Appendix 5B

Mining exploration entity or oil and gas exploration entity quarterly cash flow report

Name of entity	
Vulcan Energy Resources Limited	
ABN	**Quarter ended ("current quarter")**
38 624 223 132	31 December 2019

	Consolidated statement of cash flows	**Current quarter $A'000**	**Year to date (6 months) $A'000**
1.	**Cash flows from operating activities**		
1.1	Receipts from customers		
1.2	Payments for		
	(a) exploration & evaluation (if expensed)	-	-
	(b) development	-	-
	(c) production	-	-
	(d) staff costs	(68)	(98)
	(e) administration and corporate costs	(278)	(586)
1.3	Dividends received (see note 3)	-	-
1.4	Interest received	16	29
1.5	Interest and other costs of finance paid	-	-
1.6	Income taxes paid	-	-
1.7	Government grants and tax incentives	-	-
1.8	Other (provide details if material)	-	-
1.9	**Net cash from / (used in) operating activities**	**(330)**	**(655)**

2.	**Cash flows from investing activities**		
2.1	Payments to acquire:		
	(a) entities	-	-
	(b) tenements	-	-
	(c) property, plant and equipment	-	-
	(d) exploration & evaluation (if capitalised)	(389)	(577)
	(e) investments	-	-
	(f) other non-current assets	-	-

Consolidated statement of cash flows		Current quarter $A'000	Year to date (6 months) $A'000
2.2	Proceeds from the disposal of:		
	(a) entities	-	-
	(b) tenements	-	-
	(c) property, plant and equipment	-	-
	(d) investments	-	-
	(e) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (provide details if material)	-	-
2.6	**Net cash from / (used in) investing activities**	**(389)**	**(577)**

3.	**Cash flows from financing activities**		
3.1	Proceeds from issues of equity securities (excluding convertible debt securities)	-	1,100
3.2	Proceeds from issue of convertible debt securities	-	-
3.3	Proceeds from exercise of options	-	-
3.4	Transaction costs related to issues of equity securities or convertible debt securities	-	(63)
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (provide details if material)	-	-
3.10	**Net cash from / (used in) financing activities**	**-**	**1,037**

4.	**Net increase / (decrease) in cash and cash equivalents for the period**		
4.1	Cash and cash equivalents at beginning of period	3,873	3,349
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(330)	(655)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(389)	(577)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	-	1,037

Consolidated statement of cash flows		Current quarter $A'000	Year to date (6 months) $A'000
4.5	Effect of movement in exchange rates on cash held	-	-
4.6	**Cash and cash equivalents at end of period**	**3,154**	**3,154**

5.	Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	Current quarter $A'000	Previous quarter $A'000
5.1	Bank balances	154	3,873
5.2	Call deposits	3,000	-
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
5.5	**Cash and cash equivalents at end of quarter (should equal item 4.6 above)**	**3,154**	**3,873**

6.	Payments to related parties of the entity and their associates	Current quarter $A'000
6.1	Aggregate amount of payments to related parties and their associates included in item 1	(99)
6.2	Aggregate amount of payments to related parties and their associates included in item 2	(243)

6.1	Fees paid to Directors and/or Director related entities	$67,389
	Corporate advisory fees paid to a Director related entity	$31,548
6.2	Exploration consulting fees paid to a Director and/or Director related entities	$242,761

Note: if any amounts are shown in items 6.1 or 6.2, your quarterly activity report must include a description of, and an explanation for, such payments

7.	**Financing facilities** *Note: the term "facility' includes all forms of financing arrangements available to the entity.* *Add notes as necessary for an understanding of the sources of finance available to the entity.*	**Total facility amount at quarter end $A'000**	**Amount drawn at quarter end $A'000**
7.1	Loan facilities	-	-
7.2	Credit standby arrangements	-	-
7.3	Other (please specify)	-	-
7.4	**Total financing facilities**	-	-

7.5	**Unused financing facilities available at quarter end**	
7.6	Include in the box below a description of each facility above, including the lender, interest rate, maturity date and whether it is secured or unsecured. If any additional financing facilities have been entered into or are proposed to be entered into after quarter end, include a note providing details of those facilities as well.	

Not applicable.

8.	**Estimated cash available for future operating activities**	**$A'000**
8.1	Net cash from / (used in) operating activities (Item 1.9)	(330)
8.2	Capitalised exploration & evaluation (Item 2.1(d))	(389)
8.3	Total relevant outgoings (Item 8.1 + Item 8.2)	(719)
8.4	Cash and cash equivalents at quarter end (Item 4.6)	3,154
8.5	Unused finance facilities available at quarter end (Item 7.5)	-
8.6	Total available funding (Item 8.4 + Item 8.5)	3,154
8.7	**Estimated quarters of funding available (Item 8.6 divided by Item 8.3)**	**4**

8.8 If Item 8.7 is less than 2 quarters, please provide answers to the following questions:

1. Does the entity expect that it will continue to have the current level of net operating cash flows for the time being and, if not, why not?

Answer: Not applicable.

2. Has the entity taken any steps, or does it propose to take any steps, to raise further cash to fund its operations and, if so, what are those steps and how likely does it believe that they will be successful?

Answer: Not applicable.

3. Does the entity expect to be able to continue its operations and to meet its business objectives and, if so, on what basis?

Answer: Not applicable.

Compliance statement

1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.

2 This statement gives a true and fair view of the matters disclosed.

Date: 30 January 2020

Authorised by: The Board of Vulcan Energy Resources Limited
(Name of body or officer authorising release – see note 4)

Notes

1. This quarterly cash flow report and the accompanying activity report provide a basis for informing the market about the entity's activities for the past quarter, how they have been financed and the effect this has had on its cash position. An entity that wishes to disclose additional information over and above the minimum required under the Listing Rules is encouraged to do so.

2. If this quarterly cash flow report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 6: Exploration for and Evaluation of Mineral Resources* and *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly cash flow report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.

3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.

4. If this report has been authorised for release to the market by your board of directors, you can insert here: "By the board". If it has been authorised for release to the market by a committee of your board of directors, you can insert here: "By the [*name of board committee – eg Audit and Risk Committee*]". If it has been authorised for release to the market by a disclosure committee, you can insert here: "By the Disclosure Committee".

5. If this report has been authorised for release to the market by your board of directors and you wish to hold yourself out as complying with recommendation 4.2 of the ASX Corporate Governance Council's *Corporate Governance Principles and Recommendations*, the board should have received a declaration from its CEO and CFO that, in their opinion, the financial records of the entity have been properly maintained, that this report complies with the appropriate accounting standards and gives a true and fair view of the cash flows of the entity, and that their opinion has been formed on the basis of a sound system of risk management and internal control which is operating effectively.

Quarterly Activities Report December 2019

Highlights

- Maiden Mineral Resource Estimation completed at the Vulcan Lithium Brine Project, following positive results from brine sampling
- Total Inferred Mineral Resource of **13.2 Mt of contained Lithium Carbonate Equivalent**, at a lithium brine grade of 181 mg/l Li: **the largest JORC-compliant Lithium Resource in Europe**
- MoU agreement signed with subsidiary of **German utility Pfalzwerke Group – Pfalzwerke geofuture**, for earn-in to 80% lithium rights at **operational** Insheim geothermal plant to produce lithium hydroxide. Potential to **significantly short-cut** timescale of Company's strategy to produce **Zero Carbon Lithium™** hydroxide
- Experienced addition to Company's Board, Dr. Horst Kreuter
- Dual Listing on Frankfurt Stock Exchange completed
- Scoping Study progressed well**, on track for completion Q1 2020**
- Continued field activities at Norwegian Projects, ongoing project assessment and evaluation.

During the Quarter, Vulcan Energy Resources Ltd ("Vulcan", "VUL", "the Company") completed the maiden Mineral Resource Estimate for its Ortenau license within the Vulcan Lithium Project, in the Upper Rhine Valley of South-West Germany, which was compiled using the guidelines provided by the 2012 JORC Code. The Inferred Mineral Resource Estimate[1] for the brine was calculated at **13.2 Mt of contained LCE**, at a lithium brine grade of 181 mg/l Li, average porosity of 9.5% and lower cutoff of 100 mg/l Li, making it the largest JORC-compliant lithium resource in Europe. Vulcan also signed an MoU during the Quarter with German utility Pfalzwerke geofuture, providing access to a producing, lithium-rich geothermal brine well and plant, and a pathway to earn up to 80% lithium rights at the project. In addition, Vulcan strengthened the European geothermal experience of its Board by appointing Dr. Horst Kreuter as Executive Director. A cross-listing on the Frankfurt Stock Exchange was completed, to assist with diversifying Vulcan's shareholder base. The Scoping Study, led by Hatch, progressed well during the Quarter, and is on track for completion Q1 2020. An update on the Company's Norwegian projects is provided.

[1] Refer VUL ASX announcement, 4/12/2019

ASX Release
30 January 2020
ASX: VUL
FRA: 6KO

Highlights

Large, lithium-rich geothermal brine field, in the Upper Rhine Valley of Germany.

Europe's **largest** JORC-compliant lithium resource.

Aiming to be the world's first **Zero Carbon Lithium™** producer.

Strategically located at the heart of the EU auto & Li-ion battery industry.

Access agreement in place with German geothermal operator at a **producing plant**

Fast-track development of project under way, targeting production of **lithium hydroxide by 2023**.

Corporate Directory

Managing Director
Dr Francis Wedin

Chairman
Gavin Rezos

Executive Director
Dr Horst Kreuter

Fast Facts

Issued Capital: 48,500,002
Market Cap (@17.5c): ~$8.3m

Contact

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Vulcan Project Summary: Unique Zero-Carbon Lithium™ Production

The **Vulcan Zero Carbon Lithium™ Project** is aiming to be Europe's and the **world's first Zero Carbon Lithium™ project**. It aims to do achieve this by producing **battery-quality lithium hydroxide** from hot, sub-surface geothermal brines pumped from wells, with a renewable energy by-product fulfilling all processing energy needs.

The Vulcan Zero Carbon Lithium™ Project is strategically located, within a region well-serviced by local industrial activity, at the heart of the European auto and lithium-ion battery manufacturing industry, just 60km from Stuttgart. The burgeoning European battery manufacturing industry is forecast to be the world's second largest, with currently zero domestic supply of battery grade lithium products. JORC

The Company is concluding a Scoping Study at the project, on track for completion Q1 2020, and is targeting initial commercial production by 2023.

World's First & Only Zero-Carbon Lithium™ Process

Co-generation of geothermal energy from production wells will power lithium extraction. Unique process will satisfy OEMs' stated desire for ISO-compliant, zero carbon Electric Vehicle (EV) raw materials supply.

Europe's Largest JORC Lithium Resource

Recent JORC Mineral Resources contain a total combined Indicated and Inferred estimates of 13.95 million tonnes of Lithium Carbonate Equivalent (LCE)[2]. Large enough to be Europe's primary source of battery-quality lithium hydroxide.

Most Optimally Positioned for Supply Chain Security & Footprint Reduction

Located in Germany, in the centre of the European lithium-ion battery industry. Removes dependence on South America/China for this designated Critical Raw Material. Removes carbon footprint of supply chain.

Europe's Lowest Impact Lithium Project

No hard-rock mining, no evaporation ponds required in Vulcan's Zero Carbon Lithium™ process. Instead lithium extraction the European way, from renewable energy-producing geothermal brine wells rich in Li.

World's Most Rapidly Advancing Lithium Project

Recent agreement with major German utility provides access to existing wells and potentially a fast-track to production. Targeting production in 2023.

Unprecedent Demand Forecast for Lithium Hydroxide in Europe

Ramp-up of lithium-ion battery manufacturing for auto industry in Europe in 2020s forecast to dwarf China expansion of 2016-18. Zero local supply of battery quality lithium hydroxide.

[2] Refer announcement subsequent to the Quarter, on 20 January 2020

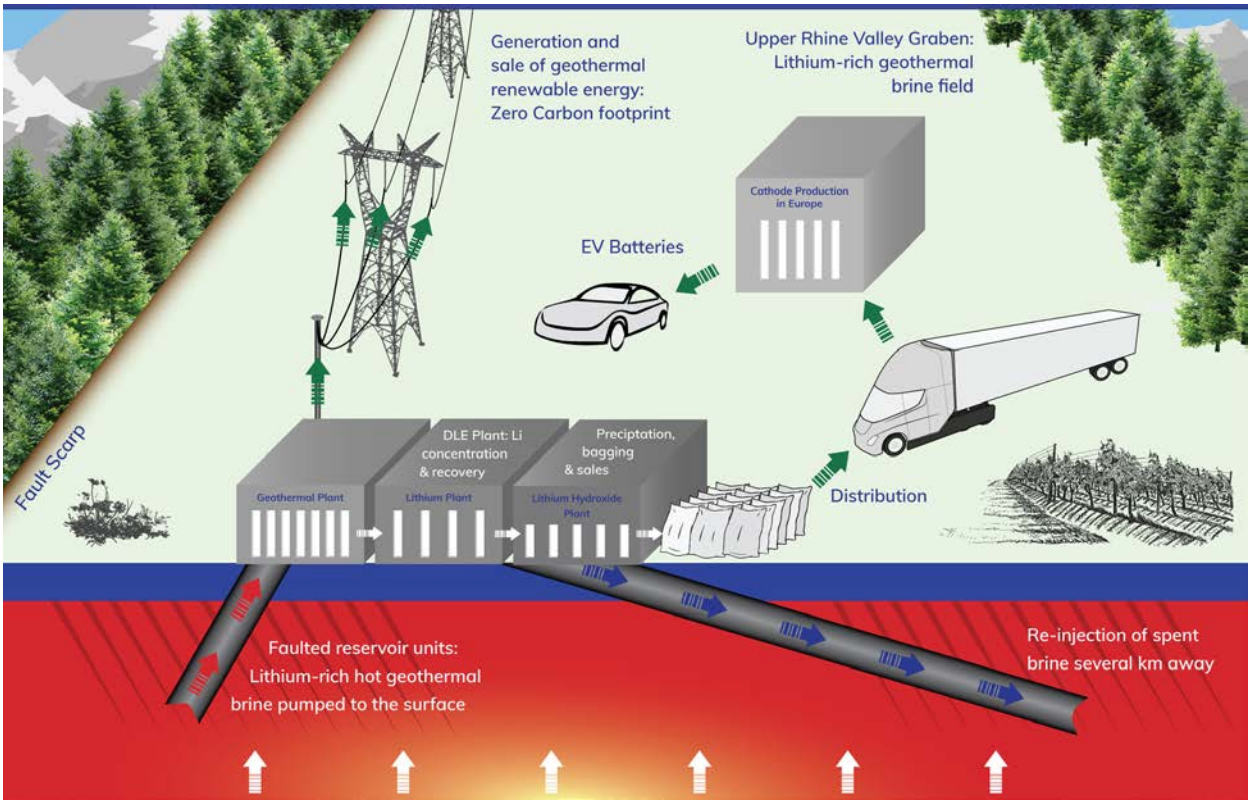

Figure 1: Schematic of the Zero Carbon Lithium project

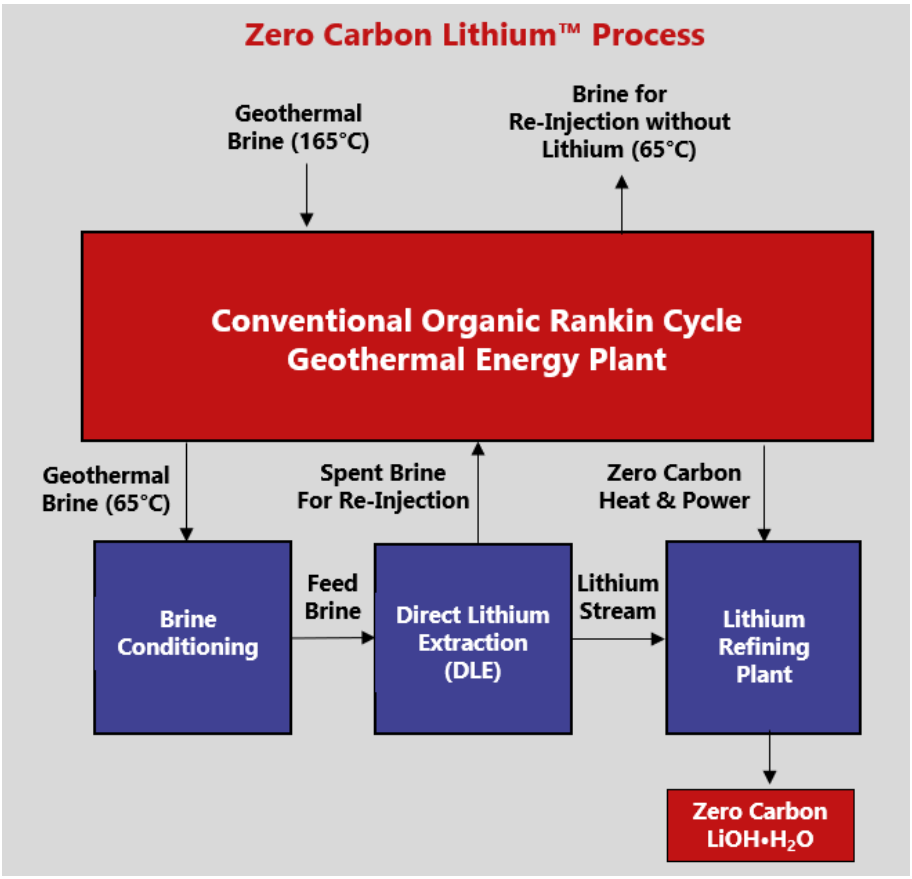

Figure 2: Vulcan's Zero Carbon Lithium™ process

Unprecedented Demand for Lithium in Europe - The Next China?

- In the 2010s, China experienced the world's highest growth in lithium-ion battery production for electric vehicles**. It caused a lithium supply shortage & 300% lithium price spike**.
- In the 2020s, the **same is forecast to happen in Europe, on a larger scale.**
- "European battery cell production capacity is set to increase rapidly in the coming decade. Europe currently has no commercial lithium production or refining capacity of its own to meet this demand, but plans are afoot to change this" (Benchmark Mineral Intelligence, 2019).

There is an unprecedented ramping up of lithium-ion and associated cathode production in Europe. Forecasts show that the European Union (EU) is set to require the equivalent of the entire current global battery quality lithium demand by the mid-2020s, with 2023 being the main inflection point. There is currently zero EU production of battery-quality lithium hydroxide, let alone a CO_2-neutral product. A severe battery-quality lithium chemical supply shortfall is thus developing in the EU.

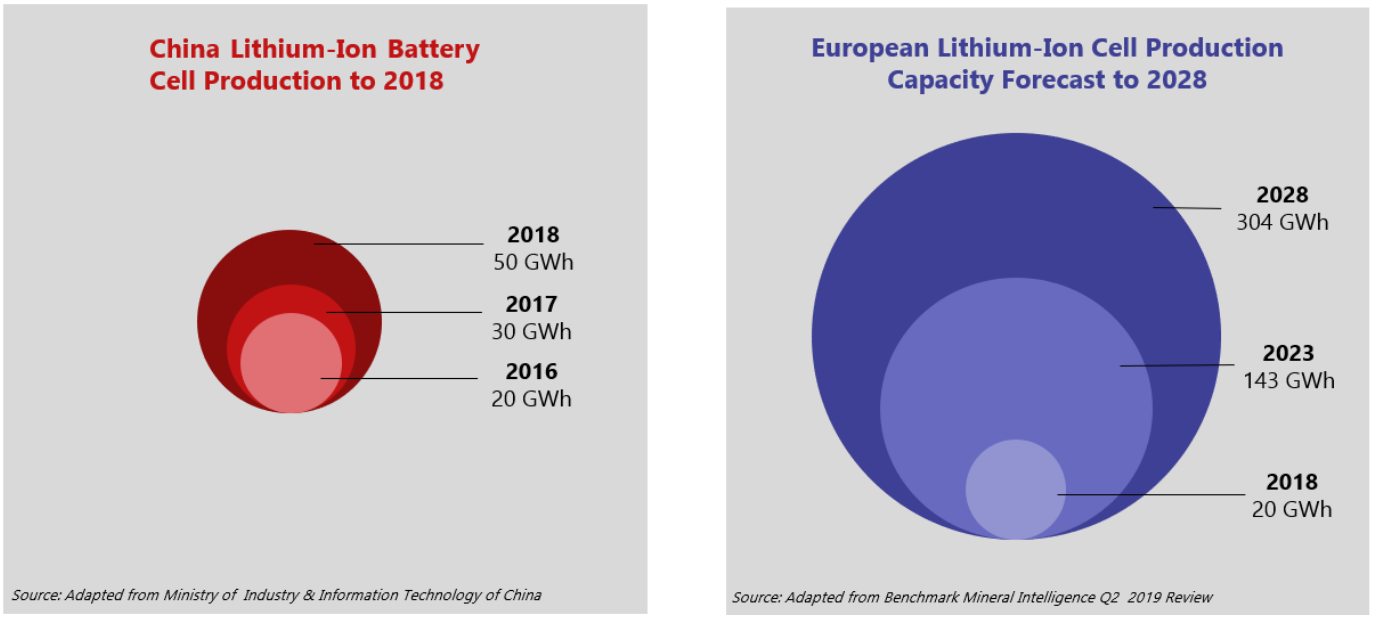

Figure 3: Forecast battery production in EU and associated lithium demand[3]

Why Vulcan? Zero Carbon Supply Chains Required

BEV raw material supply chains have a carbon footprint problem, producing more CO_2 during production than Internal Combustion Engines (ICE). Car manufacturers are actively trying to reduce the carbon footprint of their battery supply chains to bolster the credibility of their BEV offerings. This will enable them to avoid financial emissions penalties and obtain premium pricing for lowest carbon footprint in production. Volkswagen, among others, is placing great importance on having a CO_2-neutral production supply chain for its very extensive new EV line-up, with a raw materials purchasing metric for sustainability put on par with price[4], and the goal of producing net zero carbon BEVs as delivered to the customer.

[3] See VUL Presentation 4/12/19
[4] Volkswagen ID presentation, 2019

The European Commission is following suit, recently flagging that "CO_2 Passports" will be issued to BEVs detailing the full CO_2 footprint of each battery. The aim is to differentiate EU lithium-ion battery and BEV production, by producing uniquely low CO_2 products. The EU has declared a climate emergency and aims to cut 55% of emissions by 2030, net zero by 2050. Currently, there is no "zero carbon" lithium chemical product in the world, since all current extraction, processing and transport routes are very carbon intensive. Spodumene converted by fossil fuel-fired processes and lithium products transported from South America will always emit significant quantities of CO_2 to sell their lithium products in Europe.

Hard-rock lithium production has a high OPEX and high CO_2 footprint due to its inherent energy requirement for mining, crushing and processing to producing battery quality lithium chemicals, as well its transport distance to major global markets. A processing bottleneck has also developed for spodumene concentrate going through lithium refinery plants in China, creating downward pressure on concentrate prices. South American lithium brine operations make up the balance of current production. Because of their distance to market, remoteness and substantial use of reagents from North America, there is a substantial CO_2 footprint inherent in these operations also. These operations can also be very slow and unreliable in terms of producing battery quality lithium chemicals, as the evaporation process makes them vulnerable to weather events. The evaporation can also cause stresses on local environment and communities.

The world's conventional lithium supply chains are not geared towards low carbon intensity production, so Europe will need to build its own.

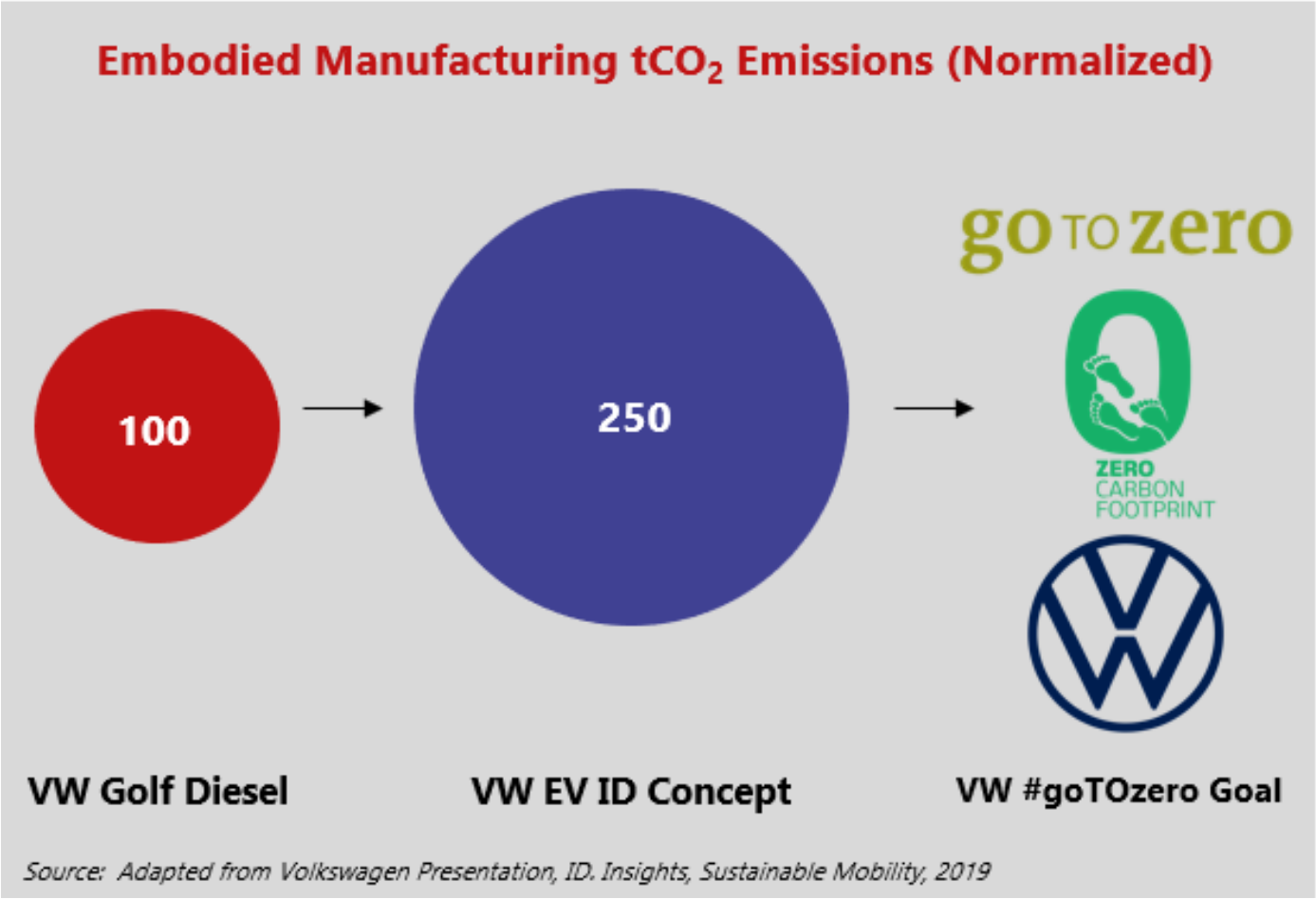

Figure 4: EVs' carbon problem, and the industry goal to fix the problem

The Solution: Vulcan's Zero Carbon Lithium™ Project

The Company believes that the solution lies in the **Vulcan Zero Carbon Lithium™ Project.** This comprises a very large, lithium-rich geothermal brine field in the Upper Rhine Valley of South-West Germany, in the heart of the EU's battery "giga-factory" production.

Summary

- Unique flowsheet developed by Vulcan, making use of **binary cycle geothermal electricity & heat** to create a **Zero Carbon Lithium™ product.**
- Direct Lithium Extraction (DLE) process to produce LiOH•H2O from the brine,
- Zero carbon electricity generated and used to produce premium, Zero Carbon Lithium™ with no gas input.
- Spent brine re-injected into reservoir with no evaporation losses.
- Processing time **hours instead of months**, not dependent on weather like South American brines.
- Creates high purity, high concentration solution that is easily converted on site into **battery quality LiOH•H_2O.**
- Excess **power will be sold** at a Feed-in-Tariff of €0.252/kWh, displacing coal and decarbonizing the German electric grid.
- No need for high energy mining, crushing, grinding and conversion processes used in hard-rock lithium deposits.

Vulcan intends to test and de-risk this flowsheet in 2020, during its feasibility studies.

The Zero Carbon Lithium™ production stems from a clever, unique process:

1. Standard geothermal production wells will be drilled into high flow rate, lithium-rich brine reservoir units, including the Buntsandstein unit. Geothermal energy wells have been successfully doing this for decades in the Upper Rhine Valley, so there is strong precedent. The heated brine is pumped up and produces geothermal energy via a binary cycle plant, which emits no CO_2.

2. Usually the spent brine would then be re-injected into the reservoir. In the Vulcan process, the spent brine gets diverted through a Direct Lithium Extraction (DLE) plant, where the vast majority of the lithium is extracted in less than an hour, while leaving other impurities. The brine is then re-injected into the reservoir minus the lithium. A new lithium stream of much higher concentration is formed for further processing and nothing is added to the brine. Livent has used a similar process to produce LiOH•H2O from Argentine brine for over 30 years. Importantly, such technologies have been successfully tested in California for the Salton Sea geothermal lithium field, which has similar brine characteristics to the Upper Rhine Valley brine, meaning a similar process can be used. Vulcan will fast-track project development through its relationships with the most successful groups in the DLE industry who have already de-risked the methods used.

3. A series of chemical operations convert the lithium stream into battery quality lithium hydroxide using conventional processes all previously demonstrated at commercial scale. Water is recycled, no toxic wastes are produced, and no gases are emitted. Heat and power from the geothermal plant are used, meaning no fossil fuels are burned, eliminating carbon emissions from lithium hydroxide processing. On top of being a zero-carbon product, it is expected that the Vulcan flowsheet will be a very low cost LiOH•H2O operation.

Vulcan Project, Germany: Strategic Location, Large License-Holding

Summary

- Most well-explored graben system in the world: large quantities of existing 2D and 3D seismic data to shortcut development timeline.
- Dominant license landholding in lithium-rich brine field - ~800 km^2 of license area.
- Thousands of historical wells and multiple operating geothermal wells in the region provide a wealth of data and readily accessible brine.
- Geothermal brine production socially & environmentally accepted in region with vineyards and communities next to existing operations.
- Lithium hydroxide is a "semi-bulk" commodity. Vulcan's short distance to markets is a major cost advantage as well as carbon advantage.
- Strategic, secure domestic supply for EU OEMs at a time of global trade insecurity.
- Located in Germany just 60km from Stuttgart; the centre of the burgeoning European lithium-ion supply chain.

The **Vulcan Zero Carbon Lithium™ Project** is situated within one of the most well-studied and well-explored graben systems in the world. This means that the lithium-rich brine in the field is very well understood, and large amounts of seismic and geochemical data are readily available, reducing the need for exploration time and spend. Drilling data and existing wells are also available and can be used to shortcut project development. Based on historical data, the Upper Rhine Valley brines have been shown to have grades in the same order of magnitude as typical South American salars, in the hundreds of ppm Li, but with the advantage of readily available heat and power. Commonly, grades are >150mg/l Li in the Upper Rhine Valley at the depths targeted, with grades sometimes up to 210mg/l Li. The means that the Upper Rhine Valley brine field is one of the only geothermal brines in the world, the Salton Sea in California being the other main example, with both high flow rates and lithium grades within the brine reservoir. The Vulcan project represents a dominant licence landholding within this brine field.

Importantly, as well as being European, the project is just 60km away from Stuttgart, the home of the German auto-industry. It is perfectly placed to reduce the transport footprint of lithium chemicals down to almost negligible amounts, both from a carbon cost and direct financial cost perspective. In addition, existing and recently permitted geothermal operations within the area are testament to the social and environmental acceptance of drilling geothermal wells within the region, in contrast with hard rock mining projects elsewhere in Europe. Indeed, the Insheim geothermal operation, which is the subject of Vulcan's MoU with Pfalzwerke geofuture, is surrounded by vineyards, showing the harmony of such operations with local communities.

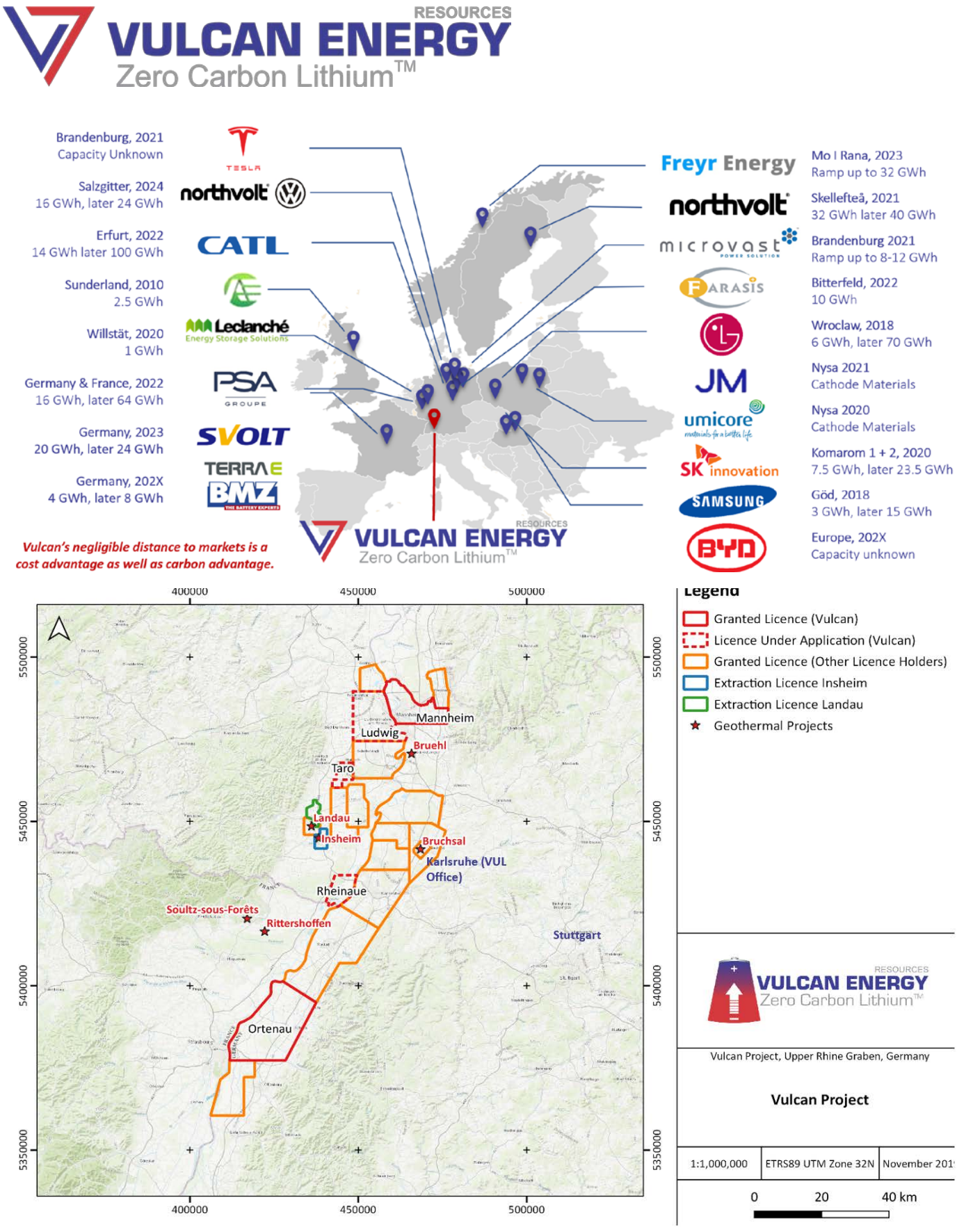

Figure 5: Vulcan Zero Carbon Lithium™ Project Location

German Utility Partnership: Shortcut to Development

Summary

- MoU agreement signed in November 2019 with subsidiary of German utility Pfalzwerke Group – Pfalzwerke geofuture, for JV at operational Insheim geothermal plant to produce lithium hydroxide.
- Transformational agreement for Vulcan, gives access to lithium-rich, producing brine operations neighbouring Vulcan's existing project area.
- Potential to significantly short-cut timescale to production of Zero Carbon Lithium™ hydroxide.
- Vulcan to earn up to 80% of lithium rights at Insheim by completing Pre-Feasibility (PFS) and Definitive Feasibility (DFS) studies.
- Pfalzwerke Gruppe is a German and international energy provider with annual revenue in excess of €1.5 billion.
- Insheim geothermal plant a shining example of geothermal best-practice, operating in harmony with local community and environment for 7 years.

Activities During the Quarter

Maiden Inferred Resource

During the Quarter, an Inferred resource estimation at the Ortenau Exploration Licence was presented in a Vulcan News Release dated December 4, 2019. The Ortenau License was assessed by APEX Geoscience Ltd. using the resource modelling and estimation processes outlined in the release. As outlined in Vulcan News Release dated December 4, 2019, the Inferred lithium-brine resource estimate at the Ortenau Licence was 2.48 million tonnes of elemental lithium, or 13.225 M tonnes of LCE. Europe's other JORC-compliant lithium resources in Europe include European Metals' Cinovec, at 7.17 Mt LCE, Rio Tinto's Jadar, at 6.24 Mt LCE, Infinity Lithium's San Jose at 1.68 Mt LCE and Savannah Resources' Barroso at 0.71 Mt LCE, all hard-rock projects, making Vulcan's the largest lithium project in Europe.

Mineral resources are not mineral reserves and do not have demonstrated economic viability. There is no guarantee that all or any part of the mineral resource will be converted into a mineral reserve. While it would be reasonable to expect that the majority of Inferred Mineral Resources would upgrade to Indicated Mineral Resources with continued exploration, due to the uncertainly of Inferred Mineral Resource it should not be assumed that such upgrading will always occur. There is no direct link from an Inferred Mineral Resource to any category of Ore Reserves

Table 1: Inferred Vulcan Li-Brine Resource Estimate of lithium-bearing brine within the Buntsandstein Group aquifer domain at the Ortenau Licence (see Vulcan's December 4, 2019 News Release for more information).

Category	Aquifer Volume (km^3)	Brine Volume (km^3)	Average Lithium Concentration (mg/l Li)	Average Effective Porosity	Total Contained Elemental Li Resource Tonnes	Total Contained Lithium Carbonate Equivalent (LCE) Million Tonnes
Inferred (Ortenau License)	144.489	13.726	181	9.50	2,484,000	13.225

Note 1: Mineral resources are not mineral reserves and do not have demonstrated economic viability. Note 2: The weights are reported in metric tonnes (1,000 kg or 2,204.6 lbs). Numbers may not add up due to rounding of the resource values percentages (rounded to the nearest 1,000 unit). Note 3: The volume and weights are estimated at average porosities of 9.5% for the Ortenau Resource Note 4: The Vulcan Li-brine Project estimation was completed and reported using a lower cutoff of 100 mg/L Li. Note 5: In order to describe the resource in terms of industry standard, a conversion factor of 5.323 is used to convert elemental Li to Li_2CO_3, or Lithium Carbonate Equivalent (LCE).

Management Changes

During the Quarter, Mr Patrick Burke and Mr William Oliver both resigned as directors of the Company. **Dr. Horst Kreuter**, joined the Company as an executive Director. Dr Kreuter is an engineering geologist with a long career in geothermal energy. Dr. Horst Kreuter is a highly experienced businessman and engineering geologist, with an outstanding record of project development and consulting in the geothermal sector. Dr Kreuter is CEO of Geothermal Group Germany GmbH, Karlsruhe, a joint initiative for the world market of notable German companies active in the geothermal industry. He is also CEO of GeoThermal Engineering GmbH (GeoT), a consultancy who are involved in geothermal project development in Germany and worldwide. He is based in Karlsruhe, local to Vulcan's Zero Carbon Lithium™ project area in the Upper Rhine Valley, and has a broad political and corporate network in Germany.

Corporate

Insheim MoU

As announced on 26 November 2019, the Company entered into an MoU with the subsidiary of German utility Pfalzwerke Group – Pfalzwerke geofuture.

Pfalzwerke geofuture GmbH is the owner-operator of the Insheim geothermal plant, which has been operating successfully for seven years. Pfalzwerke geofuture is 100%-owned by Pfalzwerke Gruppe. Founded in 1912, Pfalzwerke Gruppe is a German and international energy provider with annual revenue in excess of €1.5 billion. Pfalzwerke Gruppe and its subsidiaries and partners offer solutions for all aspects of electricity and heating. The company is increasing its share of renewable energy sources such as photovoltaic, biomass, geothermal and wind power. With approximately 430,000 private and 20,000 business customers, as well as power supplies to 60 municipalities, Pfalzwerke Gruppe is one of the most important energy supply companies in Germany.

The Insheim plant operates with a thermal water temperature of 165°C, producing a maximum of 4.8 MW_{el} power and 10 MW thermal energy. The plant receives a feed-in-tariff of €0.25/kWh under the EEG (German Renewable Energy Act). The plant can supply around 8,000 households with electricity and 600-800 households with heat.

Currently, brine is pumped up, energy produced and the brine re-injected with no extraction of lithium from the lithium-rich fluids. The agreement with Vulcan allows both parties to potentially extract value from the lithium contained within the brine. The plant has a very small footprint and operates in harmony with its local surroundings. This is a testament to the potential of geothermal wells to service Europe's battery-quality lithium needs, with zero carbon footprint, without the requirement for environmentally and socially undesirable hard-rock mining.

The structure of the agreement is as follows:

Initial Collaboration Period

- Vulcan to conduct a PFS involving pilot testwork of the lithium extraction at the Insheim plant, as well as engineering, geological and financial studies.
- Pfalzerke geofuture to provide geothermal plant data and brine prior to re-injection, necessary for processing testwork.

Joint Venture Period

- Legal JV to be established for the lithium production project at the Insheim plant. Vulcan to have initial 0% JV interest, full expenditure responsibility and management control of the lithium project.
- Vulcan to build and implement a demonstration plant to test enrichment on site under the conditions of the operating geothermal plant. Vulcan to conduct a DFS for lithium production at the plant.
- On successful completion of the DFS, Vulcan will be deemed to have earned up to 80% JV interest in the lithium rights at Insheim.
- On successful completion of the DFS, a commercial extraction plant may be built on site to start the production of lithium from the enriched brine. The plant can be financed by both parties on a pro rata basis, otherwise Pfalzwerke geofuture can elect to be diluted using an industry standard formula, to a non-dilutionary 2.5% net profits royalty on lithium production.

All terms of the agreement are binding on the legal JV being established.

Frankfurt Listing

On 4 December 2019 the Company announced the dual listing of the Company's shares on the Frankfurt Stock Exchange. The Company's shares will trade under the code "6KO". The Frankfurt listing widens Vulcan's investor reach and increases the Company's exposure to German and European markets, where the Vulcan Zero Carbon Lithium Project is located.

Update on Norwegian Projects

The Company continues to explore its extensive copper-zinc mineral exploration portfolio located in the Trøndelag region of Norway. The Company has received results from rockchip sampling across its Undal and Nyerbeget Projects carried out in October 2019. Results are shown on Figure 7 and detailed in Appendix 3.

At the Undal Project 3 mine dump samples returned an average of 1.1% Cu and 0.4% Zn, consistent with historical production grades of 1.15 % Cu & 1.86 % Zn from the Undal underground mine (Source: Norwegian Geological Survey (NGU) Database). The samples were massive sulphide (>80%), dominantly pyrite, similar to descriptions of the material mined at the project intermittently until 1971. Mineralisation at Undal is not outcropping which provides encouragement that historical exploration may not have been able to identify extensions to the previously mined mineralisation and that modern-day techniques could aid future exploration in the area.

At the Nyberget Project samples were taken from both the Nyberget mine site and workings in the surrounding area, as well as some regional samples. A sample from the Nyberget mine site returned 1.9% Cu + 2.7% Zn, again consistent with previous production and sampling documented by the NGU (refer ASX Announcement 11 June 2019). The mineralised sample was located in the hangingwall of a stratiform, pyrite-bearing sulphide horizon conformably emplaced between two greenstone units. Sampling of the Bergstjern III workings returned a result of 1.1% Pb + 0.3% Zn from a semi-massive sulphide lens within the chert sequence. The presence of these massive sulphide lenses provides encouragement for further such occurrences at the same stratigraphic horizon. As detailed previously historical exploration in the Nyberget-Bergstjern area included geological mapping, ground geophysics and soil sampling with follow-up exploration was planned but never implemented (refer ASX Announcement 11 June 2019). The Company is in the process of assessing the exploration data and planning new activities for the next field season. During the Quarter, the Company also undertook a review of its licenses in Norway following initial field reconnaissance and fieldwork. This review resulted in the relinquishment of some non-core licenses, to enable the Company to better focus on more prospective areas. A full list of current and relinquish licenses is provided in Appendix 2.

Table 2: Results from Rockchip Sampling at Undal and Nyerbeget

Sample ID	Project	Cu%	Zn%	Pb%	Au (g/t)
UN19001	Undal	**1.400**	0.299	0.025	0.059
UN19002	Undal	**1.115**	**0.401**	0.009	0.063
UN19003	Undal	**0.834**	**0.534**	0.026	0.033
NY19001	Nyberget	0.147	0.199	0.005	0.091
NY19002	Nyberget	0.039	0.054	BDL	0.038
NY19003	Nyberget	**1.875**	**2.660**	0.024	0.026
NY19004	Nyberget	**0.434**	0.088	0.01	0.008
NY19005	Nyberget	0.039	0.012	BDL	0.019
NY19006	Nyberget	0.010	0.035	BDL	0.074
NY19007	Nyberget	0.124	**0.384**	0.025	0.071
NY19008	Nyberget	0.064	**0.292**	**1.135**	**0.128**

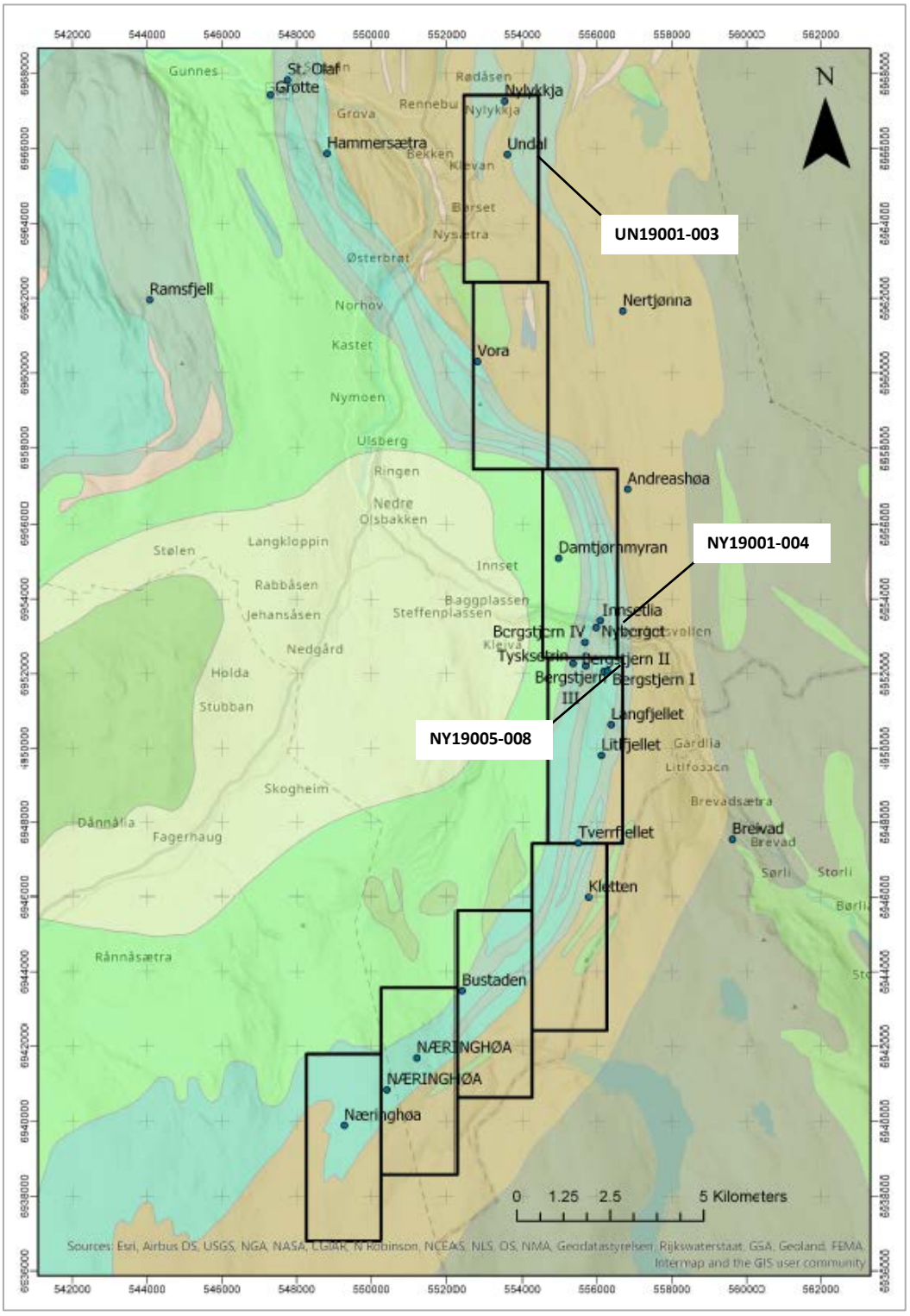

Figure 6: Overview of Koppar's Undal tenements underlain by regional 1:250,000 mapping by the Norwegian Geological Survey and showing known mineral occurrences as per the NGU database.

Authorised by the Board,
Mauro Piccini
Company Secretary

Competent Person Statement

The information in this News Release that relates to Mineral Resources is extracted from the ASX announcements made by Vulcan on 4 December 2019, and 20 January 2020, which are 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 undermining 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.

The information in this News Release that relates to Exploration Results at the Company's Norwegian Projects has been prepared and reviewed by Bill Oliver, who was previously a director of Vulcan and deemed to be a 'Competent Person'. Mr. Oliver has sufficient experience relevant to the style of mineralization and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Person as defined in the 2012 Edition of the Australian Code for the Reporting of Exploration Results, Mineral Resources, and Ore Reserves (JORC Code). Mr. Oliver consents to the disclosure of information in this News Release in the form and context in which it appears.

Appendix One: Vulcan Zero Carbon Lithium™ Project License Summary

Name	Area (ha)	Status	Date Granted / Applied for	Ownership
Ortenau	37,360	Granted	03/2019	100%
Mannheim	14,427	Granted	06/2019	100%
Taro	3,268	Application	03/2019	Earn in to 80%
Ludwig	17,716	Application	04/2019	Earn in to 80%
Rheinaue	5,848	Application	04/2019	Earn in to 80%
Insheim (held by Pfalzwerke geofuture)	1,900	Granted		MoU to earn in to 80% after formation of formal JV

Appendix Two: Norwegian Projects License Summary

Name	Area (km2)	Status	Date Granted	Permit Type	Ownership at Start of Quarter	Change in Ownership
Nygruva	9.14	Granted	7/07/2017	Exploration	100%	-100%
Grimsdalen	9.86	Granted	7/07/2017	Exploration	100%	N/A
Tverrfjellet	9.99	Granted	7/07/2017	Exploration	100%	N/A
Undal 101	10.0	Granted	5/07/2018	Exploration	100%	N/A
Undal 102	10.0	Granted	5/07/2018	Exploration	100%	N/A
Nyberget 101	10.0	Granted	5/07/2018	Exploration	100%	N/A
Nyberget 102	10.0	Granted	5/07/2018	Exploration	100%	N/A
Innerdalen 101	10.0	Granted	5/07/2018	Exploration	100%	-100%
Innerdalen 102	10.0	Granted	5/07/2018	Exploration	100%	-100%
Innerdalen 103	10.0	Granted	5/07/2018	Exploration	100%	-100%
Innerdalen 104	10.0	Granted	5/07/2018	Exploration	100%	N/A
Vangrofta 101	10.0	Granted	27/08/2018	Exploration	100%	-100%
Vangrofta 102	9.8	Granted	27/08/2018	Exploration	100%	N/A
Tverrfjellet 101	9.4	Granted	27/08/2018	Exploration	100%	-100%
Tverrfjellet 102	10.0	Granted	27/08/2018	Exploration	100%	N/A
Tverrfjellet 103	9.02	Granted	23/01/2019	Exploration	100%	N/A
Grimsdalen 101	9.0	Granted	5/03/2019	Exploration	100%	N/A
Grimsdalen 102	10.0	Granted	7/09/2018	Exploration	100%	N/A
Grimsdalen 103	8.8	Granted	7/09/2018	Exploration	100%	-100%
Grimsdalen 104	8.8	Granted	7/09/2018	Exploration	100%	-100%
Grimsdalen 105	10.0	Granted	7/09/2018	Exploration	100%	-100%
Grimsdalen 106	8.0	Granted	7/09/2018	Exploration	100%	-100%
Grimsdalen 107	10.0	Granted	7/09/2018	Exploration	100%	-100%
Grimsdalen 108	9.0	Granted	7/09/2018	Exploration	100%	-100%
Grimsdalen 109	9.0	Granted	7/09/2018	Exploration	100%	-100%

Appendix Three: Details of Rockchip Sampling at Undal and Nyberget

Sample ID	Easting	Northing	Sample Type	Description
UN19001	553475	6965868	Dump sample	Fine grained, massive sulphide (sulphides >80%, dominantly pyrite)
UN19002	553475	6965868	Dump sample	Fine grained, massive sulphide (sulphides >80%, dominantly pyrite)
UN19003	553522	6965984	Dump sample	Fine grained, massive sulphide (sulphides >80%, dominantly pyrite)
NY19001	555896	6953201	Dump sample	Fine- to medium grained, massive sulphide (sulphides >80%, dominantly pyrite)
NY19002	555896	6953201	Dump sample	Fine- to medium grained, massive sulphide (sulphides >80%, dominantly pyrite)
NY19003	555896	6953201	Dump sample	Semi-massive to massive sulphides (pyrrhotite-chalcopyrite) occurring in hanging wall of mineralised zone (NY19001/002)
NY19004	555896	6953201	Dump sample	Garnet-magnetite-biotite rock with subordinate pyrite overlying mineralised sequence (NY19001-003)
NY19005	556181	6952092	Dump sample	Massive sulphides (sulphides > 80%), medium grained, brecciated pyrrhotite-pyrite
NY19006	556076	6952081	Dump sample	Massive sulphides (sulphides > 80%), medium grained pyrite-pyrrhotite
NY19007	555612	6952112	Dump sample	Semi-massive, fine grained pyrite-dominated sulphide lenses in chert
NY19008	555612	6952112	Dump sample	Sulphide veins of pyrrhotite, pyrite, galena, sphalerite and chalcopyrite in chert (disseminated sulphides also present)

Note: Further details as prescribed by the JORC Code are included in Appendix 3.

Appendix Four: Legend for Geological Units shown in Figure 7

Appendix Five

The following Tables are provided to ensure compliance with the JORC Code (2012 Edition) requirements for the reporting of Exploration Results.

Section1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling technique	• *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used* • *Aspects of the determination of mineralisation that are material to the Public report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1m samples from which 3kg was pulverised to produce a 30g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.*	Rock chip samples collected are grab samples from historical mine workings, either from remnant dumps or from nearby outcrops.
Drilling techniques	• *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method etc.).*	No drilling results are being presented.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed* • *Measurements taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and wether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	No drilling results are being presented.

Criteria	JORC Code explanation	Commentary
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel etc.) photography.* • *The total length and percentage of the relevant intersections logged*	Samples were geologically described and these are presented in tables in the body of this announcement.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and wether quarter, half or all core taken.* • *If non-core, whether riffles, tube sampled, rotary split, etc. and whether sampled wet or dry.* • *For all sample types, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	Each rock chip sample collected weighed between 1 and 1.5kg. The samples are rockchip samples and given the nature of rockchip sampling the samples may not be representative and instead are indicative of specific geological feature or point.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	Samples were sent to ALS in Sweden for analysis. Sample prep and analysis included the following: • Fine crushing 70% < 2mm • Sample splitting (Boyd Rotary Splitter) • Pulverize split to 85% <75um • Crushing QC test • Pulverizing QC test • Analysis for gold using method Au-ICP21 – Au 30g FA ICP-AES Finish • Analysis for base metals using method ME-ICPORE – oxidising digestion w/ICP-AES Finish No standards, blanks, duplicates, or external laboratory checks were submitted. Internal laboratory QAQC procedures were followed by ALS.

Criteria	JORC Code explanation	Commentary
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes* • *Documentation of primary data, data entry procedures, data verification, data storage (physically and electronic) protocols.* • *Discuss any adjustment to assay data.*	No drilling results are being presented. No significant intersections are being reported. Assay results were sent by the lab in excel spreadsheet. No adjustment to assay data has been made.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resources estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	Coordinates of the rock chip sample locations were recorded by handheld GPS in WGS1984 UTM Zone 33N. The location of data points using a handheld GPS is considered adequate for this stage of work.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	Rock chip samples have been collected from dumps, which occur at irregular spacings. Sampling is not appropriate for inclusion in Mineral Resources or Ore Reserves. No sample compositing has been applied.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• Rockchip samples from dumps are not oriented. Outcrop samples are likely to be biased as only a specific feature was sampled. • No drilling has taken place.
Sample security	• *The measures taken to ensure sample security.*	Samples were sent by air freight from Norway to Sweden.
Audits or reviews	• *The results of and audits or reviews of sampling techniques and data.*	No audits or reviews have taken place

Section2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenements and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interest, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	Samples were collected as part of a field visit to tenements Undal 101, Undal 102, Nyberget 101 and Nyberget 102. The exploration permits are 100% held by Koppar Resources Europe Pty Ltd, which is 100% owned by Vulcan Energy Resources Ltd. The tenure is secure and in good standing at the time of writing. A full list of the company's exploration permits is available in each Quarterly Report.
Exploration done by other parties	• *Acknowledgement and appraisal of exploration by other parties.*	Activities that have taken place in the project area by previous permit holders are summarised in previous announcements based on information sourced from the Norwegian Geological Survey (NGU)'s Ore Database.
Geology	• *Deposit type, geological settings and style of mineralisation.*	The deposits are VMS deposits. The deposits are massive sulphides containing pyrite, chalcopyrite, and sphalerite.
Drill hole information	• *A summary of all information material for the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* o *Easting and northing of the drill hole collar* o *Elevation or RL (Reduced level-elevation above sea level in metres) and the drill hole collar* o *Dip and azimuth of the hole* o *Down hole length and interception depth* o *Hole length*	No drilling results are being presented.
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	No drilling results are being presented..
Data aggregation methods	• *In reporting Exploration results, weighing averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	The assays are reported individually for each sample. No averaging techniques have been applied to the reporting of exploration results. Metal equivalents have not been used

Criteria	JORC Code explanation	Commentary
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known')*	Rockchip sample results represent point values only (i.e. no widths are being reported or assumed).
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts would be included for any significant discovery being reported. These should include, but not be limited too plan view of drill hole collar locations and appropriate sectional views.*	Please refer to tables in this announcement.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	All rock chip assay results have been reported.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations, geophysical survey results, geochemical survey results, bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or containing substances.*	All known exploration activities have been disclosed in previous ASX Announcements
Further work	• *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, providing this information is not commercially sensitive.*	Further work will be designed once results have been reviewed and assessed.