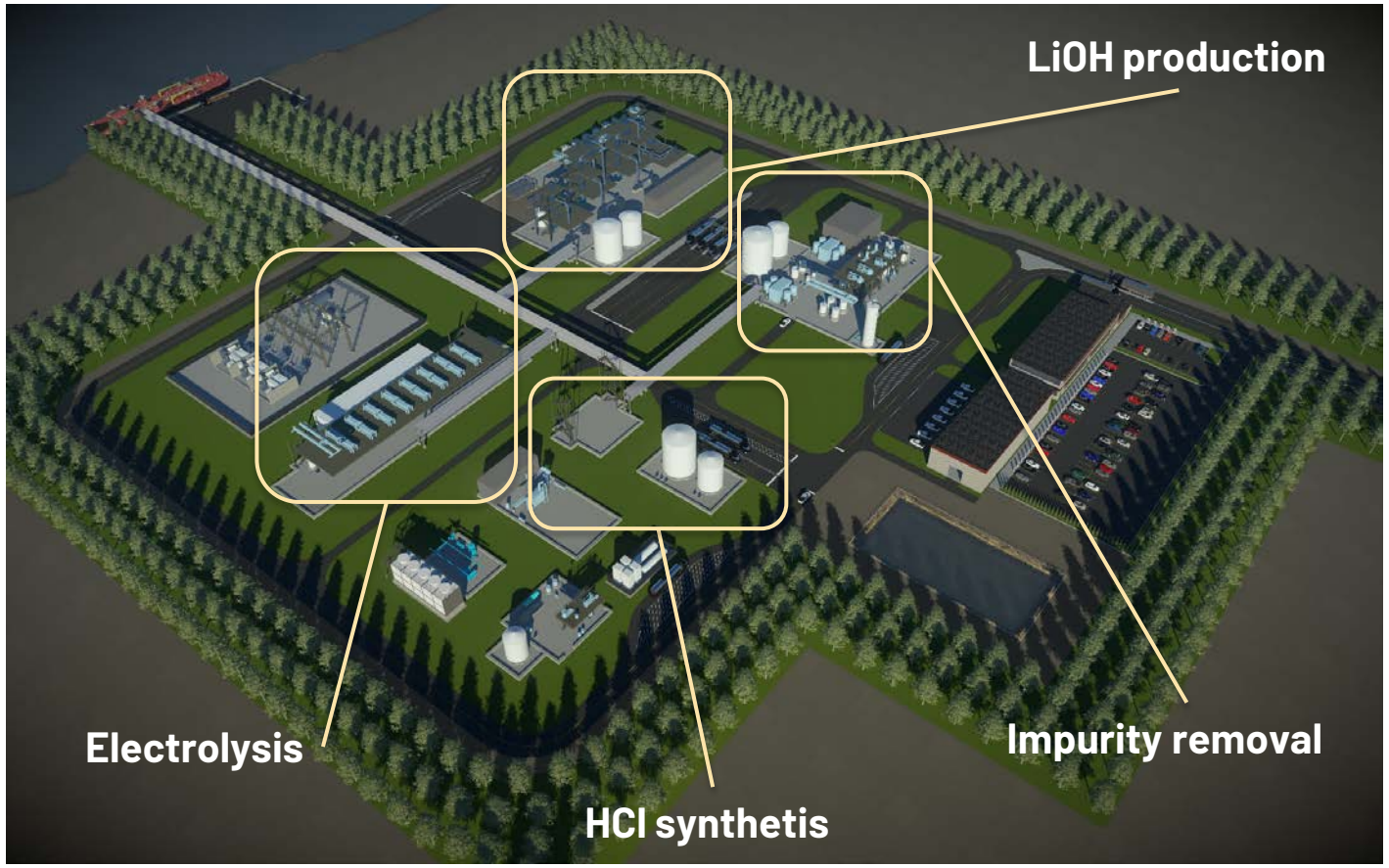
**3 Central Lithium Plant** ✓



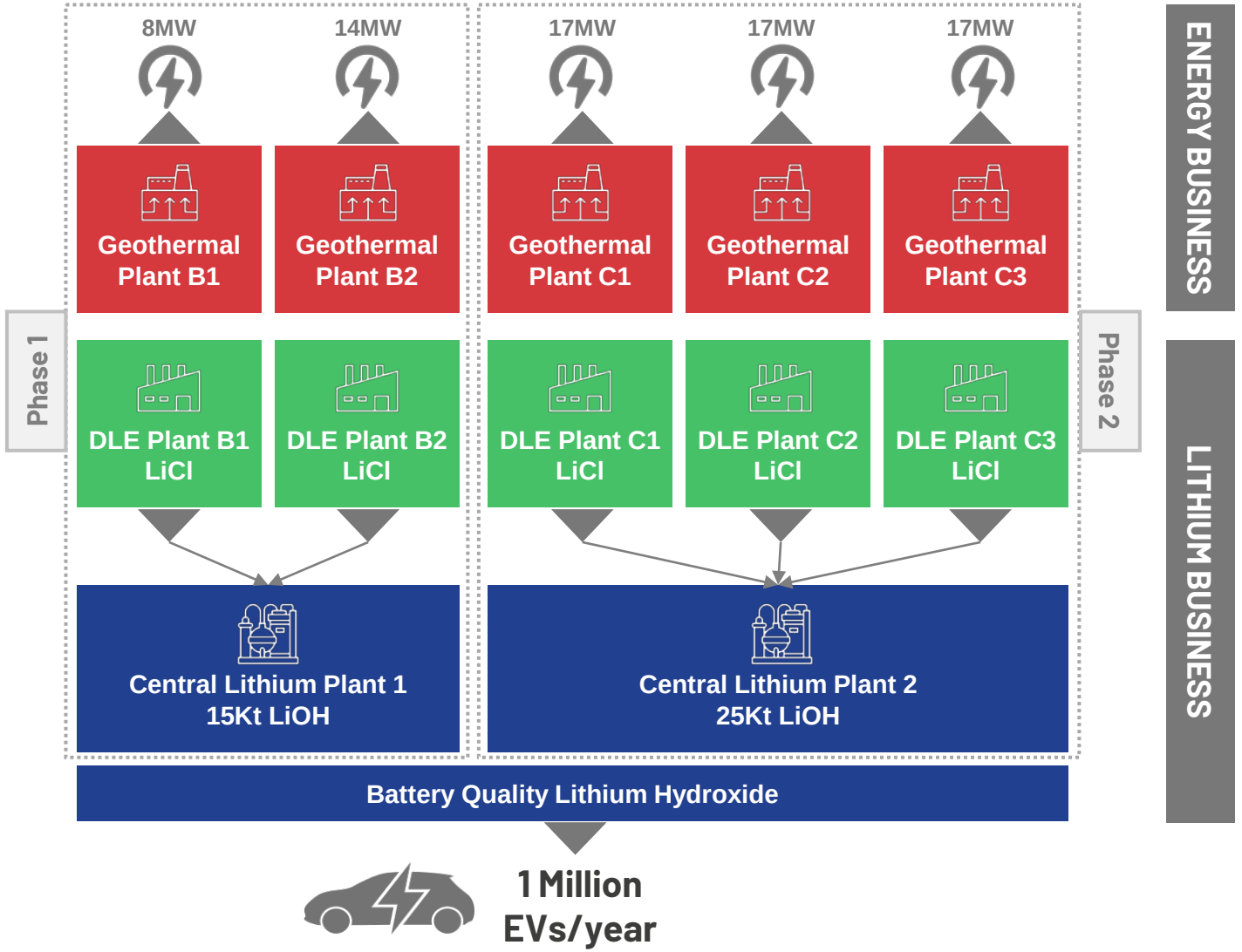
# 4. Project Structure: Dual Purpose Renewable Project

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

1 Binary Cycle Geothermal Plant ✓

2 Direct Lithium Extraction Plant ✓

3 Central Lithium Plant ✓



# 4.Project Structure: Dual Purpose Renewable Project

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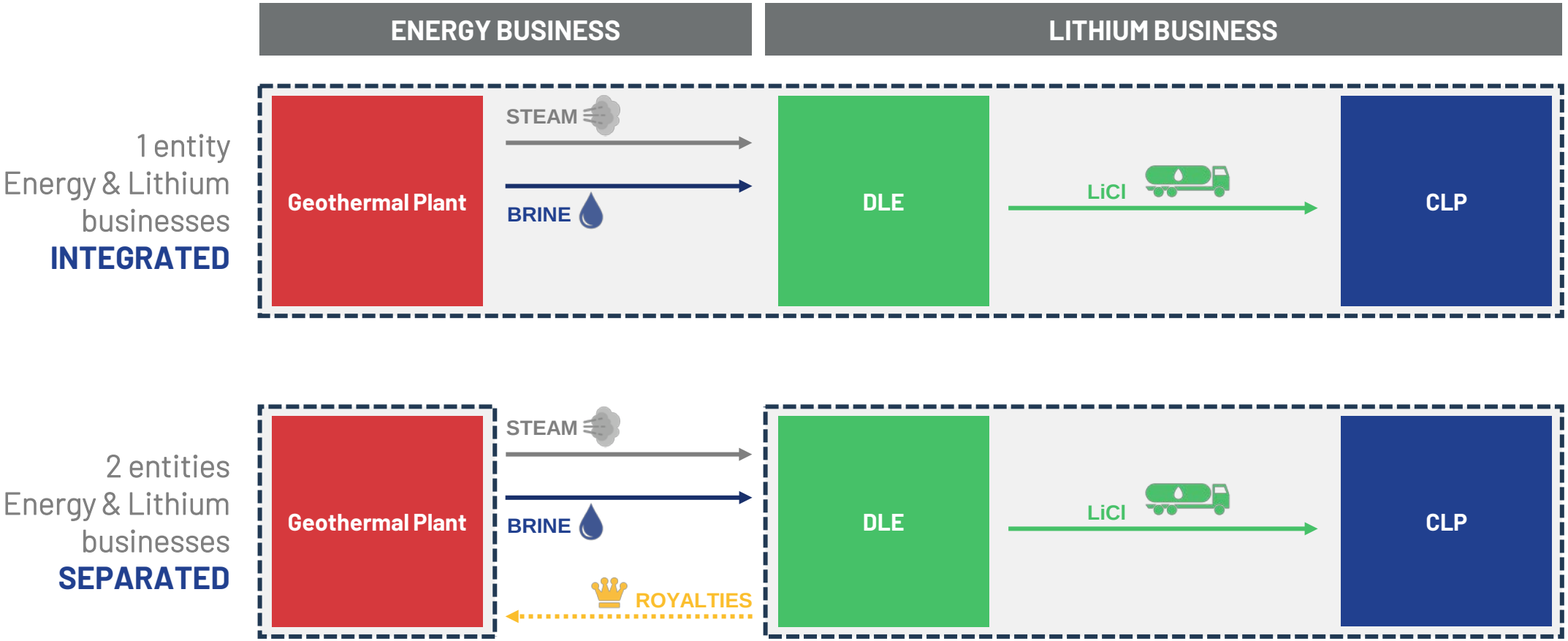
Zero Carbon Lithium®



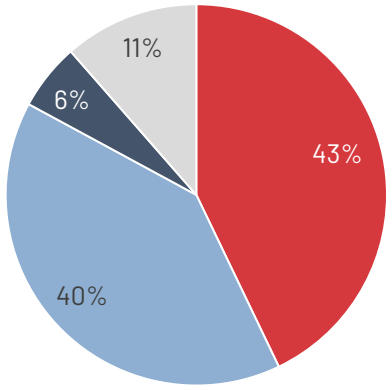
# 5.Project Economics: CAPEX

ENERGY BUSINESS

LITHIUM BUSINESS

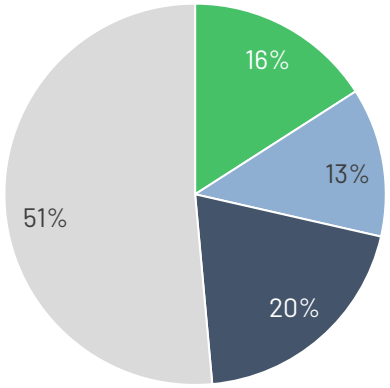
**Geothermal Plant[1]** → **DLE Plant[1]** → **Central Lithium Plant[2]** → **Full Project**

- Power Plant
- Drilling Costs
- Contingency
- Others



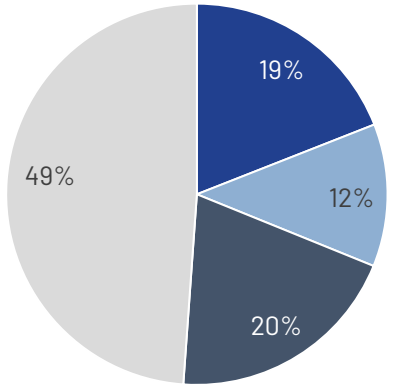

**CAPEX**
**€133M per plant**

- Direct Lithium Extraction
- Brine Purification
- Contingency
- Others



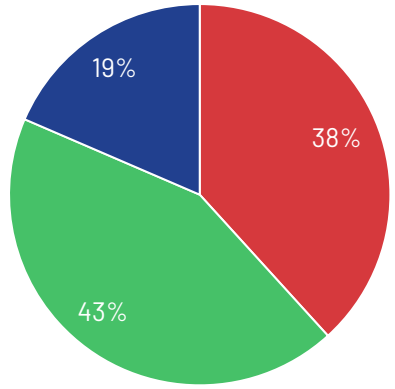

**CAPEX**
**€150M per plant**

- Electrolysis
- Crude LHM Crystallization
- Contingency
- Others




**CAPEX**
**€322M per plant**

- Geothermal
- DLE
- CLP



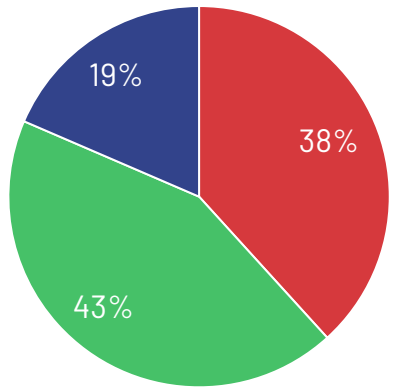

**Equivalent per ton of LiOH**

[1]Average per plant, [2]Full 40Kt capacity built at the same time

# 5.Project Economics: CAPEX

| | ENERGY BUSINESS | LITHIUM BUSINESS | | |
|---|---|---|---|---|
| | 1 Geothermal Plant | 2 DLE Plant | 3 CLP | |
| PHASE 1 2024 Start | 2 geothermal plants:<br>• GB1 – 8MW<br>• GB2 – 14MW<br>Capex: €226M | 2 DLE plants:<br>• DB1 – 8kt LiOH<br>• DB2 – 7kt LiOH<br>Capex: €291M | 1 Central Lithium Plant<br>• CLP1 - 15kt LiOH<br>Capex: €182M | €473M |
| PHASE 2 2025 Start | 3 geothermal plants:<br>• GC1 – 17MW<br>• GC2 – 17MW<br>• GC3 – 17MW<br>Capex: €438M | 3 DLE plants:<br>• DC1 – 8kt LiOH<br>• DC2 – 8kt LiOH<br>• DC3 – 8kt LiOH<br>Capex: €460M | 1 Central Lithium Plant<br>• CLP2 - 25kt LiOH<br>Capex: €240M | €700M |
| FULL PROJECT NO PHASING 2024 Start | 5 geothermal plants 74MW<br>Capex: €665M | 5 DLE Plants<br>Capex: €751M | 1 Central Lithium Plant<br>• CLP – 40kt LiOH<br>Capex: €322M | €1.1bn |

FULL PROJECT




Equivalent per ton of LiOH

# 5.Project Economics: OPEX - Integrated Business

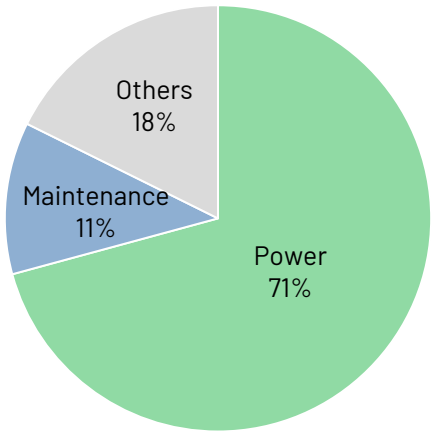
ENERGY BUSINESS

LITHIUM BUSINESS

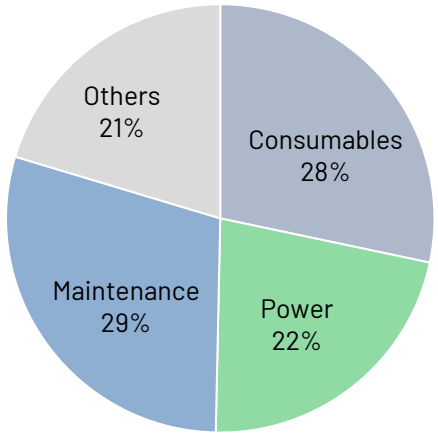
Geothermal Plant → DLE Plant → Central Lithium Plant → Full Stage 1

Steam and brine from the geothermal plant received at no cost

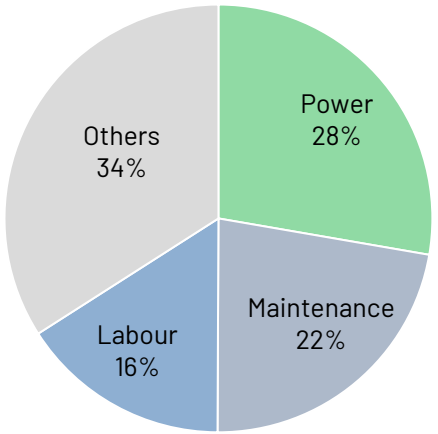
Lithium chloride received at no cost



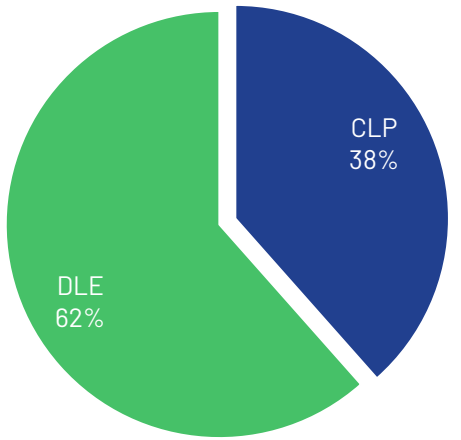

OPEX/KWh: €0.066




OPEX/t LiOH: €1,630/t




OPEX/t LiOH: €1,010/t




OPEX/t LiOH: €2,640/t

# 5. Project Economics: OPEX Comparison

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

### LiOH via hard-rock processing


**$6,855/t LiOH**
**€5,760/t LiOH**

Mineral Cost
- 7-8 tons of spodumene per ton of LiOH produced

Conversion Cost
- Energy intensive and large volume of chemicals needed (i.e. Sulfuric acid)

### LiOH via brine processing


**$5,872/t LiOH**
**€4,934/t LiOH**

Brine Harvesting

Processing Cost to Carbonate
- High reagent cost (i.e. Sodium Carbonate)

Processing Cost to Hydroxide
- High reagent cost (i.e. lime)

### Vulcan's process


**$3,142/t LiOH**
**€2,640/t LiOH**

DLE | Electrolysis

ZERO CARBON FOOTPRINT

[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.

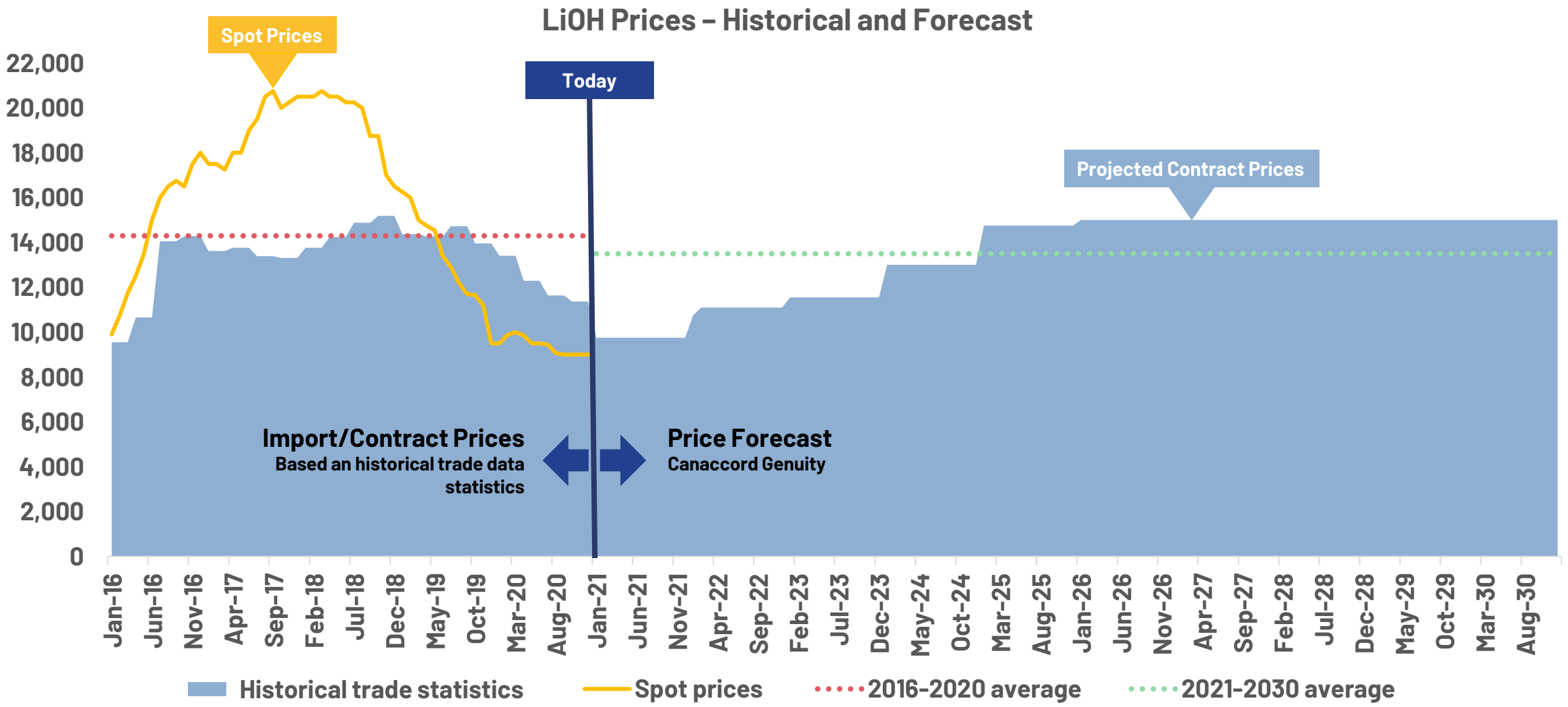
**Upgrading**

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

Vulcan notes that the comparison operating cost figures above are actual results from lithium hydroxide projects that are currently in production, whereas the above data for Vulcan's process is based on estimates in the PFS.
Vulcan's LHM products will potentially have the lowest carbon footprint in the world, as well as the lowest operating costs per tonne of LHM based on current global operations. This is a unique differentiator for the Vulcan project. Vulcan considers that it is appropriate to compare the estimates from the PFS to actual results from projects currently in production because Vulcan's process is unique and a comparison to other processes for producing lithium hydroxide is important to enable investors to contextualise the PFS results; and actual data from projects currently in production is the best available guide to benchmark the PFS results.

# 5. Project Economics: Lithium Revenues

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

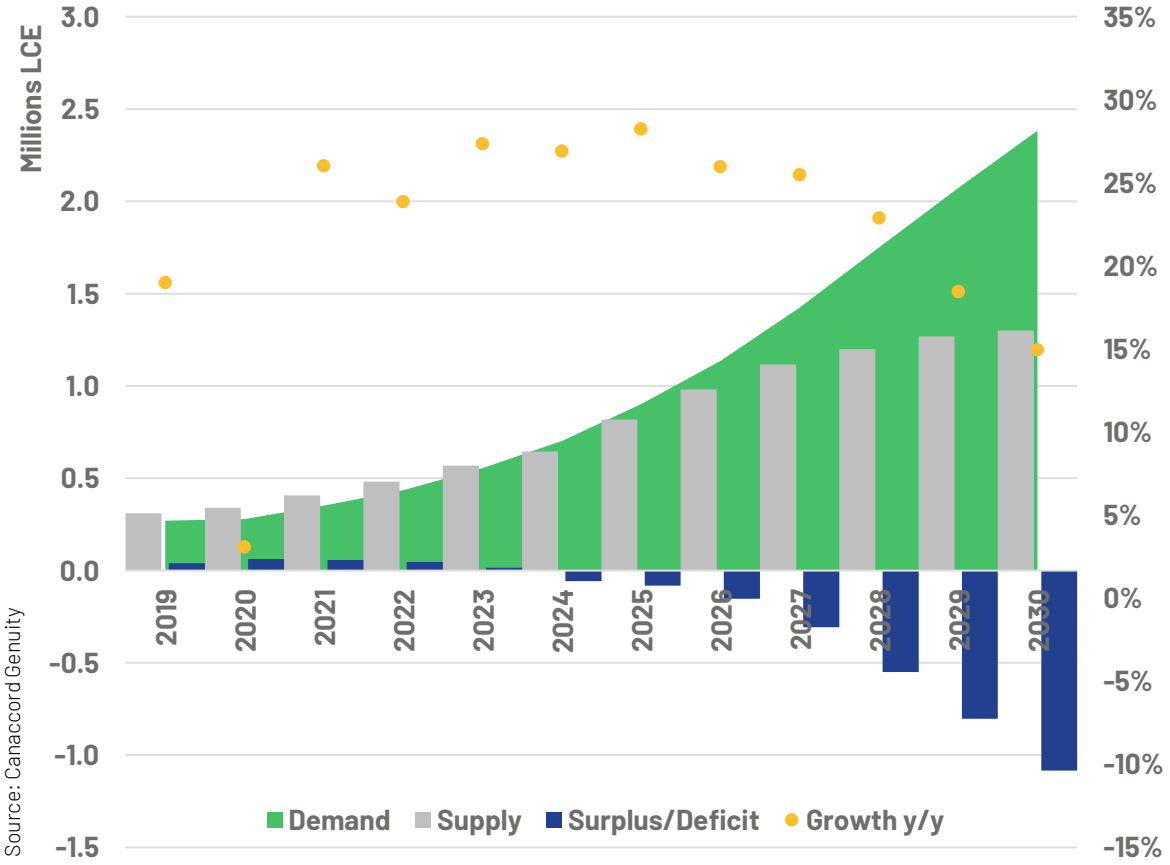



Source: Trade statistics compiled from Global Trade Atlas®, Benchmark Minerals, S&P Global, Canaccord Genuity

# 5.Project Economics: Upcoming Lithium Deficit

Long term market fundamentals remains strong for the lithium market. Demand will be driven by electric mobility with growth rates expected to average 24%py during the next 10 years, supply is growing slower leading a negative market balance from 2024 onwards.

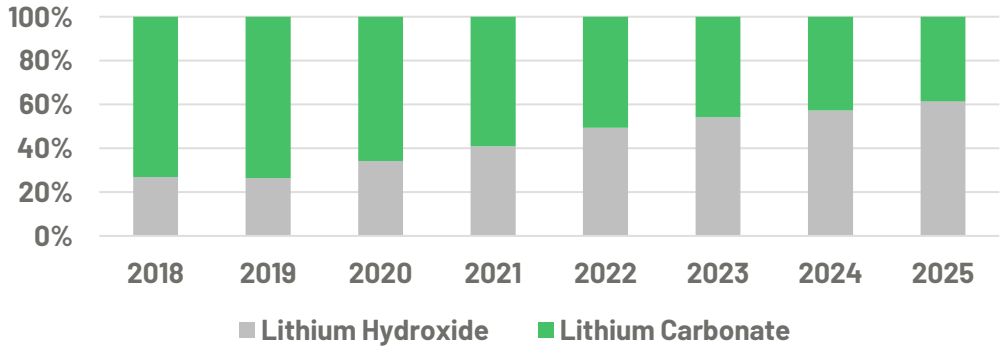
## Global lithium chemicals market balance




Source: Canaccord Genuity

Lead by changes in cathode technologies, lithium hydroxide is forecast to take over lithium carbonate before the mid 2020's.

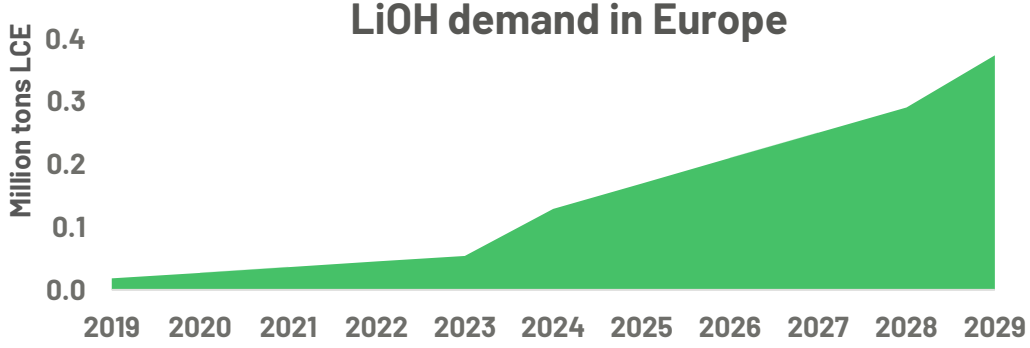
## LiOH overtaking Li2CO3




Source: Canaccord Genuity

Europe is becoming the fastest growing market in the world for lithium following strong investments in battery & cathode plants.

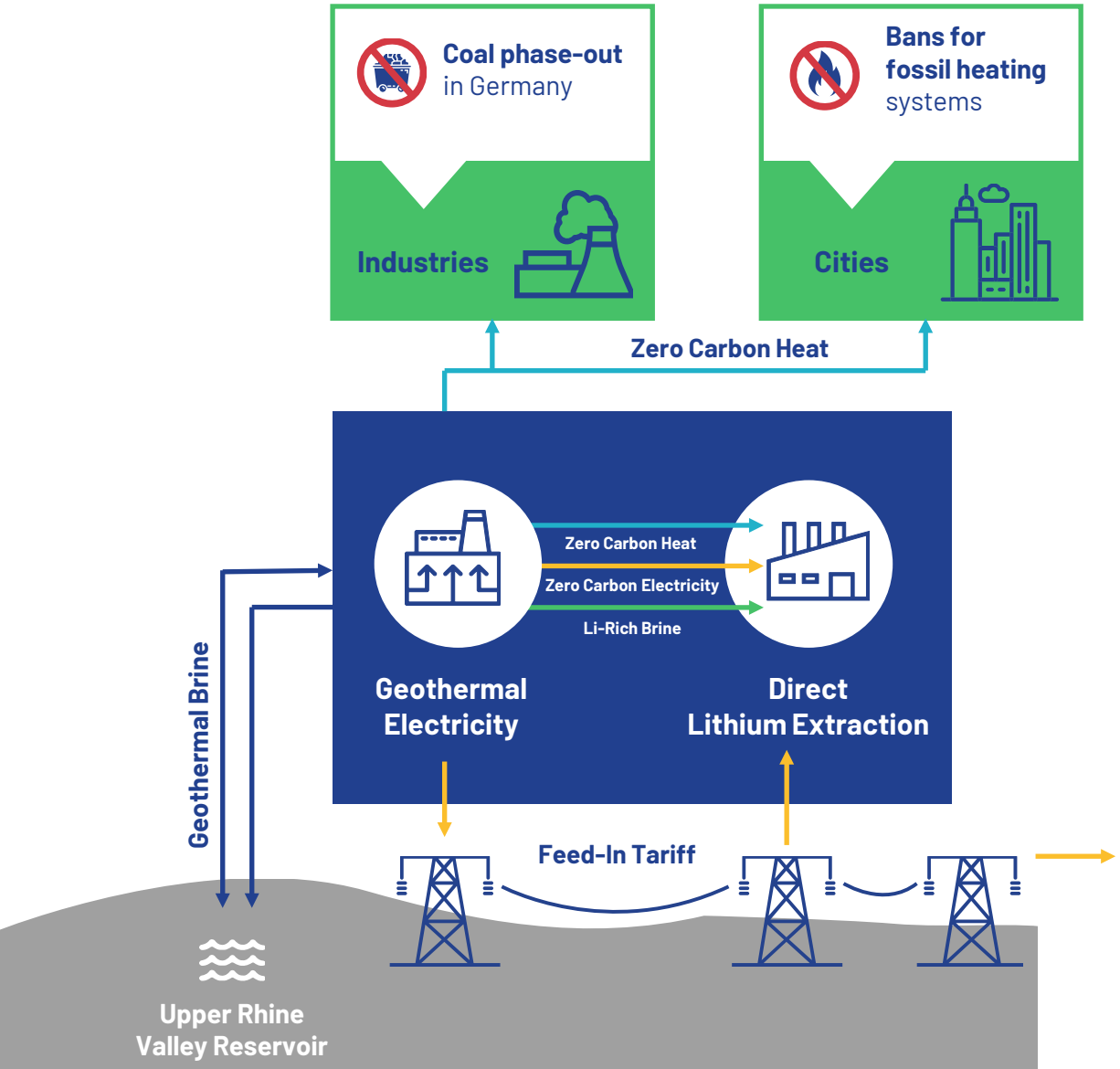
## LiOH demand in Europe




Source: Benchmark Minerals

# 5. 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

# 5.Project Economics: Possible Structures

## A. Integrated Businesses

Full project developed at the same time and integrated under one business.

**FULL PROJECT**
**NO PHASING**
**2024 Start**

**INTEGRATED BUSINESS**

| | | | | |
|---|---|---|---|---|
| GB1 | GB2 | GC1 | GC2 | GC3 |
| DB1 | DB2 | DC1 | DC2 | DC3 |
| CLP | | | | |
| 74MW & 40Ktpy LiOH | | | | |

| | |
|---|---|
| **Revenues €M/y** | **652** |
| **Net Op. Cash Fl. €M/y** | **507** |
| NPV Pre-tax €M | 3,443 |
| **NPV Post-tax €M** | **2,250** |
| IRR Pre-tax | 26% |
| **IRR Post-tax** | **21%** |
| **Payback (year)** | **5** |
| **CAPEX €M** | **1,738** |
| *CAPEX Geo* | *665* |
| *CAPEX DLE* | *751* |
| *CAPEX CLP* | *322* |
| **OPEX LiOH €/t** | **2,640** |

Phase 1 developed first and is an integrated business

**PHASE 1**
**2024 Start**

**INTEGRATED BUSINESS**

| | | | | |
|---|---|---|---|---|
| GB1 | GB2 | GC1 | GC2 | GC3 |
| DB1 | DB2 | DC1 | DC2 | DC3 |
| CLP1 | | CLP2 | | |
| 21MW & 15Ktpy LiOH | | | | |

| | |
|---|---|
| **Revenues €M/y** | **232** |
| **Net Op. Cash Fl. €M/y** | **171** |
| NPV Pre-tax €M | 1,114 |
| **NPV Post-tax €M** | **703** |
| IRR Pre-tax | 23% |
| **IRR Post-tax** | **18%** |
| **Payback (year)** | **5** |
| **CAPEX €M** | **700** |
| *CAPEX Geo* | *226* |
| *CAPEX DLE* | *291* |
| *CAPEX CLP* | *182* |
| **OPEX LiOH €/t** | **3,139** |

Phase 2 developed second and is an integrated business

**PHASE 2**
**2025 Start**

**INTEGRATED BUSINESS**

| | | | | |
|---|---|---|---|---|
| GB1 | GB2 | GC1 | GC2 | GC3 |
| DB1 | DB2 | DC1 | DC2 | DC3 |
| CLP1 | | CLP2 | | |
| 52MW & 25Ktpy LiOH | | | | |

| | |
|---|---|
| **Revenues €M/y** | **420** |
| **Net Op. Cash Fl. €M/y** | **324** |
| NPV Pre-tax €M | 2,145 |
| **NPV Post-tax €M** | **1,403** |
| IRR Pre-tax | 27% |
| **IRR Post-tax** | **22%** |
| **Payback (year)** | **6** |
| **CAPEX €M** | **1,138** |
| *CAPEX Geo* | *438* |
| *CAPEX DLE* | *460* |
| *CAPEX CLP* | *240* |
| **OPEX LiOH €/t** | **2,792** |

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 ahs a 51% interest in Taro, with the right to earn at least 80% interest.

# 5. Project Economics: Possible Structures

## B. Separate Businesses

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

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

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

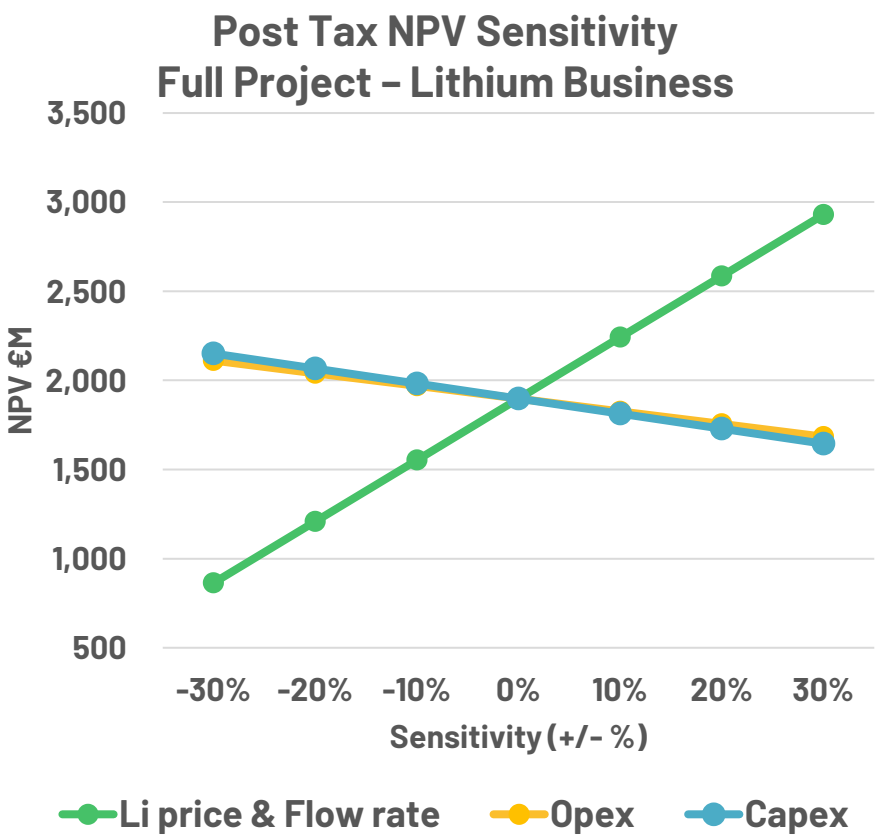
| | FULL PROJECT - NO PHASING 2024 Start | | PHASE 1 2024 Start | | PHASE 2 2025 Start | |
|---|---|---|---|---|---|---|
| | ENERGY BUSINESS | LITHIUM BUSINESS | ENERGY BUSINESS | LITHIUM BUSINESS | ENERGY BUSINESS | LITHIUM BUSINESS |
| | GB1 GB2 GC1 GC2 GC3 / DB1 DB2 DC1 DC2 DC3 | GB1 GB2 GC1 GC2 GC3 / DB1 DB2 DC1 DC2 DC3 | GB1 GB2 GC1 GC2 GC3 / DB1 DB2 DC1 DC2 DC3 | GB1 GB2 GC1 GC2 GC3 / DB1 DB2 DC1 DC2 DC3 | GB1 GB2 GC1 GC2 GC3 / DB1 DB2 DC1 DC2 DC3 | GB1 GB2 GC1 GC2 GC3 / DB1 DB2 DC1 DC2 DC3 |
| | CLP | CLP1 | CLP1 CLP2 | CLP1 CLP2 | CLP1 CLP2 | CLP1 CLP2 |
| | 74MW | 40Ktpy LiOH | 21MW | 15Ktpy LiOH | 52MW | 25Ktpy LiOH |
| **Revenues €M/y** | **157** | **500** | **46** | **187** | **111** | **312** |
| **Net Op. Cash Fl. €M/y** | **114** | **394** | **31** | **140** | **83** | **242** |
| **NPV Pre-tax €M** | **685** | **2,802** | **155** | **971** | **530** | **1,647** |
| **NPV Post-tax €M** | **470** | **1,897** | **99** | **644** | **371** | **1,111** |
| **IRR Pre-tax** | **16%** | **31%** | **13%** | **27%** | **18%** | **32%** |
| **IRR Post-tax** | **13%** | **26%** | **11%** | **22%** | **15%** | **26%** |
| **Payback (year)** | **6** | **4** | **4** | **4** | **7** | **5** |
| **CAPEX €M** | **665** | **1,073** | **226** | **474** | **438** | **700** |
| *CAPEX Geo* | | | *226* | | *438* | |
| *CAPEX DLE* | | *751* | | *291* | | *460* |
| *CAPEX CLP* | **0.066** | *322* | | *182* | | *240* |
| **OPEX €/KWh or LiOH€/t** | | **2,681** | **0.078** | **3,201** | **0.061** | **2,855** |

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

# 5. Project Economics: Sensitivities Analysis

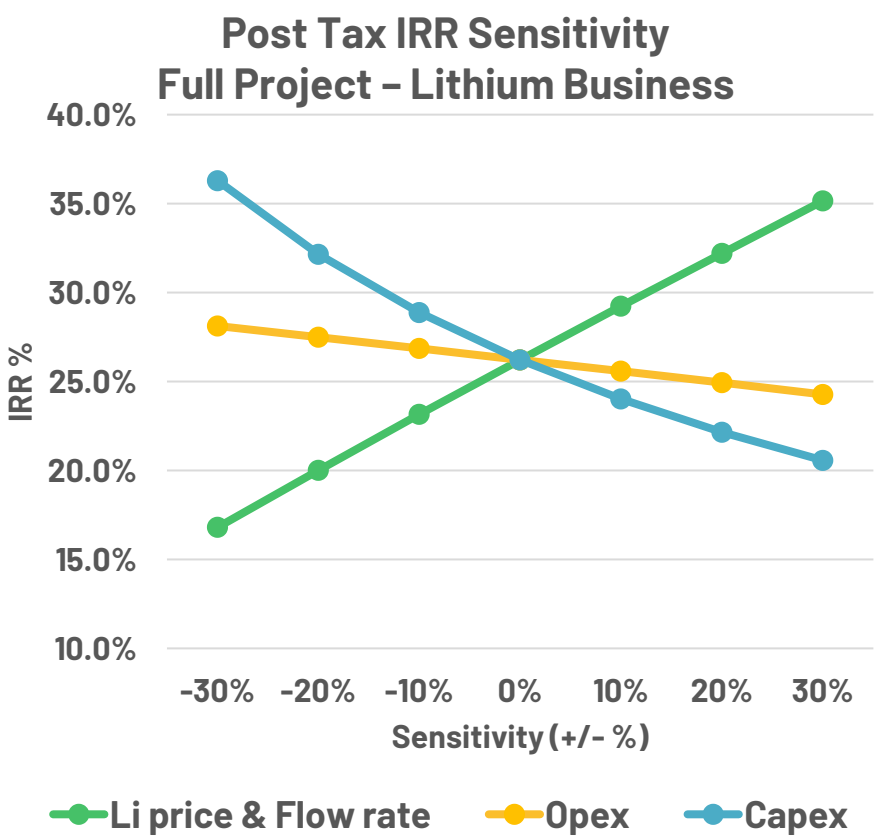
## Project Economics are exceptionally resilient to extreme case scenarios

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 | | | | |

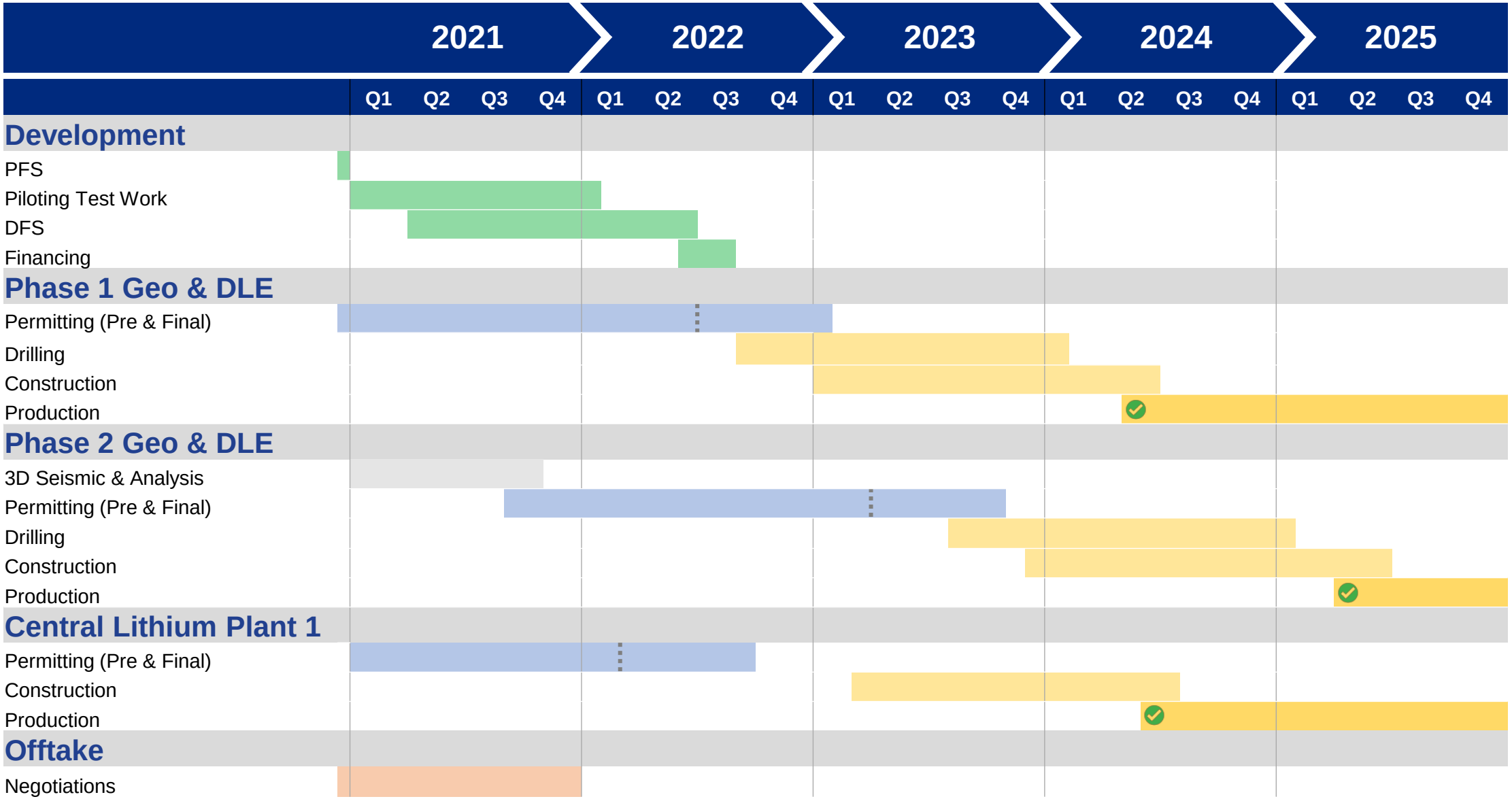
| | |
|---|---|
| LiOH Price | $14,925 |
| LiOH Price | €12,542 |
| Revenues (€M/y) | 499 |
| Net Op. Cash Fl. | 394 |
| NPV Pre-tax €M | 2,803 |
| **NPV Post-tax €M** | **1,897** |
| IRR Pre-tax | 31% |
| **IRR Post-tax** | **26%** |
| **Payback (year)** | **4** |
| CAPEX €M | 1,073 |
| **OPEX LiOH €/t** | **2,681** |






Notes: LiOH prices -10%: $13,498/€11,343, -20%: $11,998/€10,083, -%30: $10,498/€8,822. Li price and flow rate are not aggregated but have the same effect and therefore are overlain.

# 6. Project Timeline



# 7. Study Team

| Geology & hydrogeology, geothermal sub-surface | Mineral resources modelling & estimation | Production studies and reserves Review | Engineering studies for geothermal plant | Laboratory test works & chemical engineering | Process plant design and cost estimates |
|---|---|---|---|---|---|
| **GeoThermal Engineering** | **APEX Geoscience** | **GLJ** | **Gec-Co Global Engineering** | **IBZ Salzchemie** | **Hatch** |
| **Germany** | **Global** | **Global** | **Germany** | **Germany** | **Global** |
| Consultancy and engineering company for geothermal energy since 2005.<br>Based in **Karlsruhe**, Germany.<br>**From initial project concept to drilling:** Hydrothermal (natural reservoir), Petrothermal (enhanced reservoir), Low enthalpy (< 200°C), High enthalpy (>200°C).<br>**International network of expertise.**<br>Drilling, Financing and Power Plant Operation<br>**Activities across project development, exploration, consulting, and R&D.**<br>www.geo-t.de | APEX provides professional geological consulting, exploration management and Technical Reporting to International clientele.<br>Experienced team of geoscientists to manage and interpret data.<br><br>www.apexgeoscience.com | GLJ is a global leader in reserves and resource evaluation. Its evaluations are used for public disclosure, asset transactions, financial reporting, investment decisions and legal proceedings. With a trusted reputation backed by over 45 years of experience, it has the technical prowess and proven track record to meet and exceed evaluation needs.<br><br>www.gljpc.com | Focused on deep geothermal projects at surface: **power plant, heat stations, drill pads, and permitting.**<br>~ 25 employees.<br>More than 20 years experience in geothermal.<br>More than **300 years engineering knowledge of Gec-Co's team.**<br>Involved in geothermal projects in high and low enthalpy brines worldwide.<br><br>www.gec-co.de | Technologies for mineral processing, solution mining. Salt recovery and processing.<br>Extraction of minor constituents from brines.<br>Geotechnical technologies for soil stabilization and immobilization of pollutants.<br>Development of backfill materials / backfill strategies.<br>Realization of in-house testing as well as pilot plant testing in the customers facilities.<br><br>ibz-freiberg.de | Global network of 9,000 employees over 150 countries.<br>**Leading lithium project engineering company worldwide.**<br>Have worked with all the leading producers and many of the new entrants.<br>**Over 25 years of experience in lithium** and completed over 50 projects.<br><br>www.hatch.com |

**Vulcan's in-house expertise**

# Conclusion

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

- **Purpose-built** process to be **uniquely Zero Carbon**
- Co-generation of geothermal energy from production wells will power lithium extraction
- **Negative $CO_2$/t** LiOH $H_2O$, **decarbonising** the grid while producing lithium, compared with **~15 tonnes $CO_2$ for hard-rock**

## 2 STRONG & RESILIENT PFS ECOMOMICS

- 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**

## 3 SUPPORTED BY EU FUNDING, REGULATION & INITIATIVES

- 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

## 4 EUROPE'S LARGEST LITHIUM RESOURCE

- 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.**

## 5 LOCATION CENTRE OF FASTEST GROWING MARKET

- 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

## 6 LOCAL PARTNERS & WORLD LEADING COLLABORATORS

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

## 7 THE RIGHT TEAM FOR THE JOB

- 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

## 8 RAPIDLY ADVANCING LITHIUM PROJECT

- 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 1: Information for slide 7

| 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 |

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

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# Thank You