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Growth and diversification of Zero Carbon Lithium™ development portfolio
New permit in Italy prospective for sustainable lithium development

Vulcan Energy Resources Limited (Vulcan; ASX: VUL, the Company) is aiming to become the world's first integrated lithium and renewable energy producer with a net zero carbon footprint. Vulcan's unique Zero Carbon Lithium™ Project aims to produce both renewable geothermal energy and lithium hydroxide for electric vehicles, from the same deep brine source in the Upper Rhine Valley, Germany.

- Vulcan subsidiary Vulcan Energy Italy Pty Ltd has been granted a new Research Permit in Italy, named "Cesano" located 20 km NNW of Rome.
- The Cesano Permit extends over an area of 11.5 km² and includes an area where a single geothermal well yielded two "hot brine" samples that contained high average lithium-in-brine historical (1976) grades of 350 and 380 mg/l Li.
- Vulcan considers the area to have potential for sustainable lithium battery chemicals development in line with its Zero Carbon Lithium™ business, given the recorded high heat and lithium grades within the brine, and encouraging flow rates.
- Vulcan's in-house geological team in Germany will be collaborating with Italian geologists and local stakeholders to collate and assess historical data, verify the lithium content and assess the brine for potential lithium project development. If successful, the Cesano Project could provide a source of strategic, sustainable lithium in Italy for Europe's battery and automotive market, and become a possible future additive to Vulcan's Zero Carbon Lithium™ business.

Vulcan's Managing Director Dr. Francis Wedin commented: *"Vulcan is aiming to increase the future supply of our sustainable lithium product in response to significant customer demand. By growing and diversifying our project development portfolio - an initiative we internally call "Project Rollo" - we ultimately aim to develop a global Zero Carbon Lithium™ business focused on Europe, and to become a significant producer of renewable energy and sustainable lithium for electric vehicles. Ultimately, we aim to leverage our extensive experience in lithium extraction from heated brines to have a materially decarbonising effect on global electric vehicle supply chains and in doing so build stakeholder value.*

"After an extensive geological review, we have identified an area in Italy with positive flow rate, historical lithium grade and reservoir temperature indications that could be conducive to Vulcan's unique method of using renewable heat to drive lithium processing, with net zero carbon footprint, for the European electric vehicle market. We will be working with local partners to ascertain the potential of the area in more detail, and ascertain next steps."

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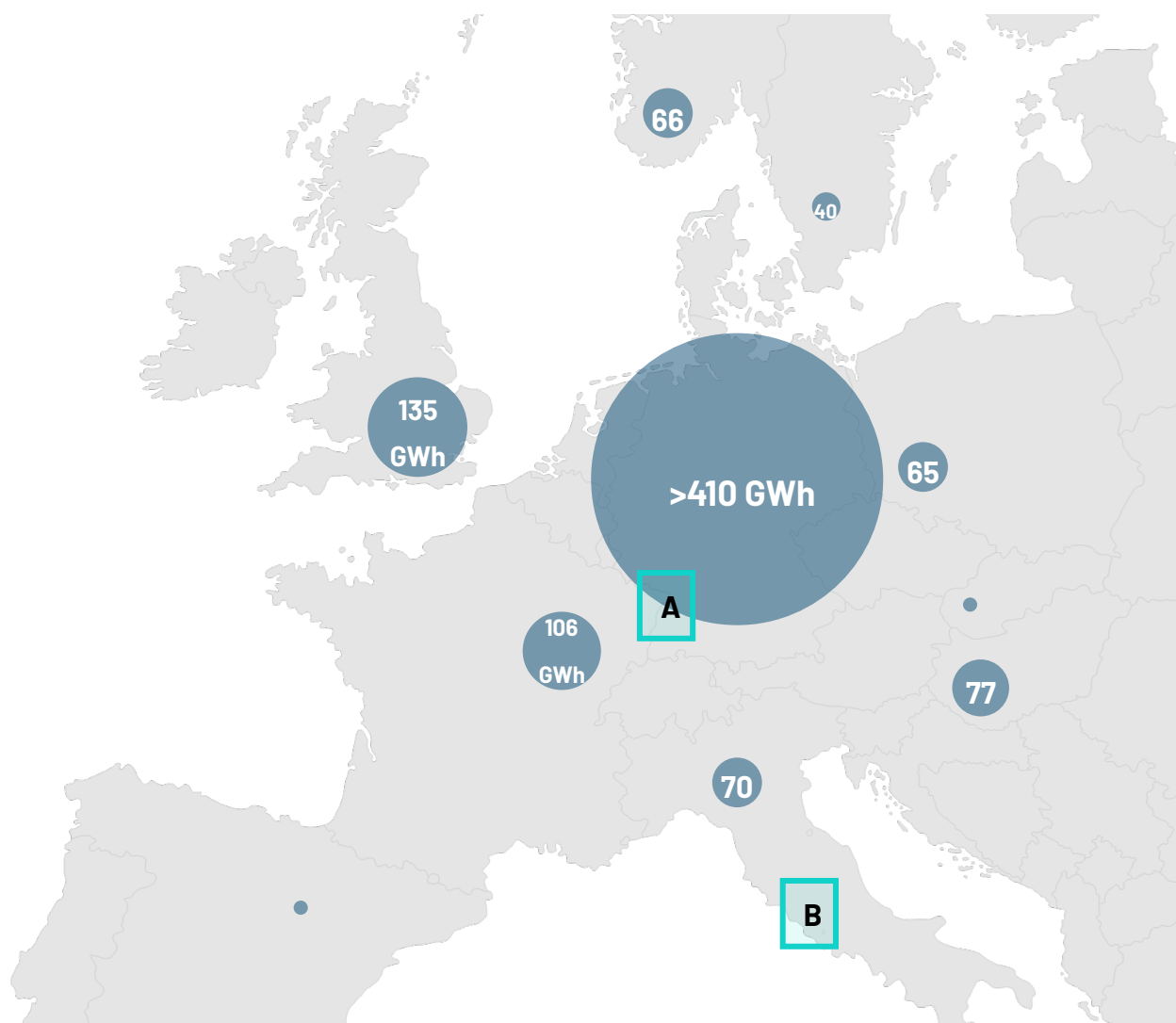


Figure 1: Location of A) Vulcan's Zero Carbon Lithium Project in the Upper Rhine Valley, Germany, in relation to B) the newly granted Research Permit in Italy.

The Cesano Research Permit is located within the Cesano geothermal field, which was discovered in 1974, and is approximately 20km NNW of the Capital City of Rome. During 1975, a "hot brine" was discovered in a single geothermal well (Cesano 1) at a depth of approximately 1,390 m below surface by ENEL. Two hot brine samples yielded historical lithium contents of 350 and 380 mg/L Li in filtered and unfiltered brine (Calamai et al, 1976). The historical results represent one of the highest global lithium grades recorded in a confined aquifer geothermal brine setting.

The Cesano geothermal field occurs within the Monti Sabatini volcanic region. Several deep wells (1,400-3,000m) were historically drilled in the geothermal field and the deep brine has yet to be tested, or publicly documented, for their lithium content. The Baccano caldera was formed over a carbonate structural high with Quaternary volcanic cover, on the inside of a large graben that developed from the Upper Miocene, and is characterised by a strong thermal anomaly (Funicello et al, 1979). The Cesano 1 well was drilled at the southern border of the Baccano caldera, in correlation with a gravity high anomaly and a thermo-metamorphic halo in the Lower Jurassic carbonate rocks of the Umbria-Marche sedimentary basin (Petracchini et al., 2015).

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The Cesano 1 well was reportedly tested at more than “250 tons/hr flow rate and about 50 tons/hr flashing steam, at a delivery pressure of 12-16 kg/cm²g”. At the date of brine sampling, the recorded “temperature at the base of the well, in conditions far from thermal equilibrium, was 210 °C, but the base temperature in the aquifer was thought to likely exceed 300 °C” (Calamai et al, 1976).

The geothermal reservoir of Cesano field occurs within fractured pelagic and shallow water carbonate rocks in the lower portions of the Late Triassic to Paleogene Umbria-Marche sequence. The Cesano geothermal fluid is made of brine with salinities that are up to 350,000 mg/L and rich in sodium and potassium chloride (Petracchini and Scrocca, 2015).

Table 3. Average composition of the water produced from the Cesano 1 well (in ppm).

Constituent	a	b	Constituent	a	b	Constituent	a	b
pH	8.50	—	Cs	80.00	—	Ba	0.10	—
Ca	43.00	106.00	As	7.90	8.30	Sr	0.05	—
Mg	12.00	17.00	Cu	0.012	—	Mn	0.10	—
Na	63 570.00	78 930.00	Zn	0.04	—	HCO ₃	1 900.00	5 850.00
K	21 370.00	48 350.00	Pb	0.01	—	SO ₄	91 010.00	163 290.00
NH ₄	12.00	87.00	Co	0.02	—	H ₃ BO ₃	13 800.00	15 160.00
Fe	0.70	0.70	Ni	0.02	—	Cl	37 010.00	42 850.00
Li	350.00	380.00	Hg	0.001	0.001	F	100.00	—
Rb	400.00	450.00	U	0.04	—	SiO ₂	130.00	132.00
						TDS	230 000.00	356 000.00

a. Filtered water

b. Total, including filtered water and deposit.

Calamai et al. (1976)

Figure 2: Average brine composition from Cesano 001 well (Calamai et al, 1976)

Based on the historical geochemical values from Calamai et al. (1976), a study by Pauwels et al (1989) concluded that the Cesano geothermal field “presents very favourable characteristics for lithium production”. A subsequent study (Pauwels et al, 1990) used the historical geochemical data to assimilate aluminate adsorption tests on reconstituted Cesano brine and concluded that “the results are very encouraging for Li recovery from these fluids without any prior treatment. Very high Li recovery rates are obtained in (a) few minutes...”. A Competent Person and Vulcan has not verified the experimental work and are not taking the information as current metallurgical results.

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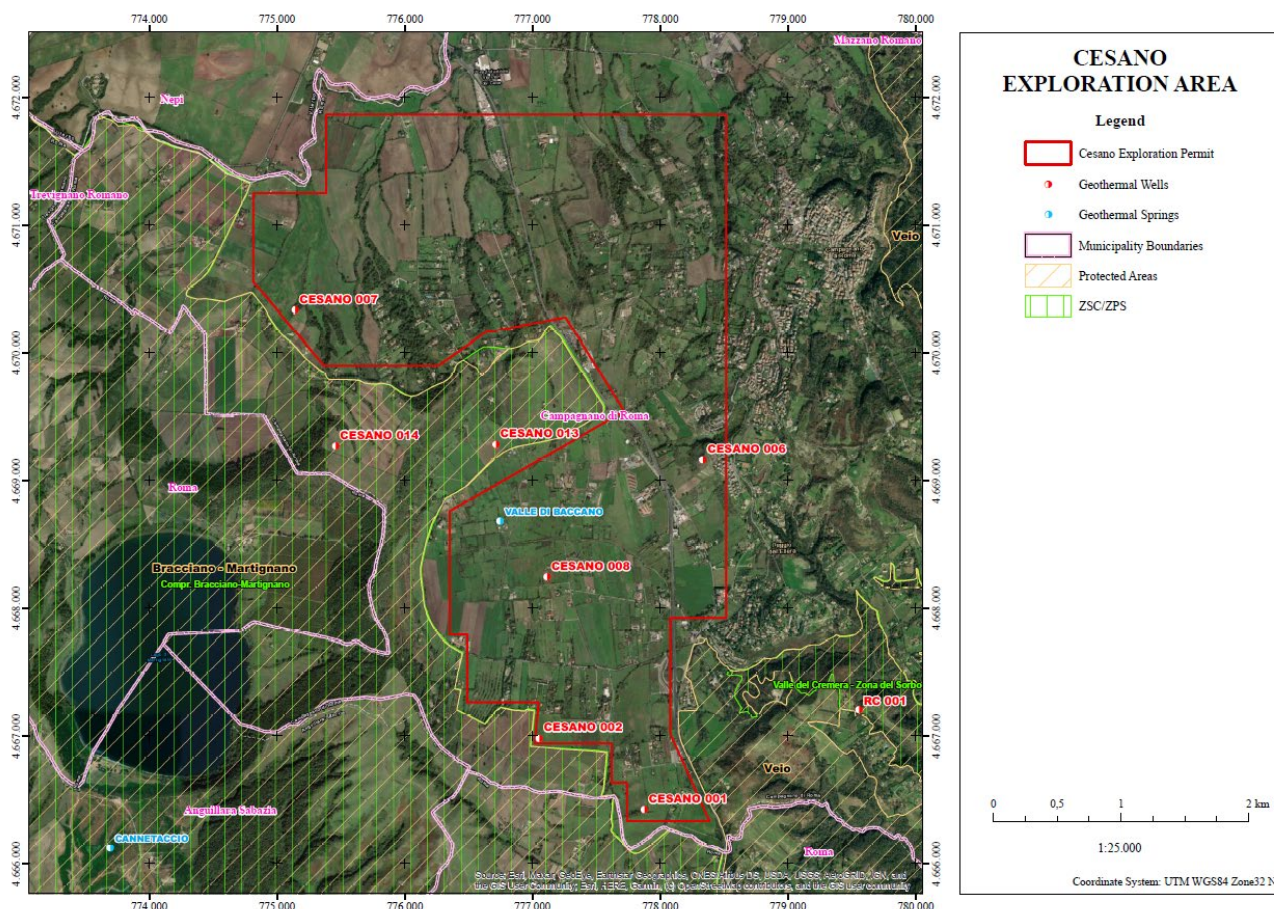


Figure 3: Map of the Cesano Permit exploration license, Italy, showing the location of the historically drilled wells, “Cesano 001, 002, 006, 007, 008”, within the license permit area.

The Vulcan team has noted some potential future challenges with development of lithium extraction at Cesano, including structural complexity and presence of high quantities of dissolved H_2S . The structural complexity could be better understood with a 3D survey and the mitigation of H_2S within a closed loop system is understood and a standard practice at other brine and geothermal plants worldwide.

While there has recently been a moratorium on geothermal renewable energy exploration (but not lithium exploration) in the Cesano region, a recent study by Cinti et al (2018), concluded that “the exploitation of the identified geothermal resources in the ...Sabatini volcanic district (are) very suitable for both generation of electric power and direct uses that, due to the presence of many potential users (municipalities, industrial sites, agricultural, and touristic infrastructures), can play a significant role in the reduction of CO_2 emissions.” Initially, as a next step, Vulcan plans on conducting surface studies including CO_2 soil gas analysis, to detect open/permeable fluid conduits, as well as a surface analogue study to define lithological heterogeneity.

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About Vulcan

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



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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., who is independent of Vulcan, a full-time employee of APEX Geoscience Ltd. and deemed to be both a 'Competent Person'. Mr. Eccles has sufficient experience relevant to the style of mineralization and type of deposit under consideration and to the activity which he is 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 consents to the disclosure of information in this News Release in the form and context in which it appears.

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JORC CODE 2012 TABLE 1. SECTION 1: SAMPLING TECHNIQUES AND DATA.

Criteria	JORC Code Explanation	Commentary
Sampling techniques	<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property.• The only deep brine sampling known to the Competent Person (CP) was conducted, historically, on a single geothermal well (Cesano 1) by Calamai et al. (1976). These authors reported that formation water, or brine, samples were collected at the well head at regular approximately one-hour intervals. Hence, the brine should be representative of the brine sampled from the wells perforation window(s).



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Drilling techniques	<ul style="list-style-type: none"> • 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). 	<ul style="list-style-type: none"> • Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property. • There are several geothermal wells within the boundaries of the Cesano Property that were drilled by companies other than Vulcan.
Drill sample recovery	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property. • The only deep brine sampling known to the CP was conducted, historically, on a single geothermal well (Cesano 1) by Calamai et al. (1976). These authors reported that formation water, or brine, samples were collected at the well head at regular approximately one-hour intervals. Hence, the brine should be representative of the brine sampled from the wells perforation window(s).
Logging	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property. • Several authors summarize the drill logs from the historical geothermal wells, particularly for wells Cesano 1 and Cesano 4 (e.g., Calamai et al., 1976; Capelli and Mazza, 2005; Petracchini et al., 2015).



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Sub-sampling techniques and sample preparation	<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property.• The only deep brine sampling known to the CP was conducted on a single geothermal well (Cesano 1) by Calamai et al. (1976). These authors reported that formation water, or brine, samples were collected at the well head at regular approximately one-hour intervals. Hence, the brine should be representative of the brine sampled from the wells perforation window(s). There is no mention of quality control – quality assurance procedures in the authors manuscript.
Quality of assay data and laboratory tests	<ul style="list-style-type: none">• 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, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	<ul style="list-style-type: none">• Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property.• The only deep brine sampling known to the CP was conducted on a single geothermal well (Cesano 1) by Calamai et al. (1976). These authors reported geochemical analyses that included whole rock and trace element atomic absorption analytical techniques, and the analyses was conducted on both filtered and unfiltered brine samples. The historical analysis was performed by spectrophotometry using Perkin-Elmer models 303 and 503 (with deuterium back-ground corrector) equipped with a graphite furnace, P.E. Model HG-72. There is no mention of quality control – quality assurance procedures in the authors manuscript.



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Verification of sampling and assaying	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property.
Location of data points	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property. • Vulcan has not attempted to verify the accuracy of the historical geothermal well locations to date. • With respect to the Research Permit, the vertices of the permit are in World Geodetic System 1984 (WGS84) coordinates.
Data spacing and distribution	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property.
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property
Sample security	<ul style="list-style-type: none"> • The measures taken to ensure sample security. 	<ul style="list-style-type: none"> • Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property
Audits or reviews	<ul style="list-style-type: none"> • The results of any audits or reviews of sampling techniques and data. 	<ul style="list-style-type: none"> • has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property. Hence no audits have taken place.



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

Criteria	JORC Code Explanation	Commentary																																																																																																																																		
Mineral tenement and land tenure status	<ul style="list-style-type: none">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.	<ul style="list-style-type: none">Vulcan has been granted a single Research Permit in Italy, named "Cesano".The permit encompasses an area of 11.5 km².The permit is in the Lazio region in the Municipality of Campagnano Romano, Italy.The permit is valid for a period of 3 (three) years.The vertices of the permit are described the following table in WGS84 coordinates. <table><tr><th></th><th colspan="2">WGS84</th><th colspan="2">ROME 1940 (W Monte Mario)</th></tr><tr><th>Vertices</th><th>longitude</th><th>latitude</th><th>longitude</th><th>latitude</th></tr><tr><td>a</td><td>12° 19' 58,212"</td><td>42° 09' 01,913"</td><td>-0° 07' 09,5"</td><td>42° 08' 59,5"</td></tr><tr><td>b</td><td>12° 22' 14,483"</td><td>42° 08' 57,928"</td><td>-0° 04' 53,2"</td><td>42° 08' 55,5"</td></tr><tr><td>c</td><td>12° 22' 07,713"</td><td>42° 08' 50,365"</td><td>-0° 03' 50,6"</td><td>42° 08' 48,5"</td></tr><tr><td>d</td><td>12° 21' 48,668"</td><td>42° 08' 50,915"</td><td>-0° 05' 19,0"</td><td>42° 08' 48,0"</td></tr><tr><td>e</td><td>12° 21' 47,110"</td><td>42° 08' 21,475"</td><td>-0° 05' 20,6"</td><td>42° 08' 19,1"</td></tr><tr><td>f</td><td>12° 21' 59,324"</td><td>42° 05' 58,853"</td><td>-0° 05' 08,4"</td><td>42° 05' 56,5"</td></tr><tr><td>g</td><td>12° 21' 31,223"</td><td>42° 05' 59,677"</td><td>-0° 05' 36,5"</td><td>42° 05' 57,3"</td></tr><tr><td>h</td><td>12° 21' 31,738"</td><td>42° 06' 09,436"</td><td>-0° 05' 35,9"</td><td>42° 06' 07,1"</td></tr><tr><td>i</td><td>12° 21' 27,133"</td><td>42° 06' 09,571"</td><td>-0° 05' 40,5"</td><td>42° 06' 07,2"</td></tr><tr><td>j</td><td>12° 21' 27,691"</td><td>42° 06' 20,136"</td><td>-0° 05' 40,0"</td><td>42° 06' 17,8"</td></tr><tr><td>k</td><td>12° 21' 01,838"</td><td>42° 06' 20,892"</td><td>-0° 06' 05,8"</td><td>42° 06' 18,5"</td></tr><tr><td>l</td><td>12° 21' 02,394"</td><td>42° 06' 31,443"</td><td>-0° 06' 05,3"</td><td>42° 06' 29,1"</td></tr><tr><td>m</td><td>12° 20' 38,532"</td><td>42° 06' 32,140"</td><td>-0° 06' 29,1"</td><td>42° 06' 29,8"</td></tr><tr><td>n</td><td>12° 20' 39,390"</td><td>42° 06' 48,444"</td><td>-0° 06' 28,3"</td><td>42° 06' 46,1"</td></tr><tr><td>o</td><td>12° 20' 33,341"</td><td>42° 06' 48,620"</td><td>-0° 06' 34,3"</td><td>42° 06' 46,2"</td></tr><tr><td>p</td><td>12° 20' 34,994"</td><td>42° 07' 20,035"</td><td>-0° 06' 32,7"</td><td>42° 07' 17,7"</td></tr><tr><td>q</td><td>12° 21' 35,781"</td><td>42° 07' 43,736"</td><td>-0° 05' 31,9"</td><td>42° 07' 41,4"</td></tr><tr><td>r</td><td>12° 21' 17,055"</td><td>42° 08' 08,133"</td><td>-0° 05' 50,6"</td><td>42° 08' 05,8"</td></tr><tr><td>s</td><td>12° 20' 49,649"</td><td>42° 08' 05,036"</td><td>-0° 06' 18,0"</td><td>42° 08' 02,7"</td></tr><tr><td>t</td><td>12° 20' 32,995"</td><td>42° 07' 57,115"</td><td>-0° 06' 34,7"</td><td>42° 07' 54,7"</td></tr><tr><td>u</td><td>12° 19' 54,142"</td><td>42° 07' 58,247"</td><td>-0° 07' 13,5"</td><td>42° 07' 55,9"</td></tr><tr><td>v</td><td>12° 19' 32,251"</td><td>42° 08' 19,081"</td><td>-0° 07' 35,3"</td><td>42° 08' 16,8"</td></tr><tr><td>w</td><td>12° 19' 33,481"</td><td>42° 08' 42,552"</td><td>-0° 07' 34,1"</td><td>42° 08' 40,3"</td></tr><tr><td>x</td><td>12° 19' 57,160"</td><td>42° 08' 41,864"</td><td>-0° 07' 10,5"</td><td>42° 08' 39,5"</td></tr></table> <ul style="list-style-type: none">The Cesano Property is shaped like an hourglass with 1) the top portion measuring approximately 3.62 km (E-W) by 1.94 km (N-S), 2) the lower portion approximately 2.13 km (E-W) by 3.02 km (N-S), and 3) the middle neck portion measuring approximately 1.0 km (E-W).		WGS84		ROME 1940 (W Monte Mario)		Vertices	longitude	latitude	longitude	latitude	a	12° 19' 58,212"	42° 09' 01,913"	-0° 07' 09,5"	42° 08' 59,5"	b	12° 22' 14,483"	42° 08' 57,928"	-0° 04' 53,2"	42° 08' 55,5"	c	12° 22' 07,713"	42° 08' 50,365"	-0° 03' 50,6"	42° 08' 48,5"	d	12° 21' 48,668"	42° 08' 50,915"	-0° 05' 19,0"	42° 08' 48,0"	e	12° 21' 47,110"	42° 08' 21,475"	-0° 05' 20,6"	42° 08' 19,1"	f	12° 21' 59,324"	42° 05' 58,853"	-0° 05' 08,4"	42° 05' 56,5"	g	12° 21' 31,223"	42° 05' 59,677"	-0° 05' 36,5"	42° 05' 57,3"	h	12° 21' 31,738"	42° 06' 09,436"	-0° 05' 35,9"	42° 06' 07,1"	i	12° 21' 27,133"	42° 06' 09,571"	-0° 05' 40,5"	42° 06' 07,2"	j	12° 21' 27,691"	42° 06' 20,136"	-0° 05' 40,0"	42° 06' 17,8"	k	12° 21' 01,838"	42° 06' 20,892"	-0° 06' 05,8"	42° 06' 18,5"	l	12° 21' 02,394"	42° 06' 31,443"	-0° 06' 05,3"	42° 06' 29,1"	m	12° 20' 38,532"	42° 06' 32,140"	-0° 06' 29,1"	42° 06' 29,8"	n	12° 20' 39,390"	42° 06' 48,444"	-0° 06' 28,3"	42° 06' 46,1"	o	12° 20' 33,341"	42° 06' 48,620"	-0° 06' 34,3"	42° 06' 46,2"	p	12° 20' 34,994"	42° 07' 20,035"	-0° 06' 32,7"	42° 07' 17,7"	q	12° 21' 35,781"	42° 07' 43,736"	-0° 05' 31,9"	42° 07' 41,4"	r	12° 21' 17,055"	42° 08' 08,133"	-0° 05' 50,6"	42° 08' 05,8"	s	12° 20' 49,649"	42° 08' 05,036"	-0° 06' 18,0"	42° 08' 02,7"	t	12° 20' 32,995"	42° 07' 57,115"	-0° 06' 34,7"	42° 07' 54,7"	u	12° 19' 54,142"	42° 07' 58,247"	-0° 07' 13,5"	42° 07' 55,9"	v	12° 19' 32,251"	42° 08' 19,081"	-0° 07' 35,3"	42° 08' 16,8"	w	12° 19' 33,481"	42° 08' 42,552"	-0° 07' 34,1"	42° 08' 40,3"	x	12° 19' 57,160"	42° 08' 41,864"	-0° 07' 10,5"	42° 08' 39,5"
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		<ul style="list-style-type: none"> • No invasive exploration work (e.g., excavation or drilling) is to be conducted within the framework of the Research Permit, and will be subject to separate approvals. • Access to private property must be authorized in advance by the owners of the land. • The eventual issue of the mining concession is subject to the application of Directive 2006/123/EC. • If the investigations and field tests confirm the possibility of exploiting the mineral for which the research permit is issued or other associated minerals, the proposer must activate a V.I.A. procedure aimed at the environmental assessment of the works necessary for the exploitation of the resource, as they are included in the typology listed in Annex III, letter 'u' of Legislative Decree. 152/2006.
Exploration done by other parties	<ul style="list-style-type: none"> • Acknowledgment and appraisal of exploration by other parties. 	<ul style="list-style-type: none"> • Several deep wells (1,400-3,000m) were historically drilled in the Cesano geothermal field, including within the Cesano Property, by companies other than Vulcan.
Geology	<ul style="list-style-type: none"> • Deposit type, geological setting and style of mineralisation. 	<ul style="list-style-type: none"> • Vulcan is exploring the Cesano Property as part of their lithium-brine project portfolio. Lithium-enriched brine is known to occur in deep sedimentary basins as confined aquifer Li-brine deposits. • The Cesano geothermal field occurs within the Monti Sabatini volcanic region. Several deep wells (1,400-3,000m) were historically drilled in the geothermal field and the deep brine has yet to be tested, or publicly documented, for their lithium content. The Baccano caldera was formed over a carbonate structural high with Quaternary volcanic cover, on the inside of a large graben that developed from the Upper Miocene and is characterised by a strong thermal anomaly (Funciello et al, 1979). The Cesano 1 well was drilled at the southern border of the Baccano caldera, in correlation with a gravity high anomaly and a thermo-metamorphic halo in the Lower Jurassic carbonate rocks of the Umbria-Marche sedimentary basin (Petracchini et al., 2015). • The geothermal reservoir of Cesano field occurs within fractured pelagic and shallow water carbonate rocks in the lower portions of the Late Triassic to Paleogene Umbria-Marche sequence. The Cesano geothermal fluid is made of brine with a salinity's that are up to 350,000 mg/L and rich in sodium and potassium chloride (Petracchini and Scrocca, 2015).



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Drill hole Information	<ul style="list-style-type: none">• 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:<ul style="list-style-type: none">○ easting and northing of the drill hole collar○ elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar○ dip and azimuth of the hole○ down hole length and interception depth○ 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.	<ul style="list-style-type: none">• Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property.• Compilation work on historical exploration information, including the geothermal wells, is underway.
Data aggregation methods	<ul style="list-style-type: none">• 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 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	<ul style="list-style-type: none">• Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property.• Compilation work on historical exploration information, including geothermal wells is underway.



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	<ul style="list-style-type: none"> • shown in detail. • The assumptions used for any reporting of metal equivalent values should be clearly stated. 	
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> • 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'). 	<ul style="list-style-type: none"> • Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property. • Compilation work on historical exploration information, including geothermal wells is underway.
Diagrams	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • A map of the Cesano Permit area is presented in Figure 3 of the ASX announcement. • In addition, Figure 3 of the ASX announcement includes the locations of historical geothermal wells and geothermal springs relative to the license area. The geothermal wells/spring locations were obtained via published journal documents and records obtained by Vulcan's local consultants in Italy.
Balanced reporting	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property. • Compilation work on historical exploration information, including geothermal wells is underway.
Other substantive exploration data	<ul style="list-style-type: none"> • Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey 	<ul style="list-style-type: none"> • Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property. • Compilation work on historical exploration information, including geothermal wells is underway.



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	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.	
Further work	<ul style="list-style-type: none">• 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 information is not commercially sensitive.	<ul style="list-style-type: none">• Vulcan has just acquired the Cesano Research Permit in Cesano, Italy, and has yet to conduct any exploration work at the Property.• Compilation work on historical exploration information, including geothermal wells is underway.• Vulcan plans on conducting surface studies including CO₂ soil gas analysis, to detect open/permeable fluid conduits, as well as a surface analogue study to define lithological heterogeneity.• Brine sampling is required to validate the historical lithium content of the brine at the Cesano Property.