Taro Exploration License Granted, Maiden Taro Inferred Resource & Re-Totalled Zero Carbon Lithium™ Project JORC Resource

Highlights:

- "Taro" Exploration License granted within the Vulcan Zero Carbon Lithium™ Project, in the Upper Rhine Valley Project area of southwest Germany (URVP).
- Announcing upgrade from Taro as an Exploration Target to a JORC Inferred Li-Brine Resource Estimation of 1.42 Mt contained Lithium Carbonate Equivalent (LCE) at a grade of 181 mg/l Li.
- Further work under way toward advancing the confidence category of the Taro resource to a higher resource classification.
- Vulcan has a binding agreement to earn 80% rights in Taro, by spending €1 million on project development.
- Vulcan's URVP Li-brine resource is now estimated to collectively contain 15.37 Mt LCE at a grade of 181 mg/l Li (Indicated & Inferred; 95% of which is in the Inferred Resource category), the largest JORC lithium resource in Europe.
- Vulcan aims to use its project to produce the lowest CO_2-eq. footprint lithium hydroxide for electric vehicles in the world[1], from its unique Zero Carbon Lithium™ Project in the Upper Rhine Valley.
- Large resource size is significant in that it gives Vulcan the potential to become a major supplier of lithium chemicals into the EU market.

Vulcan Managing Director, Dr. Francis Wedin, commented: *"We're pleased that the Taro License has now been granted in the Vulcan Zero Carbon Lithium ™ Project area. This is in line with our strategy to continue to grow the Project's scale further, towards our goal of capturing major market share in the world's fastest growing lithium market, the European electric vehicle market. The next step will be the acquisition and interpretation of data, with the objective of upgrading the resource category at Taro and include it in our ongoing PFS."*

[1] https://www.jadecove.com/research/finalfrontier

ASX Release
31 August 2020
ASX: VUL
FRA: 6KO

Highlights

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

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

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

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

Fast-track development of project under way towards production.

Corporate Directory

Managing Director
Dr Francis Wedin

Chairman
Gavin Rezos

Executive Director
Dr Horst Kreuter

Non-Executive Director
Ranya Alkadamani

CFO-Company Secretary
Robert Ierace

Fast Facts

Issued Capital: 67,687,851
Market Cap (@59.5c): $40m

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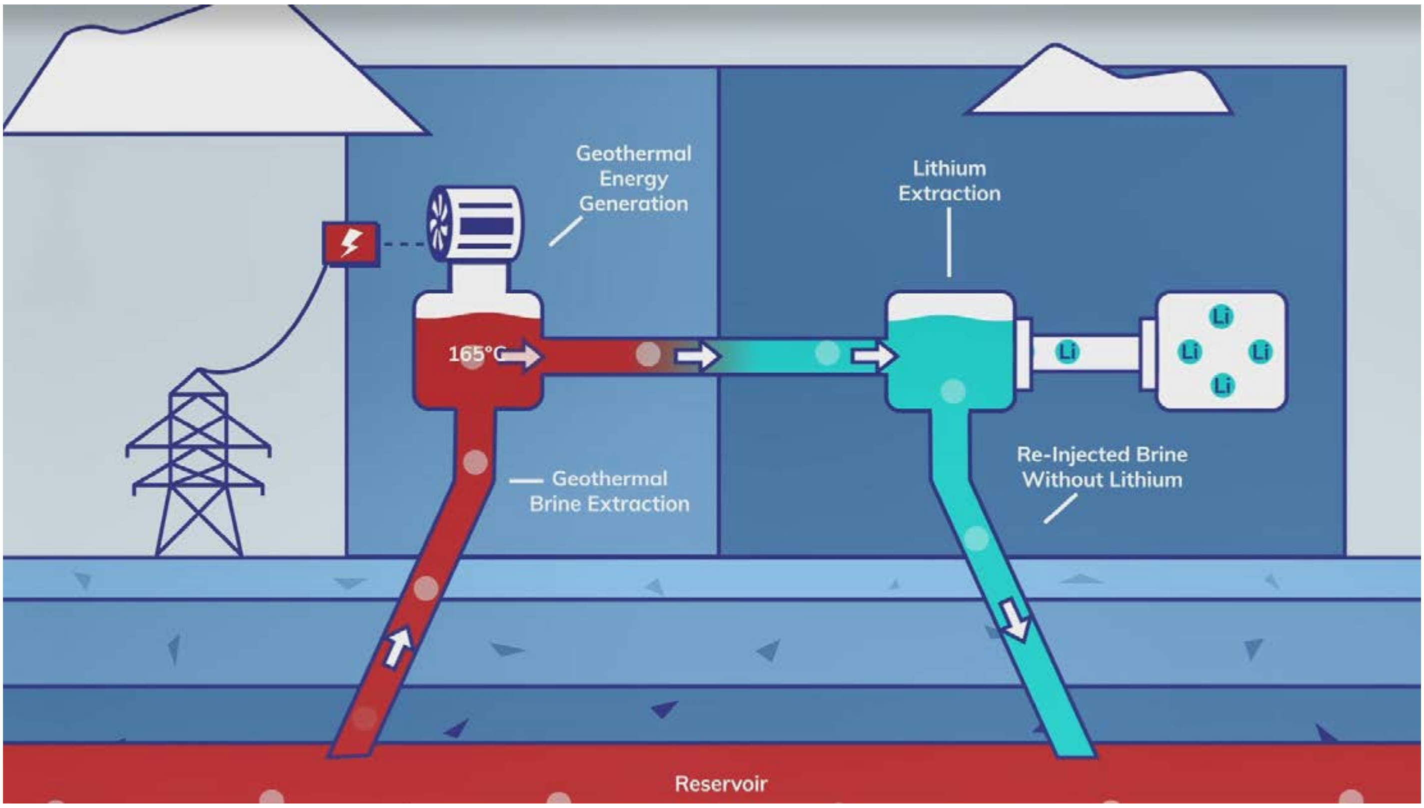
Recent activities by the Company (https://v-er.com/investor-centre/asx-announcements/):

- Appointment of lithium chemistry expert Dr. Katharina Gerber to the executive team.
- Excellent recoveries of over 90% from lithium extraction test work on Upper Rhine Valley brine.
- Appointment of London-based NRG as strategic and financial advisor.
- Securing EU backing support package, and EU-backed investment agreement into the Vulcan Zero Carbon Lithium™ Project.
- $4.8m institutional and ESG investor equity placement.
- Presentation to European Commission and European Investment Bank Vice-Presidents.
- Appointment of strategic communications expert Ranya Alkadamani to the Vulcan Board.
- Agreement to acquire 3D seismic package to accelerate project development. Commencement of lithium test work for Pre-Feasibility Study. Completion of positive Scoping Study.

About Vulcan

Vulcan Energy Resources is aiming to become the world's first Zero Carbon Lithium™ producer, by producing a battery-quality lithium hydroxide chemical product with net zero carbon footprint from its combined geothermal and lithium resource, which is Europe's largest lithium resource, in the Upper Rhine Valley of Germany. Vulcan will use its unique Zero Carbon Lithium™ process to produce both renewable geothermal energy, and lithium hydroxide, from the same deep brine source. In doing so, it will fix lithium's current problems for the EU market: a very high carbon and water footprint of production, and total reliance on imports, mostly from China. Vulcan aims to supply the lithium-ion battery and electric vehicle market in Europe, which is the fastest growing in the world. Vulcan has a resource which can satisfy Europe's needs for the electric vehicle transition, from a zero-carbon source, for many years to come.



Vulcan is pleased to announce the grant of its Taro License in the Vulcan Zero Carbon Lithium™ Project area in the Upper Rhine Valley, and maiden Taro Licence Inferred Resource estimate. In conjunction with this, Vulcan has re-totalled the collective Mineral Resource estimations for the Upper Rhine Valley Project (URVP) area within the Zero Carbon Lithium™ Project.

The Taro license area has been granted to Global Geothermal Holding UG (GGH), with which Vulcan has agreement to earn a 51% interest by spending €500,000 within two years of the license grant (Initial Expenditure). After the Initial Expenditure, a Joint Venture will be formed, with Vulcan owning 51% and GGH 49%. Vulcan will then spend a further €500,000 to earn a further 29% (Second Earn-In Expenditure) with two years, to take its JV interest to 80%. Once VER has spent the minimum amount and has taken its share to 80%, GGH can elect to co-fund the project *pro rata*, or be diluted by an industry-standard formula whilst Vulcan continues to develop the project. Should GGH be diluted below 5%, its share will be converted to a non-diluting 2% net royalty.

The now disclosed JORC Inferred Mineral Resource Estimation at Taro is 1.42 Mt contained LCE at a grade of 181 mg/l Li. Vulcan's total, combined URVP resource is now estimated at 15.37 Mt LCE at a grade of 181 mg/l Li (Indicated & Inferred; 95% of which is in the Inferred category), the largest JORC lithium resource in Europe and growing. Works will now commence to upgrade the category of the Taro resource from Inferred to Indicated status, involving the sourcing and interpretation of new data. It is intended that Taro will form part of an expanded PFS at the Vulcan Zero Carbon Lithium™ Project.

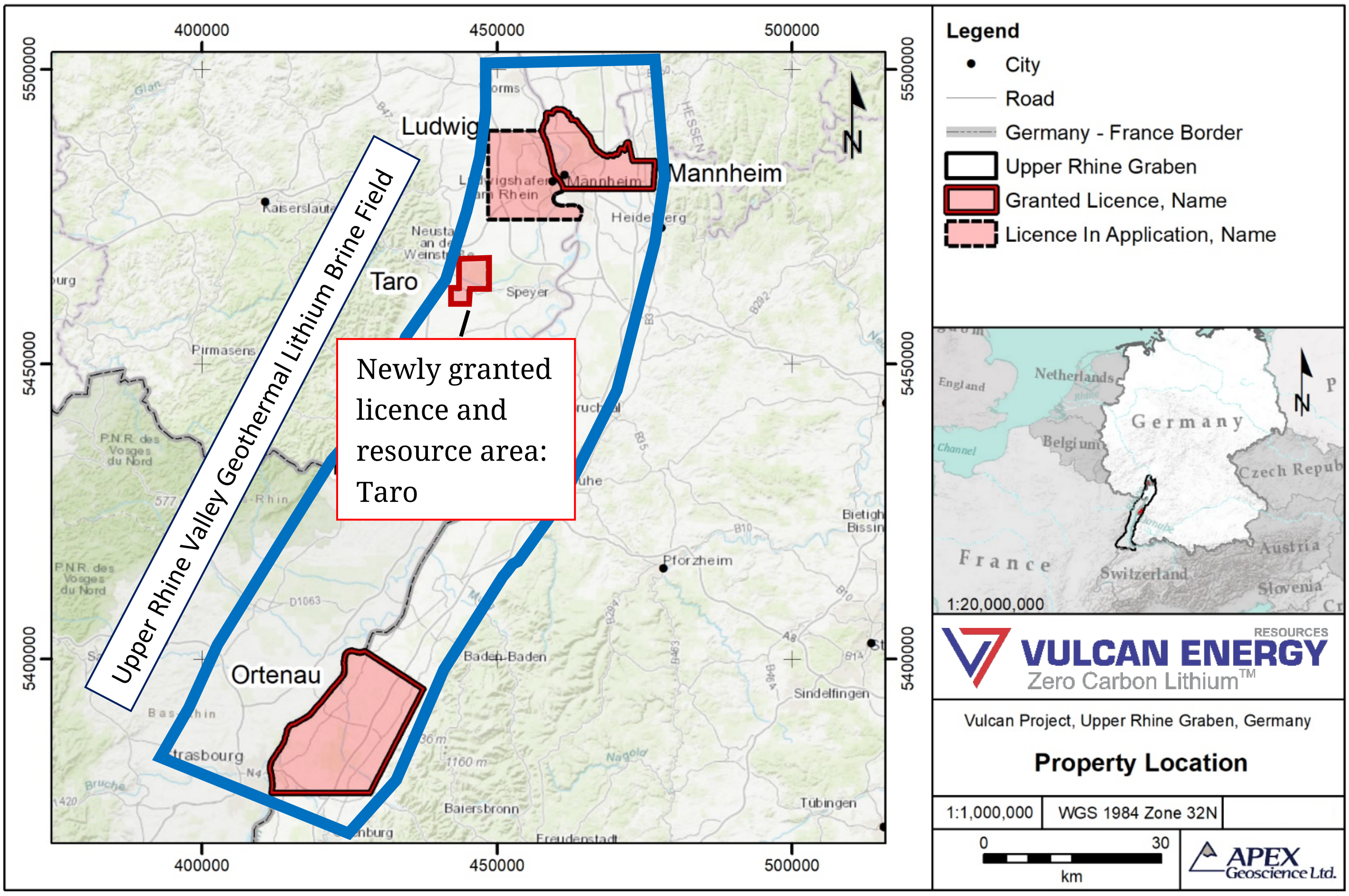


Figure 1: Taro license area, Vulcan Zero Carbon Lithium ™ Project

Summary of Resource Estimate and Reporting Criteria

As per ASX Listing Rule 5.8 and the JORC 2012 reporting guidelines, a summary of the material information used to estimate the Mineral Resource is detailed below (for more detail please refer to Table 1, Sections 1 to 3 in Appendix 3).

Property Location and Description

The Vulcan Lithium Project is comprised of multiple license areas within the Upper Rhine Valley area of southwest Germany. The Vulcan Lithium Project is strategically located at the heart of the European auto and lithium-ion battery manufacturing industry. Vulcan has acquired exploration rights through direct application to the state mining authorities. Vulcan holds two licenses, Mannheim and Ortenau, with 100% ownership. Vulcan has an earn-in agreement with a local company, GGH, which held three license application areas, designated Taro, Ludwig and Heßbach (formerly Rheinau).

Up to now, Taro was classified as an Exploration Target (ASX News Release dated 20 August 2019), and with the Exploration Licence granted, Vulcan is now disclosing a maiden Taro Licence Inferred Li-brine Resource estimate. Vulcan currently holds 0% interest in this license but has a signed agreement in place to earn 80% interest by spending €1 million. Additional geological assessment at Taro has already commenced.

Vulcan's URVP resource area, which is being re-totalled in this News Release with the now granted Taro Exploration Licence, consists of the maiden Taro Inferred Resource estimate together with two other licences with previously announced mineral resources in the Upper Rhine Valley (Inferred Resource: 4 December 2019, and Indicated Resource: 20 January 2020).

Geology and geological interpretation

The Property is located within the Upper Rhine Graben of southwestern Germany, which is characterized as a Cenozoic graben, that is filled with Triassic to Paleogene sedimentary rocks. The Lower-Middle Buntsandstein Sub-Group aquifer, which is the focus of this News Release and Taro Licence Inferred Resource estimate, overlies the crystalline Palaeozoic basement in a package of Permian-Triassic sedimentary rocks. Between periods of active tectonism, Triassic and Jurassic sedimentary rocks were deposited during relatively dormant tectonic periods onto the Western European Platform. The Lower Triassic Buntsandstein Group is subdivided into three subgroups representing a sedimentary cycle, respectively:

- Lower Buntsandstein
- Middle Buntsandstein and the
- Upper Buntsandstein.

These three major sedimentary cycles at the southern margin of the Germanic Basin (Upper Rhine Graben, or URG, area) consist of two progradational fluvial cycles followed by retrogradation of the fluvial system. The first cycle already started during the Upper Permian. The top of this cycle is marked by coarse sands or conglomerates ("Eck'sches Konglomerat)". The second progradational cycle is also marked by a conglomerate at its top ("Hauptkonglomerat"). Horizontally stratified fine sandstones at the base ("Plattensandstein", "Zwischenschichten") as well as siltstones and mudstones towards the top ("Rötton", "Voltziensandstein") represent the subsequent retrogradational cycle. This part of the Upper Buntsandstein is already affected by temporary marine ingressions and passes into the shallow marine Muschelkalk carbonate succession. The lowermost Lower Buntsandstein Subgroup (Calvörde Formation of the standard stratigraphy) represents an aquitard characterised by a terrestrial lacustrine/floodplain depositional setting. Above this, the uppermost Lower Buntsandstein and all members of the Middle Buntsandstein Subgroup form aquifer rocks that were deposited in a terrigenous fluvial to lacustrine environment dominated by braided river sediments and sandflats with eolian to dune facies interbedding. This aquifer forms the primary target aquifer that is being assessed in this News Release. Refer to News Release dated 4/12/2019 for an overview of the stratigraphy.

The top of the Buntsandstein indicates a general deepening to the North in the URG that is believed to be in relation with the graben tilting. North of the Vulcan Property, the Buntsandstein Formation is not present in the northern URG because the sedimentary rocks have been eroded prior to rifting of the northern part of the graben. The target Buntsandstein Formation aquifer underlies all Vulcan Project Exploration Licences. The Buntsandstein Formation aquifer varies in thickness between the Vulcan Project licences and has an average thickness of 476 m at Taro. Recent German Government policy emphasizes conservation and promotes the development of renewable sources. Consequently, emphasis on stratigraphically deep geothermal wells in the

URG has created access points to acquire deep, geothermally heated, lithium-enriched brine associated with the Buntsandstein Formation sandstone aquifer and Permo-Triassic strata sitting on top of the crystalline basement.

2019 Exploration Programme

Vulcan conducted a 2019 data compilation and brine sampling program that consisted of:

1. A geological compilation and subsurface review of the Buntsandstein Formation stratigraphy toward development of a three-dimensional geological model;

2. An assessment of the hydrogeological conditions underlying the Vulcan Property; and

3. Analyzing Buntsandstein Formation brine samples from Property-neighbouring geothermal wells to verify historical Li-brine geochemical results.

For details of this programme, please refer to ASX announcements released on 4 December 2019, and 20 January 2020.

The three-dimensional geological modelling was completed by APEX Geoscience Ltd. (APEX) who conducted due diligence reviews to validate seismic cross-sections provided by GeORG. The hydrogeological assessment was conducted by Dr. Kraml using publicly available information. The geochemical analytical work was completed by independent university laboratories (University of Heidelberg and University of Karlsruhe), and an accredited commercial laboratory (AGAT Laboratory in Edmonton, AB). The average lithium content from brine collected by Vulcan from four geothermal wells located throughout the Upper Rhine Graben and near the Taro licence was 181 mg/L Li (n=13 total metal analysis by ICP-OES). A description of the sample numbers, well locations, and sample points was presented in ASX News Releases dated 4 December 2019, and 20 January 2020. At surface, one well is situated within Vulcan's project area of interest. The other wells are situated in the Upper Rhine Valley geothermal lithium brine field outside the Vulcan project area. In this instance, the wells were sampled because of the lack of accessible wells that penetrate deep-seated brine-saturated sandstone aquifers underlying the Vulcan's licences. Based on the knowledge that: 1) deep-basin URG brine is lithium-enriched as per historical documentation; and 2) confined aquifers in a graben system can have massive spatial extent with homogeneous to semi-homogeneous lithium-in-brine concentrations, it is assumed that the Li-brine content of neighbouring wells are a good proxy of the lithium content in Triassic aquifers underlying the URG and the Vulcan project licences.

Estimation Methodology, Cut-off Grades & Classification Criteria

Vulcan's Lithium Brine Project is an early stage exploration project. One of the Vulcan Property licences has been assessed for the resource modelling and estimation process in this study (Taro). The Taro resource area is confined to the Buntsandstein Formation sandstone aquifer domain within the boundaries of the Taro licence. The Taro lithium-brine resource estimation was conducted in consideration of, and in accordance with JORC (2012). Statistical analysis, three-dimensional (3-D) modelling and resource estimation was prepared by APEX under the supervision of Mr. Eccles, M.Sc. P. Geol. who reviewed all work and takes responsibility for the Taro resource estimation. The workflow implemented for the calculation of the Vulcan lithium-brine resource estimations was completed using the commercial mine planning software MICROMINE (v 18.0).

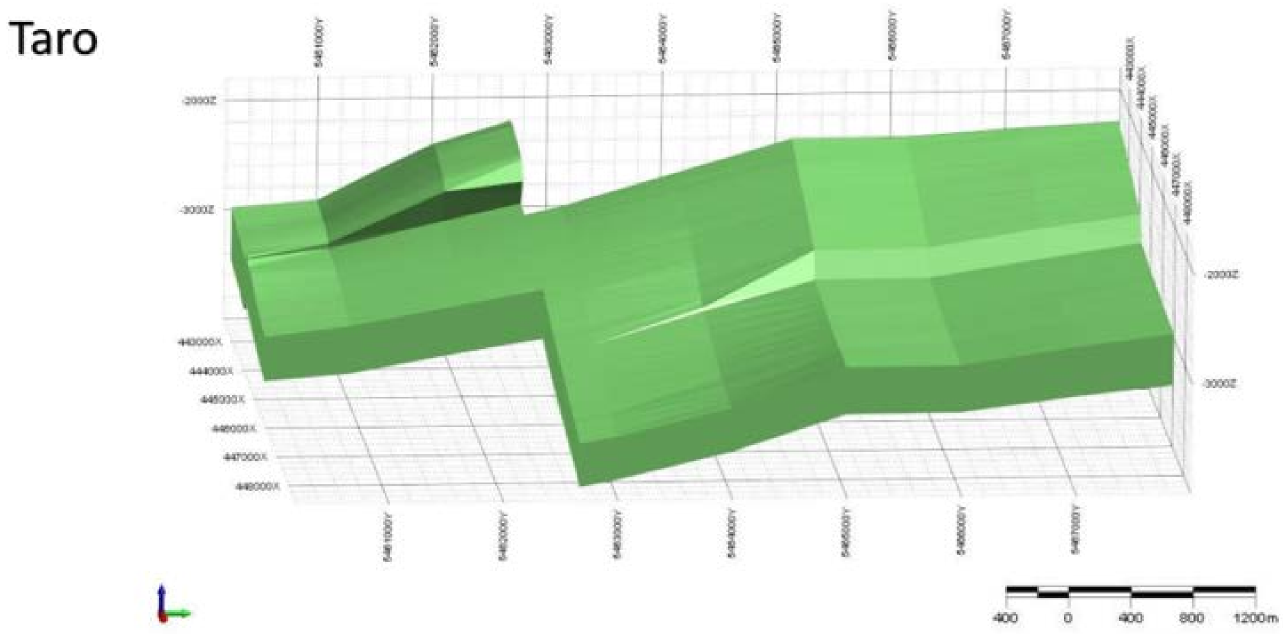


Figure 2: Taro resource 3D model. Model covers entirety of license shown in Figure 1.

Critical steps in the determination of this Taro Licence Inferred Li-Brine Resource Estimate include: 1) definition of the geometry and volume of the Buntsandstein Formation aquifer domain; 2) hydrogeological characterization of the specific yield, or in the case of the confined aquifer, the average effective porosity; 3) calculating the total volume of in situ brine; and 4) determination of the concentration of lithium within the brine and at the Property. The Buntsandstein Formation aquifer represents a large-scale aquifer that is bound by two aquitards (subject to fracture zones that could form hydraulic connections in the strata overlying, and including, the crystalline basement). The average effective porosity of the Buntsandstein Formation within the URG and the Property is 9.5%. Geothermal projects in the Upper Rhine Graben have documented sufficiently high flow rates (>50 L/s) within fault zones associated with the Buntsandstein Formation and the underlying crystalline basement. These structural sub-domains within the Buntsandstein Formation represent key determinants for locating zones of high fluid flow. The 3-D models created for the Taro licence shows that the licence was deliberately targeted by Vulcan for its high degree of faulting, and the Competent Person reasonably assumes that the licences could have high fluid flow potential within the faulted Buntsandstein Formation aquifer. A lower cutoff of 100 mg/L Li is used in this Li-brine resource estimation. It is the opinion of the Competent Person that this cutoff is acceptable because: 1) confined aquifer deposits traditionally have lower concentrations of lithium (in comparison to unconfined lithium brine salar and hard rock lithium deposits), and 2) numerous commercial, academia and independent laboratories are now commercializing rapid lithium extraction techniques using low lithium concentration source brine. The resource estimation presented in this News Release is presented as a total (or global value), and was estimated using the following relation in consideration of the Buntsandstein Formation aquifer domain within the Taro licence, or resource area:

Lithium Resource = Total Volume of the Brine-Bearing Aquifer X Average Porosity X Average Concentration of Lithium in the Brine.

The Li-Brine Inferred Resource estimate at the Taro Licence is calculated to contain 267,000 tonnes of elemental Li (see Table 1). The total lithium carbonate equivalent (LCE) for the Taro Inferred Resource is 1.42 million tonnes LCE. 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.

Table 1: Maiden Taro Licence Inferred Li-Brine Resource estimate of lithium-bearing brine within the Buntsandstein Formation aquifer domain at the Taro Licence. The other URVP Inferred and Indicated mineral resource estimates were reported in ASX announcements released on 4 December 2019, and 20 January 2020.

Tara Licence Reporting Parameters	Value
Aquifer Volume (km^3)	**15.529**
Brine Volume (km^3)	**1.475**
Average Lithium Concentration (mg/L)	**181**
Average Effective Porosity	**9.50**
Total Contained Elemental Li Resource (Tonnes)	**267,000**
Total Contained LCE Tonnes	**1,421,000**

URVP Resources	**Aquifer Volume (km^3)**	**Brine Volume (km^3)**	**Avg. Li Conc. (mg/l Li)**	**Avg. Effective Porosity**	**Contained Elemental Li Resource Tonnes**	**Contained LCE Million Tonnes**
Taro Inferred Resource estimate	15.529	1.475	181	9.50	267,000	1.42
Previously disclosed URVP Inferred Resource estimate	144.489	13.726	181	9.50	2,484,000	13.26
Previously disclosed URVP Indicated Resource estimate	8.322	0.749	181	9.00	136,000	0.72
Total URVP Indicated and Inferred Resource	**168.34**	**15.95**	**181**	**9.48**	**2,887,000**	**15.37**

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 total volume and weights are estimated at average porosities of 9.5%.
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).

Extraction and Metallurgical Methods and Parameters

Vulcan has completed a positive Scoping Study over its lithium brine project in the Upper Rhine Valley (refer announcement 21 February 2020), and since completed successful bench-scale lithium extraction testwork (refer announcement 4 August 2020) which resulted in >90% lithium recoveries. A generalized process flowsheet of Vulcan's model to derive zero-carbon lithium (LiOH•H2O) from the Vulcan Property and the Buntsandstein Formation aquifer was presented in the Scoping Study. The process flowsheet has three main components: 1) a brine conditioning process to remove deleterious metals/elements is implemented as it enters the Direct Lithium

Extraction (DLE) Plant. 2) The DLE plant removes lithium from the brine while leaving behind most impurities. The brine is sent back to the geothermal plant and re-injected into the geothermal reservoir. A new beneficiated lithium stream with significantly higher Li concentration is formed for further processing. 3) A series of chemical operations convert the lithium stream into battery quality lithium hydroxide using conventional processes that have been previously demonstrated at commercial scale. Most of the used water is recycled with no toxic waste produced and no gases are emitted. Heat and power from the geothermal plant circuit are not affected. No fossil fuels are burned during lithium hydroxide processing, thereby eliminating direct carbon emissions.

Risks and Uncertainties

Vulcan's Lithium Brine Project represents an early stage exploration project. An obvious uncertainty as discussed throughout this News Release relates to the lack of current access to brine within the boundaries of the Taro Licence. This has led to several assumptions in the resource estimation process including Li brine concentration and average porosity of the Buntsandstein Formation. Because brine cannot currently be sampled from the Buntsandstein Formation aquifer underlying the Taro licence (i.e. there are no wells that penetrate the deep-seated Buntsandstein Formation), the Competent Person relied on geochemical data associated with Vulcan's 2019 brine sampling that included, off-licence, but proximal geothermal well locations. While there was a significant amount of effective porosity measurements on Buntsandstein Formation sandstone from drill cores, none of the wells were collared within the boundaries of the Taro licence. In the CP's experience, confined aquifers in sedimentary basins can have massive spatial extent and with homogeneous to semi-homogeneous lithium-in-brine concentrations. So, it is the CP's opinion that the Li-brine content of neighbouring wells are a good proxy of lithium in the Buntsandstein Formation aquifer domain. There are, however, always local chemical variations due to numerous geological factors. In addition, porosity and permeability can be highly variable in most shoreface depositional settings, particularly those that contain diagenetic and secondary cements. Hence, future work at the Vulcan Property should involve access to more detailed datasets, containing 3D seismic, well core or well log information.

The CP has used a conservative approach in modelling the aquifer underlying the Vulcan Project. That is, APEX has wireframed the Buntsandstein Formation sandstone aquifer domain and used this wireframe – exclusively – in the resource estimation process. As geothermal producers in the URG will attest to, hot geothermal water is being utilized from the Buntsandstein Formation 'and' the underlying Permian sedimentary rocks 'and' fractured portions of the crystalline basement. Hence it is possible that the aquifer communication and dimensions underlying the licences extend to deeper levels than the Buntsandstein Formation aquifer domain that was used to estimate the Li-brine resource in this News Release. Conversely, it is also understood that the geothermal operators purposely target those stratigraphic zones that are structurally altered – as the fracture pattern and disturbance can create zones of high fluid flow. It is important to point out that in this resource estimation, the CP has assumed an average porosity for the entire Buntsandstein Formation (9.5%). Any future Li-brine operation, however, may be dependent on localized, or restricted areas, that are dominated by pervasive fracturing and significantly higher porosity. This in turn could reduce the overall horizontal scale of the resource domain, but at the same time, could expand the vertical scale of a new resource domain that correlates with the fracture zone that has elevated porosity, permeability and fluid flow. The largest source of uncertainty in the Taro Licence Inferred Li-Brine Resource Estimate is from volumes based on a 3-D geological model that was reliant on the GeORG subsurface geology interpretation. As the resource is calculated using a volumetric approach, any changes to the 3D model will affect the calculated resource estimate. Future work should include the acquisition of detailed, 2D and 3D seismic datasets, to provide higher confidence in the model.

VULCAN ENERGY RESOURCES
Zero Carbon Lithium™

Zero Carbon Lithium™

For and on behalf of the Board

Robert Ierace

Chief Financial Officer - Company Secretary

For further information visit www.v-er.com

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Competent Person Statement:

The technical information that forms the basis for this News Release has been prepared and reviewed by Mr. Roy Eccles P. Geol. and Mr. Steven Nicholls MAIG, who are both full time employees of APEX Geoscience Ltd. and deemed to be both a 'Competent Person'. Both Mr. Eccles and Mr. Nicholls have 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. Eccles and Mr. Nicholls consent to the disclosure of the technical information as they relate to the mineral resource information in this News Release in the form and context in which it appears.

Appendix One: JORC Table One

Note: The information included in the JORC Table correlates with two technical reports prepared by APEX Geoscience Ltd. (APEX) on behalf of Vulcan Energy Resources Ltd. with Effective Dates of 26 November 2019 and 13 January 2020; the former of which describes the Taro Inferred Resource estimation in detail.

JORC Code 2012 Table 1. Section 1: Sampling Techniques and Data.

Criteria	JORC Code Explanation	Commentary
Sampling techniques	• Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld 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 (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g 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 (eg submarine nodules) may warrant disclosure of detailed information.	• In 2019, Vulcan collected Buntsandstein Formation aquifer brine samples from 3 different geothermal wells in the Upper Rhine Graben area to verify historically reported lithium concentrations of the Buntsandstein Formation aquifer. Brine samples were taken from the brine circulating through the production circuit at 3 of the geothermal wells and at the bottom hole perforation point in the fourth well. Sample Blanks (deionized water with no lithium) and Sample Standards (laboratory prepared brine standard) were inserted into the sample stream. Collectively, a total of 26 brine samples (and/or aliquots) were collected by Vulcan during their 2019 brine sampling program. • Vulcan maintained chain of custody of the brine samples from the geothermal well sample point to the respective laboratories in Germany (University of Karlsruhe and University of Heidelberg). Four brine samples were couriered to the Competent Person, Roy Eccles in Edmonton, Alberta Canada for analysis at a commercial Canadian Laboratory (AGAT Laboratories). • The CP has reviewed the techniques and found the sampling was conducted using reasonable techniques in the field of brine assaying and there are no significant issues or inconsistencies that would cause one to question the validity of the sampling technique used by Vulcan.

Drilling techniques	• Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).	• Vulcan has yet to conduct any drilling at the Taro licence and is reliant on existing geothermal wells to access brine.
Drill sample recovery	• Method of recording and assessing core and chip sample recoveries and results assessed. • Measures taken to maximise sample recovery and ensure representative nature of the samples. • Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	• Vulcan has yet to conduct any drilling and/or drill core sampling at the Taro licence and is reliant on existing geothermal wells to access brine. • Brine samples were recovered directly from the flowing brine stream within the geothermal facility brine circuit. The sample method and sampling documentation are in accordance with reasonable sampling expectations and Li-brine industry standards. • Archival brine samples were stored at GeoThermal Engineering GmbH in air-tight containers and at approximately 20 °C • No relationship is expected or known between sample recovery and grade of the Li brine.
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.	• Vulcan has yet to conduct any drilling at the Taro licence and is reliant on existing geothermal wells to access brine. Hence, no logging was conducted. • Geothermal (and oil and gas) well logs are proprietary Company-owned information in Germany; however, the CP compiled well information from publicly available manuscripts and reports to ascertain and validate subsurface stratigraphy. • In addition, the project benefited from oil and gas, and geothermal, log data and seismic profile data that has been compiled into 3-D national geothermal information systems. This work was conducted by state geological surveys and coalitions of German Government and academic working groups and include data and interpretations from geophysical seismic sections and more than 30.000 oil and gas wells, geothermal, thermal, mineral water

		and mining well boreholes in the Vulcan Project area and Upper Rhine Graben. The Vulcan Project particularly benefitted from a 3-D model of the Upper Rhine Graben in which the user can select interpreted cross-sectional slices anywhere within the graben basin.
Sub-sampling techniques and sample preparation	• If core, whether cut or sawn and whether quarter, half or all core taken. • If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. • For all sample types, the nature, 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.	• Three aliquots of brine were collected at each sample point for various analytical work including: anion chemistry; trace metal ICP-OES; and dissolved metal ICP-OES. • At two geothermal plants, brine was collected from the hot and cold circuit sample points to gain an understanding of whether the geothermal plant cycle has any influence on the lithium concentration as the brine cycles through the plant. • A sample blank (composed of ionized water with no lithium) and a standard sample (a laboratory created Li-brine standard) were inserted into the sample stream at each sample site. • The sample sizes were appropriate for industry standard brine assay testing. As the brine was collected from the geothermal production brine stream, the brine sample is representative of the brine being drawn from depths associated with the Buntsandstein Formation aquifer.
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 (eg standards,	• Data verification procedures applied by the CP were performed to confirm the Li-brine mineralization at the Vulcan Property. A brine sample collected by the CP during the site inspection was split and analyzed at 2 separate commercial labs in Edmonton, Alberta Canada (AGAT Laboratory and Bureau Veritas Laboratory). The analytical result of the CP/QP collected samples contained a mean value of 181 mg/L Li substantiating lithium-enriched brine in deep URG aquifer. • As per Vulcan's QA/QC, the Company commissioned the University of Alberta to prepare a laboratory prepared Sample

	blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	Standard by adding a measured amount of elemental lithium to a saline brine concoction. • A sample blank (composed of ionized water with no lithium) and a standard sample (a laboratory created Li-brine standard) were inserted into the sample stream at each sample site. • The resulting data – as they pertain to the Sample Blank and Standard Sample samples – were excellent and show the analytical data were performed with high precision. The results helped the CP deem the data acceptable for the purpose of estimating a mineral resource. • The lithium content (and trace elements) of the brine samples were analyzed by inductively coupled plasma optical emission spectrometry (ICP-OES), which is a standard analytical technique and industry standard for the measurement of lithium-in-brine. • A split of Vulcan's 2019 samples from MK-1, MK-2, MK-3 and MK-4 was sent by courier to APEX and analyzed at AGAT Laboratories in Edmonton, AB Canada. A comparison of the analytical results between the 3 laboratories yields RSD% values of between 1.3% and 9.6%. It is concluded that there is very good data quality of Vulcan 2019 Li-brine analytical results between the 3 independent labs.
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 (physical and electronic) protocols. • Discuss any adjustment to assay data.	• Vulcan has yet to conduct any drilling or core sampling at the Taro licence. • Data verification procedures applied by the CP were performed on key data components as they pertain to the mineral resource estimation. • Analytical brine data were prepared by independent and third-party universities and or accredited commercial laboratories. • Data verification procedures applied by the CP were performed to confirm the Li-brine mineralization at the Taro licence. A brine sample collected by the CP during the site inspection was split and analyzed at 2 separate

		commercial labs in Edmonton, Alberta Canada (AGAT Laboratory and Bureau Veritas Laboratory). The analytical result contained a mean value of 181 mg/L Li substantiating lithium-enriched brine in deep URG aquifer. • No adjustments were made, or necessary, to the original laboratory data. • The CP has reviewed all geotechnical and geochemical data and found no significant issues or inconsistencies that would cause one to question the validity of the historical Li-brine geochemical data – and Vulcan's 2019 brine geochemical results – to verify that the Buntsandstein Formation aquifer is consistently enriched in lithium in the deep-seated strata and aquifer underlying the URG and the Vulcan licences.
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 Resource estimation. • Specification of the grid system used. • Quality and adequacy of topographic control.	• Vulcan has yet to conduct any drilling or core sampling at the Taro licence. Brine samples were collected from established geothermal wells (owned by geothermal companies other than Vulcan). The collar locations of the geothermal wells are documented in the ASX announcements released on 4 December 2019, and 20 January 2020. • The grid system used is UTM WGS84 zone 32N. • The surface Digital Elevation Model used in the three-dimensional model was acquired from JPL's Shuttle Radar Topography Mission (SRTM) dataset; the 1 arc-second gridded topography product provides a nominal 30 m ground coverage.
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.	• Vulcan has yet to conduct any drilling and/or core sampling at the Taro licence. • With respect to the subsurface data, subsurface interpreted geological cross-sections were used to model the Buntsandstein Formation aquifer domain for the licence, or resource, area (Taro). Each resource area utilized a separate set of east-west cross-section from GeORG that were spaced approximately 1 km part to create the 3-D subsurface model of the Buntsandstein Formation. The orientation of the

		Buntsandstein Formation is generally flat-lying and continuous in the Licence Fields. • The Buntsandstein Formation has been mapped for approximately 250 km along the north-northeast strike length along the entire Upper Rhine Graben. North of the Vulcan Property, the Buntsandstein Formation is not present in the northern Upper Rhine Graben because the sedimentary rocks have been eroded prior to rifting of the northern part of the graben. While locally there are minor faulting and slight offsets, the horizontal continuity of the sandstone unit is tremendous with the thickness isopach thickening in the vicinity of the Vulcan licences. • To help with due diligence, Vulcan acquired proprietary well log data for a geothermal well located near the Taro Licence. A comparison by the CP between the proprietary well log and GeORG cross-sections (and the 3D geological model created by APEX) illustrated a very good correlation for the general stratigraphy and specific vertical characteristics of the Buntsandstein Formation sandstone unit, which has been wireframed and is used in the resource estimation process. • Historical and proprietary lithium concentrations were compiled from throughout the Upper Rhine Valley in wells with highly variable spatial locations. Spacing between wells varied from proximal locations (<1 km) to up to 32 km apart. • At surface, the geothermal wells sampled are situated approximately 12 km away from Vulcan's Taro licence. In this instance, the wells were sampled because there currently are no wells that penetrate deep-seated brine-saturated sandstone aquifers underlying the licence. Based on the knowledge that: 1) deep-basin URG brine is lithium-enriched as per historical documentation; and 2) confined aquifers in sedimentary basins can have massive spatial extent with homogeneous to semi-homogeneous lithium-in-brine concentrations, it is assumed that the Li-brine content of neighbouring wells are a good proxy

		of the lithium content in Triassic aquifers underlying the URG and the Taro licence.
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.	• Vulcan has yet to conduct any drilling and/or core sampling at the Taro licence. • The geothermal wells investigated as part of data compilation and Vulcan's brine sampling program include vertical wells (zero orientation with a dip of -90, which is perpendicular to the Buntsandstein Formation, deviated at depth to intersect high flow structures). No sample bias is expected. • The 3D geological model created by APEX was created using 11 GeORG cross-sections such that a cross-sectional slice for approximately every 1 km was used to create the geological model. The sectional slices include local and regional faulting. The 3-D geological models were manually adjusted to honor the faulting that was interpreted at each section. This was completed by manually creating triangles that connect the fault on one section to the same location of the fault in a different section (and so on). Care was taken to ensure each model accurately reflected the interpreted cross-sections provided by the GeORG project. • It is well documented that areas of faulting within the Permo-Triassic to basement deep-strata of the URG will have some influence on local fluid flow and are therefore targeted by geothermal companies. Zones of high fluid flow would also be targeted for Li-brine exploration.
Sample security	• The measures taken to ensure sample security.	• Vulcan's 2019 brine sampling program was conducted by Dr. Kraml of GeoThermal Engineering GmbH. Dr. Kraml collected the samples and maintained their chain of custody from sample site to delivery of the samples to the University of Karlsruhe and University of Heidelberg for analytical work. In addition, Dr. Kraml couriered brine samples to APEX for analytical work at the Canadian Laboratories; during transport, chain of custody was maintained from Dr. Kraml to the courier to the CP and to the laboratory.

		• The CP collected 2 brine samples at the Property. The only time the samples were out of the possession of the CP is during the flight from Frankfurt to Edmonton (in a locked travel bag). The samples were delivered to laboratories by the CP.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	• The CP assisted with, and reviewed, the adequacy of Vulcan's sample collection, sample preparation, security, analytical procedures, QA-QC protocol, and conducted a site inspection of the Vulcan Property. • In addition, the CP coordinated discussion and meetings involving methodologies and interpretation resulting from the exploration work to define the geometry and hydrogeological characterization of the Buntsandstein Formation aquifer that form the basis of the resource model.

JORC Code 2012 Table 1. Section 2: Reporting of Exploration Results.

Criteria	JORC Code Explanation	Commentary
Mineral tenement 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 interests, 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.	• The Vulcan Project consists of: 1) two 100%-owned granted Exploration Licences (approximately 51,000 hectares; Ortenau and Mannheim); and 2) three Exploration Licence Fields subject to an earn-in agreement with GGH (an additional 27,600 hectares; Taro, Ludwig and Hesbach, of which Taro has just been granted, and Ludwig/Hesbach are in application), and 3) an MoU area over an exploitation license, as announced to market 26/11/2019. • Mannheim and Ortenau are held 100% by Vulcan Energy. For Taro, Ludwig and Hesbach, Vulcan has an agreement in place with Global Geothermal Holding (GGH) in which Vulcan can earn a joint venture (JV) interest of 80% by spending 1million Euro.

		• Licence's Ortenau and Mannheim were granted on 1st of April 2019 and 18th of June 2019 respectively for a period of two years. Taro was granted in August 2020 for two years. • The Licences are defined as 'Exploration Licences' and include the exploration rights to explore for geothermal brine projects. If required, Exploitation Rights would need be acquired pending the results of Vulcan's future exploration work. The Exploitation Licence is typically smaller in spatial area in comparison to the Exploration Licence and require advanced modelling of the aquifer production and injection wells. • The holder of an exploration licence for commercial purposes shall pay an annual field royalty. The field royalty for the first year the licence is granted shall be EUR$5 per square kilometre or part thereof and shall increase for each subsequent year by EUR$5 per year, not to exceed EUR$25 per square kilometre or part thereof. The expenses incurred for exploration in the exploration licence field during the year shall be deducted from the field royalty for that year. • The holder of an Exploitation Licence shall pay an annual royalty for the freely mineable resources extracted or incidentally extracted from the extraction licence field. A mining royalty must not be paid for resources that are extracted exclusively for technical reasons and are not commercially exploited. The mining royalty shall be calculated as ten percent of the average attainable market value of resources of this type extracted under this Act within the assessment period. For resources without any market value, the competent authority shall determine the price on which the mining royalty shall be based in consultation with experts. • Protected areas exist in each of the Licences and include: water protection areas (Zones I and II), nature conservation areas and Natura 2000 areas. These are not expected to impact the development of Taro.

Exploration done by other parties	• Acknowledgment and appraisal of exploration by other parties.	• The Upper Rhine Graben is being actively investigated for its geothermal potential by multiple companies (other than Vulcan). • Exploration and Exploitation Licences associated with the geothermal work is regulated by the *Federal Mining Act*, which manages and promotes the exploration, extraction and processing of mineral resources in Germany. To the best of the CP's knowledge, the geothermal facilities are compliant with the Act. • A summary of historical brine geochemical analytical results was analysed. Of the 43 historical brine analysis records, Six historical analysis are from the Buntsandstein Formation aquifer and yield a mine brine composition of 158.1 mg/L Li. The historical data are presented in referred journal manuscripts and the CP has verified that the analytical protocols were standard in the field of brine analysis and conducted at university-based and/or accredited laboratories. • The historical geochemical information was used as background information and were not used as part of the resource estimation process.
Geology	• Deposit type, geological setting and style of mineralisation.	• The potential lithium mineralization is situated within confined, subsurface aquifers associated with the Lower Triassic Buntsandstein Formation sandstone situated within the Upper Rhein Graben at depths of greater than approximately 2,000 m below surface. • The Buntsandstein Formation is comprised predominantly of terrigenous sand facies deposited in arid to semi-arid conditions in fluvial, sandflat, lacustrine and eolian sedimentary environments. • The various facies exert controls on the porosity (1% to 27%) and permeability (<1 to >100 mD) of the sandstone sub-units. • Lithium mineralisation occur with brine occupying the Buntsandstein Formation aquifer pore space.

		• The chemical signature of the brine is controlled by fluid-rock geochemical interactions. With increasing depth, total dissolved solids (TDS) increases in NaCl-dominated brine. Lithium enrichment associated with these deep brines is believed to related to interaction with crystalline basement fluids and/or dissolution of micaceous materials at higher temperatures.
Drill hole Information	• A summary of all information material to 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) of the drill hole collar o dip and azimuth of the hole o down hole length and interception depth o hole length. • 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.	• Vulcan has yet to conduct any drilling and/or core sampling at the Taro licence. • A description of the sample numbers, well locations, and sample points was presented in news releases dated 4 December 2019, and 20 January 2020. • With respect to geothermal wells that were sampled by Vulcan during their 2019 brine sampling program, the well ID's, coordinates, collar elevations, orientation, dip and total vertical depth are provided. The geothermal wells were drilled as vertical wells (zero orientation with a dip of -90, which is perpendicular to the Buntsandstein Formation, deviated at depth to best intersect high flow fault structures). The wells are perforated at the extent of their total vertical depth, and via geothermal pumping, draw brine from the area surrounding the end of well upward to the earth's surface; hence a sample width is not applicable due to the draw-down influence of the liquid brine being sampled.
Data aggregation methods	• In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated. • Where aggregate intercepts incorporate short lengths of	• Vulcan has yet to conduct any drilling and/or sampling and is reliant on existing geothermal wells operated by companies other than Vulcan to acquire brine samples for analysis. • The brine geochemical data presented represent raw laboratory values, and weighting average or truncation techniques were applied to the data.

	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.	• Elemental lithium within the Taro Licence Inferred Li-Brine Resource Estimate were converted to Lithium Carbonate Equivalent ("LCE" using a conversion factor of 5.323 to convert Li to Li_2CO_3); reporting lithium values in LCE units is a standard industry practice.
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 (eg 'down hole length, true width not known').	• Vulcan has yet to conduct any drilling and/or sampling and is reliant on existing geothermal wells operated by companies other than Vulcan to acquire brine samples for analysis. • These wells were drilled at zero orientation and -90 dip, deviated at depth to best intersect high flow fault zones. While intersections within these wells would be considered true width, the mineralization being sought is related to liquid brine within a confined aquifer. Consequently, intercept widths are a moot point as the well perforation points would essentially gather mineralized brine from the aquifer at large assuming the pumping rate is sufficient enough to orchestrate drawdown of the brine being sampled.
Diagrams	• Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	• All appropriate map images, including scale and direction information such that the reader can properly orientate the information being portrayed, are presented within the body of this news release.
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.	• Comprehensive reporting of all Exploration Results is presented in full.
Other substantive	• Other exploration data, if meaningful and material, should be reported including (but not	• A substantive amount of historical data was used and include information in relation to the: spatial dimensions of the Buntsandstein

exploration data	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 contaminating substances.	Formation aquifer, hydrogeological characterization of the Buntsandstein Formation aquifer, and historical lithium composition of the Buntsandstein Formation aquifer brine. o Spatial dimensions of the aquifer: The licence, or resource area, utilized a separate set of east-west cross-section from the GeORG geothermal information, the creators of which utilized an extensive set of oil and gas, and geothermal, well logs and seismic data. A total of 49 cross-sections were used to create the 3-D subsurface model of the Buntsandstein Formation; the cross-sections were spaced approximately 1 km part. o Hydrogeological information: Over 300 and 250 Buntsandstein Formation measurements were used to discuss and define porosity and permeability. o Historical assessment of Li-brine: A total of 43 historical brine analysis records were compiled, including 6 Li-brine analysis from the Buntsandstein Formation aquifer. • With respect to Vulcan's 2019 brine sampling program, a total of 26 analyses were conducted on brine samples from 3 geothermal wells in the Upper Rhine Graben (the analysis included Sample Blanks and Sample Standards). The results of Vulcan's 2019 brine sampling program confirmed the historical geochemical data compiled by the CP.
Further work	• The nature and scale of planned further work (eg 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, provided this	• Vulcan has already complied with the earlier recommendations of the CP to conduct mineral processing testwork. • Going forward, the acquisition of more detailed 2D and 3D seismic data is recommended to advance the classification of the Taro resource.

	information is not commercially sensitive.	

JORC Code 2012 Table 1. Section 3: Estimation and Reporting of Mineral Resources

Criteria	JORC Code Explanation	Commentary
Database integrity	• Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes. • Data validation procedures used.	• The review of third-party, government and/or compiled data was conducted by the CP who – to the best of his knowledge – can confirm the data was generated with proper procedures, has been accurately transcribed from the original source and is suitable for use in this News Release. • The CP was able to verify 'lithium-enriched brine' from formation water collected via a geothermal well at the basement-Buntsandstein Formation boundary during a Sep 2019 site visit. • To validate the GeORG information system, the CP contacted the GeORG project Administrator, Günter Sokol, who noted that the GeORG model was created using industry donated seismic sections. In addition, Vulcan acquired proprietary well log data for a geothermal well located near the Taro and Hesbach Licences. A comparison by the CP between the proprietary well log and GeORG cross-sections (and the 3D geological model created by APEX) illustrated a very good correlation for the general stratigraphy and specific vertical characteristics of the Buntsandstein Formation sandstone unit, which has been wireframed and is used in the resource estimation process. • Lastly, based on the CP's previous experience and research of confined lithium-brine deposits, and sampling and analytical protocols, the CP is satisfied to include these data in resource modelling, evaluation and estimations as part of Vulcan Property lithium-brine resource estimate presented in this News Release.

Site visits	• Comment on any site visits undertaken by the Competent Person and the outcome of those visits. • If no site visits have been undertaken indicate why this is the case.	• The CP conducted a site inspection of the Vulcan Property on September 17, 2019. • The CP drove to and stepped on two of the Vulcan project sub-properties (Taro and Hesbach). • The site inspection of the Vulcan Property observed the existing infrastructure at/near the Property licences, including primary and secondary road networks that make the licences accessible and with ease of access to the electrical power grid. • The CP collected two brine samples and delivered them to the independent and accredited laboratories in Edmonton, Alberta. Both labs routinely process high TDS brine and perform trace element analysis for lithium. The results (mean of 181 mg/L Li) validated lithium-enrichment of the Buntsandstein Formation aquifer brine in the Upper Rhine Graben.
Geological interpretation	• Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit. • Nature of the data used and of any assumptions made. • The effect, if any, of alternative interpretations on Mineral Resource estimation. • The use of geology in guiding and controlling Mineral Resource estimation. • • The factors affecting continuity both of grade and geology.	• An obvious uncertainty as discussed throughout this News Release relates to the lack of subsurface data and current access to brine within the boundaries of the Vulcan Property licences. This has led to several assumptions in the resource estimation process including: o Li-brine concentration: Because brine cannot currently be sampled from the Buntsandstein Formation aquifer underlying, and within, the licence (i.e. there are no wells that penetrate the deep-seated Buntsandstein Formation), the CP relied on geochemical data associated with Vulcan's 2019 brine sampling that included, off-licence, but proximal geothermal well locations. o Average porosity of the Buntsandstein Formation: While there was a significant amount of effective porosity measurements on Buntsandstein Formation

		sandstone from drill cores, none of the wells were collared within the boundaries of the licence. • In the CP's experience, confined aquifers in sedimentary basins can have massive spatial extent and with homogeneous to semi-homogeneous lithium-in-brine concentrations. So, it is the CP's opinion that the Li-brine content of neighboring wells are a good proxy of lithium in the Buntsandstein Formation aquifer domain. • The largest source of uncertainty in the Inferred Li-Brine Resource Estimate is from volumes based on a 3-D geological model that was reliant on the GeORG subsurface geology interpretation. APEX attempted to validate subsurface information acquired from GeORG by: 1) contacting the GeORG Administrator; and 2) reviewing proprietary downhole log information acquired by Vulcan. Hence it is the opinion of the CP that the 3-D model used in the resource estimation process is a reasonable representation of the Buntsandstein Formation aquifer domain underlying the Vulcan Property licences. The author also states that any advancement of the resource classification would benefit from a more thorough validation process of the GeORG data to improve the confidence level of the deposit's stratigraphy. This includes the acquisition of seismic, wireline well logs, etc. to verify the GeORG geological interpretation.
Dimensions	• The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	• The top of the Buntsandstein Formation within Vulcan's licences is located at depths that range from 1,120 m to 4,910 m below the surface (average 2,910 m from surface). At Taro, the Buntsandstein Group occurs with an average to and base elevation of -2,763.13 and -3,236.7 m from surface, respectively.

		• The Buntsandstein Formation varies in mean thickness between the Licence Fields with the Taro having a mean thickness of 476 m. • The thickness of the strata is in-line with Vulcan's other licences and the author advocates that – with the exception of the northernmost part of the Upper Rhine Graben, the Permo-Triassic strata are laterally extensive over almost the entire length of the Upper Rhine Graben. • The extent of the Taro resource area wireframe was clipped to the boundary of the Taro Licence, which has an area of 32.6 km^2, is centred at approximately 445750 E, 5464800 N (Zone 32N WGS84), and has vertical and lateral licence measurements of approximately 2.5 to 7.7 km (north-south) and 3.0 to 4.9 km (east-west).The volume of the Buntsandstein Formation aquifer domain underlying the Taro licence was calculated using the 3-D wireframes created in Micromine. As the Buntsandstein Formation is horizontally extensive over the entire Upper Rhine Graben, the strike length of the Buntsandstein Formation wireframes was extended over the entire Licence extent for Taro. • As the 3-D wireframes are closed solids, the CP calculated the volume of rock they enclose. Buntsandstein aquifer volume at Taro = 15.529 km^3 • A mean porosity value of 9.5% is used to define the porosity of the overall Buntsandstein Formation aquifer in this resource estimation. • The brine volume of reach resource area can be calculated by multiplying the aquifer volume (in m3) times the average porosity (9.5%) times the percentage of brine assumed within

		the pore space (100% as there is no oil and gas within the Buntsandstein in the samples collected by Vulcan). Brine volumes within the Buntsandstein aquifer volume at Taro = 1.475 km^3
Estimation and modelling techniques	• The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used. • The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data. • The assumptions made regarding recovery of by-products. • Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation). • In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed. • Any assumptions behind modelling of selective mining units. • Any assumptions about correlation between variables. • Description of how the geological interpretation was used to control the resource estimates.	• This is a maiden Li-brine Inferred Resource estimate for the Taro licence at the Vulcan Property. There are no known previous 'mineral resource' evaluations for Li-brine in the Taro license at the Vulcan Property. Vulcan had announced a previous Exploration Target for the Taro Licence on 20 August 2019. This maiden Li-brine Inferred Resource estimate for the Taro licence replaces and supersedes the Taro Exploration Target. • The CP conducted initial estimations in the form of Exploration Targets for all Vulcan Property Licences (see Vulcan Energy Resources Ltd. August 20, 2019 News Release). In this instance, the Taro licences were advanced to mineral resource on the basis of: 1) Vulcan's 2019 brine geochemical sampling program, which verified historical Li-brine concentrations in the vicinity of the licences; and 2) the development of a more detailed 3D geological model using GeORG cross-sections at a spacing of approximately 1 km. The other licences remain Exploration Targets and require additional work to increase the confidence level prior to making upgraded or modified statements on the Exploration Targets. • The only element being estimated is lithium, and consideration of deleterious elements is beyond the scope of this early stage project and inferred resource estimation. • With respect to lithium recovery, Vulcan has conducted bench-scale testwork, which yielded >90% recovery results. A generalized process flowsheet of Vulcan's

	• Discussion of basis for using or not using grade cutting or capping. • The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	model to derive zero-carbon lithium hydroxide from the Vulcan Property and the Buntsandstein Formation aquifer has been presented in Vulcan's Scoping Study along with risks, uncertainties and mitigation strategies, as they pertain to process operations associated with extracting lithium-from-brine in conjunction with geothermal production. • The workflow implemented for the calculation of the Vulcan lithium-brine resource estimations was completed using: the commercial mine planning software MICROMINE (v 18.0). • The resource is calculated using a volumetric approach. Critical steps in the determination of the inferred Vulcan lithium-brine resources include: • Definition of the geometry and volume of the Buntsandstein Formation domain aquifers; • Hydrogeological characterization and an historical compilation and assessment of mean porosity within the Buntsandstein Formation; • Determination of the concentration of lithium in the brine; • Demonstration of reasonable prospects of eventual economic extraction are justified; and • Estimate the in-situ lithium resources of Buntsandstein Formation brine underlying the Vulcan Property licences using the relation: Lithium Resource = Total Volume of the Brine-Bearing Aquifer X Average Effective Porosity X Average Concentration of Lithium in the Brine. • The geometry and volume of the aquifers were calculated by designing 3-D model that wireframed the outline of the Buntsandstein Formation aquifer for each of the Taro licence, or resource area. A total of 11 cross-sections were used to

		formulate the 3-D model. Individual 2-D strings of the Buntsandstein Formation were created by tracing the top and bottom of the Buntsandstein Formation stratigraphy using each cross-section. The 2-D strings were then connected together to create a solid 3-D wireframe of the Buntsandstein Formation aquifer. The 3-D geological models were manually adjusted to honor the faulting that was interpreted at each section. • Buntsandstein Formation sandstone porosity varies widely in the URG, from 1.4% to 24.2%. Hence, the CP uses a mean porosity value of 9.5% (mean of over 300 effective porosity measurements from publicly available reports). This value is considered to represent a conservative, limit of Buntsandstein porosity for use in the resource estimation presented in this report. • The average lithium-in-brine concentration used in the resource estimations presented in this report is 181 mg/L Li and is based on the average of 13 samples collected by Vulcan during the 2019 sampling program and analyzed by trace metal ICP-OES analysis at 3 independent laboratories. • No top cuts or capping upper limits have been applied, or are deemed to be necessary, as confined Li-brine deposits typically do not exhibit the same extreme values as precious metal deposits (and this statement is applicable to the Buntsandstein Formation aquifer Li-brine data in this study).
Moisture	• Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	• Not applicable. The resource is a Li-brine resource.
Cut-off parameters	• The basis of the adopted cut-off grade(s) or quality parameters applied.	• A lower cutoff of 100 mg/L Li is used in this Li-brine resource estimation. It is the opinion of the author that this cutoff is

		acceptable because: 1) confined aquifer deposits traditionally have lower concentrations of lithium (in comparison to unconfined lithium-brine salar and hard rock lithium deposits), and 2) numerous commercial, academia and independent laboratories are now experimenting with rapid lithium extraction techniques using low lithium concentration source brine.
Mining factors or assumptions	• Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	• At present, there are no oil and gas, or geothermal wells, that penetrate the deep-seated Buntsandstein Formation aquifer within the boundaries of the Taro licence. Consequently, to obtain brine access, Vulcan is either reliant on partnerships with pre-existing geothermal companies, and/or drilling or renting their own wells at the Property. • It is the CP's opinion that geothermal facilities and Li-brine extraction operations are a good fit. The Li-brine extraction pilot plant (or commercial operation) could be situated after the heat exchanger, and therefore would not influence the main purpose of the geothermal plant. Assuming the lithium extraction process causes minimal compositional change to the brine, the lithium-removed brine could return to the subsurface aquifer via the reinjection well. Hence it is assumed both companies (geothermal and lithium) are extracting their own commodity of interest with virtually no interference between the two processes. • It is also assumed that Vulcan could drill their own wells and the 3-D geological model completed as part of this report shows there is a high degree of faulting with potential for high fluid flow in the Buntsandstein Formation underlying the licences.

Metallurgical factors or assumptions	• The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	• Confined aquifer Li-brine deposits traditionally have lower concentrations of lithium in comparison to unconfined Li-brine salars and hard rock lithium deposits. In addition, the aquifer deposits typically occur in areas where solar evaporation is not an option. Consequently, a number of companies and laboratories (commercial, academia, independent) are attempting to develop modern technology that will beneficiate and recover the Li-brine from these types of deposits in real time. The developers are aware that the technology must incorporate lower source concentrations of lithium and are therefore testing Li-brine at low lithium concentrations. Accordingly, there are several companies and laboratories that are experimenting with rapid lithium extraction techniques and/or conduct test work on low lithium source brine, including starting source levels of approximately 50 mg/L Li. Large lithium companies such as Livent have been successfully using such technologies on their continental brines for many years, and Direct Lithium Extraction (DLE) project accounted for 19% of global lithium chemicals production in 2019. • It is the opinion of the CP that it is only a matter of time, funding and test work until the rapid extraction technology becomes commercially used on geothermal brines. For example, European Geothermal Brines Lithium (EuGeLi) is developing the ERAMET and IFPEN direct adsorption lithium extraction processes at the Soultz-sous-Forêts Geothermal Facility, in the URG near the Town of Soultz-sous-Forêts and has reportedly extracted 85-90% lithium from brine. In addition, EnergySource Minerals Ltd. has reportedly extracted lithium from geothermal brine projects at the Salton Sea geothermal resource. • Vulcan has conducted a series of bench-scale Direct Lithium Extration (DLE) tests,

		the results of which are presented in a ASX Release dated 3 August 2020 (https://v-er.com/test-work-shows-excellent-lithium-recoveries/).
Environmental factors or assumptions	• Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	• Recent Government policy emphasizes conservation and hence promotes development of renewable sources, such as solar, wind, biomass, water and geothermal power. It the supposition of the CP that green energy opportunities such as Li-brine projects will be viewed favourable by the German Government. • As per the *Federal Mining Act*, Conditions associated with Vulcan's granted licences include: • Geothermal research within 400 vertical metres below the ground surface is not permitted. • Research is not permitted in water resource protection areas or nature and landscape conservation areas. • Seismic shocks related to the Vulcan project may not exceed limits set out by the Mining Law; and • Consent from affected landowners and authorities is required. • If required, Exploitation Licences would need to be acquired by Vulcan pending the results of Vulcan's future exploration work. The Exploitation Licence is typically smaller in spatial area in comparison to the Exploration Licence and require advanced modelling of the aquifer production and injection wells. Protected areas exist in each of the licences and include water protection areas (Zones I and II), nature conservation areas and Natural 2000 areas.
Bulk density	• Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements,	• Bulk density is not applied, or necessary to be applied, to the liquid, brine-hosted resource. • The lithium resource was calculated using the volume of the brine bearing aquifer, the average effective porosity, the

	the nature, size and representativeness of the samples. • The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.	percentage of brine in the pore space and the average concentration of lithium in the brine.
Audits or reviews.	• The results of any audits or reviews of Mineral Resource estimates.	• Vulcan's Li-Brine Project is an early stage exploration project. No audits were conducted on the Inferred Li-Brine Resource Estimate presented in this report.
Classification	• The basis for the classification of the Mineral Resources into varying confidence categories. • Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data). • • Whether the result appropriately reflects the Competent Person's view of the deposit.	• The CP has classified the Vulcan Taro Lithium-Brine Project resource as an Inferred Mineral Resource. The Vulcan Property is an early stage exploration project and there has limited geological sampling and the geological evidence is sufficient to imply but not verify geological grade or quality continuity. • As per JORC (2012), the Inferred category is intended to cover situations where a mineral concentration or occurrence has been identified and limits measurements and sampling completed, but where the data are insufficient to allow the geological and grade continuity to be confidently interpreted. • It is the opinion of the CP that the project requires further detail to elevate the resource to a higher classification level. This work includes additional geological modelling and verification of the GeORG geological interpretation, and ongoing brine processing test work toward the development of a modern lithium extraction technology tailored for geothermal brines.
Discussion of relative	• Where appropriate a statement of the relative accuracy and confidence	• Uncertainty as discussed throughout this report relates to the overall lack of

accuracy/ confidence	level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate. • The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. • These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	subsurface data and current access to brine within the boundaries of the licence. This has led to several assumptions in the resource estimation process including: Li-brine concentration and average porosity of the Buntsandstein Formation. • Another source of uncertainty in the Taro Inferred Li-Brine Resource Estimate is from volumes based on a 3-D geological model that was reliant on the GeORG subsurface geology interpretation. APEX was unable to verify the GeORG cross-sections using abundant existing /and or new seismic data or downhole geophysical surveys to verify the accuracy of the GeORG interpretation. • As the resource is calculated using a volumetric approach, any changes to the 3-D model, the lithium concentration and/or the porosity will affect the calculated resource estimate. • In addition, it is entirely possible that future geological models to advance the deposit and resource classification, use a strategy in which sub-domains of the Buntsandstein Formation aquifer are wireframed to depict localized fracture zones with high fluid flow. This methodology would certainly reduce the overall Inferred Resource Estimate presented in this Technical Report into small Indicated and/or Measured resources.