Phase Two Preliminary Feasibility Study showcases improved economics and repeatable development growth strategy

Vulcan Energy (ASX: VUL, FSE: VUL), (Vulcan or the Company) is pleased to announce the completion of its Preliminary Feasibility Study (PFS) for Project Ludwig, its proposed second phase of lithium and geothermal energy production. Project Ludwig will be an integrated lithium chemical and renewable heat project in the Ludwigshafen region of the Upper Rhine Valley Brine Field, Germany.

Project Ludwig will build on learnings and experience from Vulcan's first phase, Project Lionheart, to drive improved capital efficiency. The PFS is evidence that Lionheart is a repeatable development platform capable of delivering stronger returns and lower capital intensity across future phases.

Key highlights

- Located in the Ludwigshafen region of the URVBF, Project Ludwig is approximately 60km north of Lionheart. It can leverage the same regional brine system, proprietary extraction platform, in-house drilling capability, permitting experience and delivery organisation
- Project Ludwig delivers robust economics, with a pre-tax NPV_8 of €2.6 billion and IRR of 25.0%, post-tax NPV_8 of €1.7 billion and IRR of 20.2%, based on a 30-year planned operating life[1]
- Capital intensity reduced by 15% relative to Lionheart, with total CAPEX of €1.26 billion, reflecting Lionheart learnings, increased project maturity and simplification of the development concept[1]
- Lowest industry quartile OPEX of €4,101/t LCE, driven by low-cost lithium production from brine, and integration of heat generation[2]
- Base case production of 21,100 tonnes per annum (tpa) of battery-grade lithium carbonate (Li_2CO_3), providing battery application flexibility to the Vulcan product offering, given lithium hydroxide production from Lionheart[1]
- Co-production of 3,125 GWh per annum of renewable heat for internal Vulcan process demand and complementary external sales[1]
- Project Ludwig Indicated Mineral Resources increased from 655 kt LCE to 1,251 kt LCE (+91%) at 155mg/l Li and Inferred Mineral Resources increased from 2,128kt LCE to 2,230kt LCE (+5%) at 155 mg/l Li[3]
- Project Ludwig maiden Geothermal Resources estimate of 193 PJ Indicated Classification and Inferred Classification of 295 PJ[4]
- Asset-level financing strategy commenced to advance Project Ludwig to be able to take a Final Investment Decision (FID) after successful start-up of Project Lionheart; strategic partner selection processes under way.

[1] Refer to the 'Production Target and Economic Summary" section of this announcement for assumptions.
[2] Refer to Vulcan ASX Announcement titled "Financing and FID Presentation" released on 3 December 2025.
[3] Mineral Resources are reported in accordance with the JORC Code (2012).
[4] Geothermal Resources are reported in accordance with the Australian Geothermal Reporting Code (Second Edition, 2010).

Vulcan's Managing Director and CEO, Cris Moreno, commented: *"Project Ludwig represents the strategic next step in our phased development of the Upper Rhine Valley Brine Field. We're applying the technical, operational and commercial blueprint of Lionheart to a second development area with similar resource and geological characteristics.*

"The growth potential of our assets is significant, and supports the potential for numerous future phase projects, where our engineering and construction teams can transition between developments. The Project Ludwig development plan combines lithium production with renewable heat supply for internal use and for sale to local partners.

"We look forward to advancing Project Ludwig using our existing blueprint in the same brine field, with the same bankable lithium extraction technology. In doing so, we're creating shareholder value without taking our focus away from delivering Lionheart. The PFS allows us to deliver on this plan."

Project Ludwig – PFS Summary

The PFS was guided by Vulcan's inhouse technical teams supported by Worley on integrated specialist study components. JordProxa developed the lithium carbonate process design package to PFS level definition. Worley then integrated these packages in the overall facility configuration and prepared Total Installed Cost estimate and Basis of Estimate for the lithium carbonate plant. GLJ Ltd. reviewed the updated lithium Mineral Resource estimates, and Geothermal Resource estimates and Competent Person disclosure.

Project Ludwig aims to further utilise Vulcan's globally significant sub-surface Resource across its ~2,000 km^2 license area in the URVBF. The Company aims, beyond Phase One Lionheart, to target a new phase of production every 2-3 years in the URVBF, where the FID for a new project would be triggered by commencement of production in the preceding project, i.e. FID for Project Ludwig would be made after Lionheart commences production.

Project Ludwig will benefit from the pre-investment already made to develop Lionheart to FID, across drilling, lithium extraction technology and engineering. Cost savings are expected from having an integrated lithium extraction and lithium carbonate conversion process within a single facility configuration and leveraging infrastructure synergies at the project location. The development concept maximises supply of local heat rather than on-site power generation, allowing a simpler and more capital-efficient energy configuration while maintaining the benefits of geothermal heat integration.

The investment across the URVBF to date provides substantial advantages to Project Ludwig - across subsurface evaluation, lithium extraction technology development, piloting, well design, drilling optimisation, brine handling, project execution planning and market engagement. Further, Project Ludwig plans to leverage the knowledge transfer and skills rotation as development and project execution teams rotate and apply Lionheart learnings to Ludwig. This is particularly relevant as the brine and geology are expected to be materially the same across both projects.

Key PFS economic outcomes are summarised in Table 1 and highlight Project Ludwig's lower capital intensity and stronger returns relative to Phase One Lionheart for the equivalent lithium production capacity. Further details are provided in the Project Production Target and Economic Summary section below.

Table 1 - Project Ludwig Economic Summary and Indicative Comparison to Lionheart[5]

Economic Metrics (€)	Project Ludwig[1,2,3] Product: Lithium Carbonate (Li_2CO_3)	Lionheart[1,2,3] Product: Lithium Hydroxide Monohydrate (LHM)	Ludwig indicative comparison to Lionheart
Lithium Production Capacity[4] (Battery-Grade)	21.1 kt/year Li_2CO_3 (517 kt life of project)	24.0 kt/year LHM (21.1 kt/year LCE)	Equivalent Capacity
Renewable Energy Production[4]	3,125 GWh/year (heat) (93,071 GWh life of Project)	275 GWh/year (electrical) + 560 GWh/year (heat)	
CAPEX at FID	€ 1,261 m (real 2026)	€ 1,476 m (real 2025)	15% lower development costs
Capital intensity[7]	€ 59,770 /t Li_2CO_3	€ 61,500 /t LHM (€ 69,995 /t LCE)	~15% lower capital intensity on LCE basis
C1 Cost / tonne[4,8] (Life of Project)	€ 4,101 /t Li_2CO_3	€ 3,588 /t LHM (€ 4,077 /t LCE)	Comparable operating costs on LCE basis
Annual Average Revenue[4,9] (Life of Project)	€ 563 m/year	€ 566 m/year	Comparable Revenue
IRR pre-tax[10] (unlevered)	25.0%	15.6%	+9.4 percentage points
IRR post-tax[10] (unlevered)	**20.2%**	**13.7%**	+6.5 percentage points
NPV_8 pre-tax[11]	€ 2,607 m (@ FID 2029)	€ 1,838 m (@ FID 2025)	
NPV_8 post-tax[11]	**€ 1,727 m** (@ FID 2029)	**€ 1,152 m** (@ FID 2025)	

Note 1: Project Ludwig economic metrics are based on the 2026 Pre-Feasibility Study (PFS) on the assumptions set out in this announcement, while Phase One Lionheart metrics are based on the material assumptions set out or referred to in slide 39 of the investor presentation announced on 3 December 2025 and the independent expert report included as section 17 to the ASX announcement titled 'Information Memorandum' released on 11 December 2024 (Lionheart Financial Forecast Announcements). Refer to the Lionheart Financial Forecast Announcements for the detailed breakdown of the Phase One Lionheart economics and economic assumptions to the estimated Phase One Lionheart economics. Comparisons are provided to illustrate relative project characteristics and should be considered in the context of the different study assumptions and development stages of each project.
Note 2: Economic metrics are presented assuming capital costs are funded on a 100% equity basis, with no financing costs assumed. IRR metrics are unlevered.
Note 3: Production and cost comparisons are presented on an LCE (Lithium Carbon Equivalent) or LHM (Lithium Hydroxide Monohydrate) basis where applicable.
Note 4: Design capacity of the plant. Note 5: Assuming FID is achieved in 2029. Note 6: Project Ludwig development CAPEX includes a 15% contingency.
Note 7: Capital intensity is calculated as a ratio of Development Capex (with contingency) to plant capacity (tonnes).
Note 8: C1 costs represent the direct operating costs of producing saleable lithium product and exclude sustaining capital, depreciation, financing costs and taxes. C1 costs are reported in real 2026 terms and include a 10% operating cost contingency for the life of the project.
Note 9: Annual Average Revenue is on a nominal basis for the integrated Lithium and Geothermal Projects. For Project Ludwig total heat production includes some heat that is consumed internally. Annual average nominal heat revenue for Project Ludwig is approximately €42m/year.
Note 10: Internal Rate of Return (IRR) values are unlevered and are presented for indicative comparison purposes only. Differences in IRR also reflect differing study assumptions, lithium products and project maturities.
Note 11: Net Present Value discounted at 8% (NPV_8) values reflect different effective dates aligned with each project's Final Investment Decision (Project Ludwig: assumed 2029; Phase One Lionheart: 2025). NPV_8 values are presented for indicative comparison purposes only and should not be interpreted as a like-for-like valuation comparison. Differences in NPV_8 also reflect differing study assumptions, lithium products and project maturities.
Note 12: The above economic outcomes are based on the key financial assumptions summarised in Table 8.
Note 13: The Project Ludwig Production Target is supported by Indicated Lithium Mineral Resources, and the forecast financial information is principally driven by lithium recovery and lithium product revenues.

5 Vulcan notes that Project Lionheart and Project Ludwig are at different stages of development and the economic modelling for each Project Lionheart and Project Ludwig are subject to separate financial assumptions as further detailed in "Note 1" and other notes to the table above. Comparisons are provided to illustrate relative project characteristics and should be considered in the context of the different study assumptions and development stages of each project. Refer to the 'Project Production Target and Economic Summary' section of this announcement for the full details of the key financial assumptions underpinning the Project Ludwig economic summary.

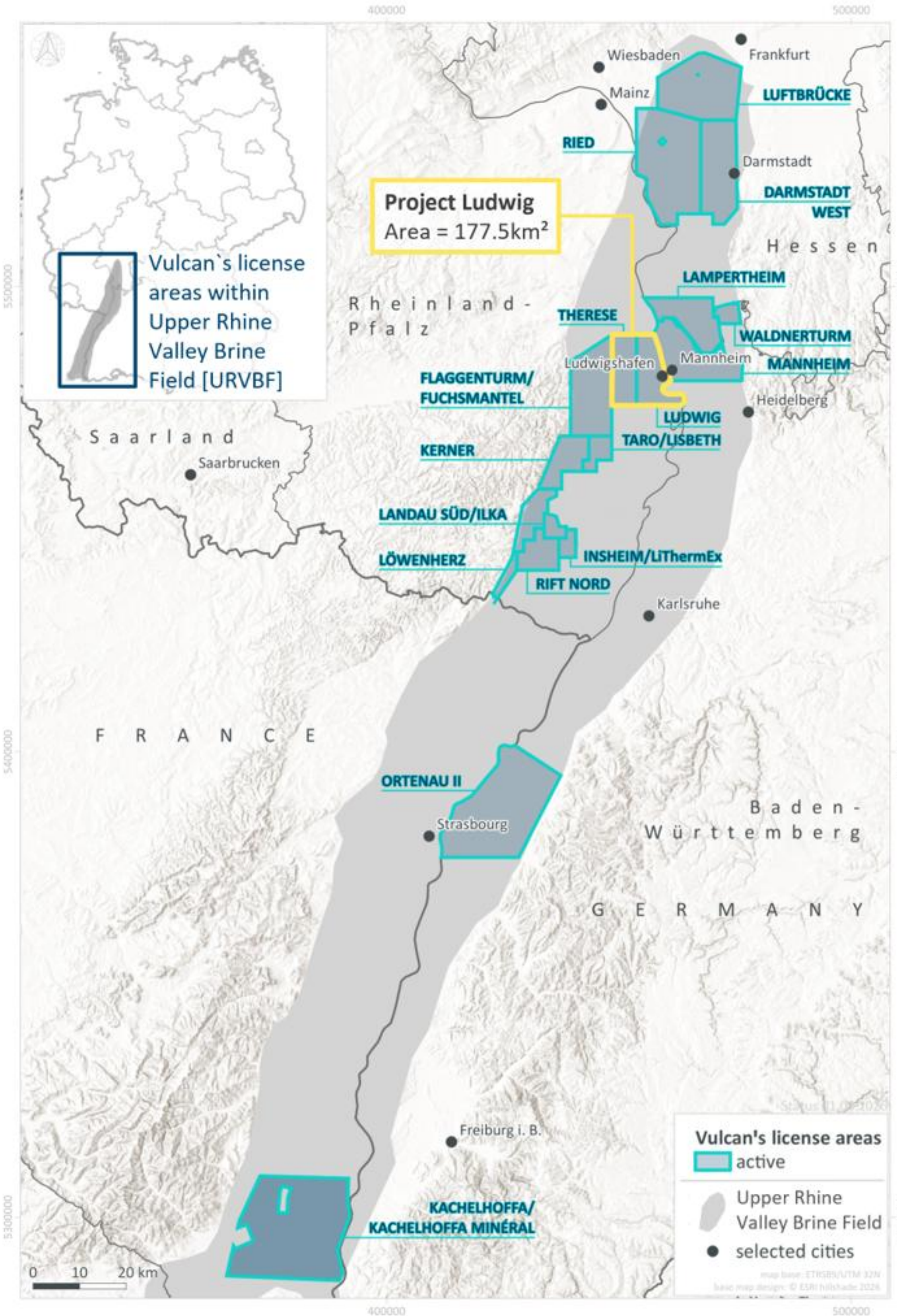

Figure 1 – Location of Project Ludwig in relation to Vulcan's licenses across the Upper Rhine Valley Brine Field

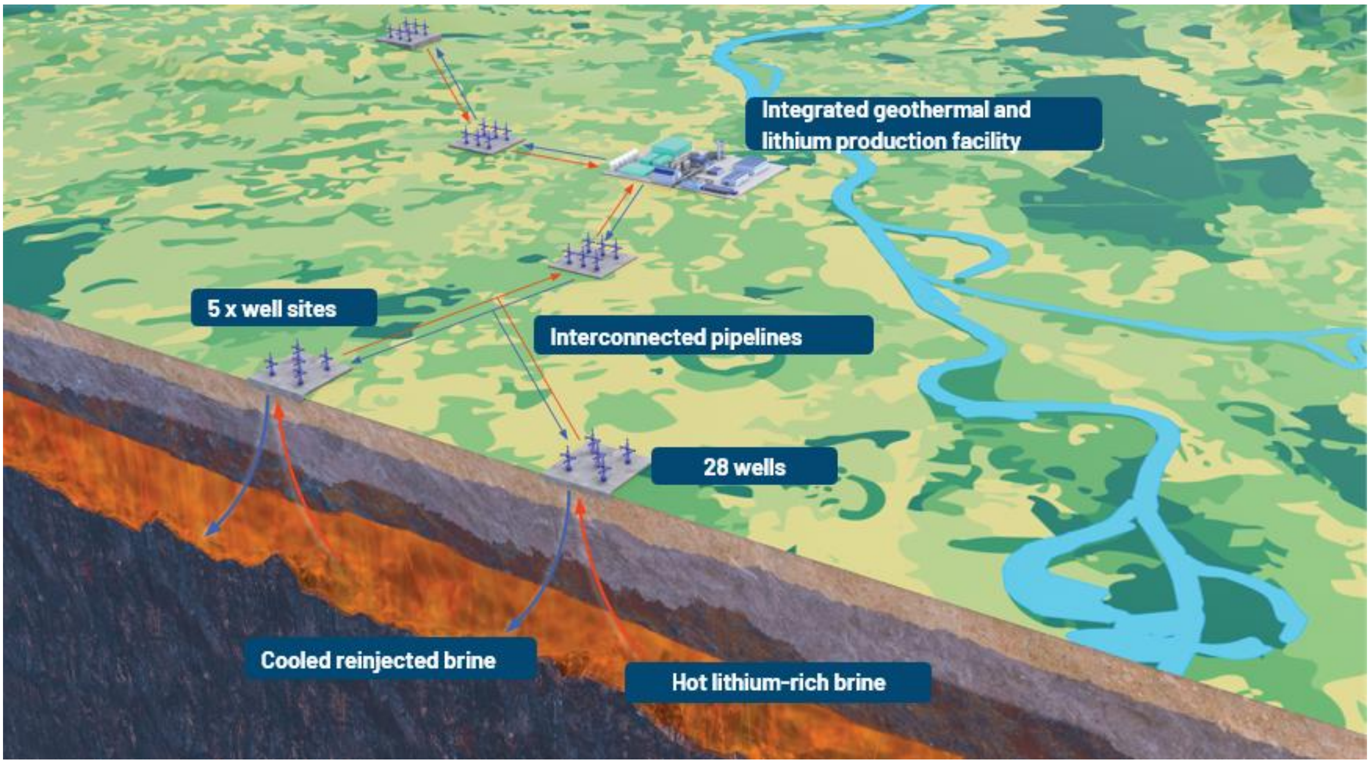

Figure 2 – Schematic of the Project Ludwig Development Concept Plan

Table 2 – Key PFS Participants

Project coordination & integration	Subsurface, field development and economics	Lithium and geothermal Resource estimate review	Lithium carbonate process design	Facility integration and engineering	Capital cost estimate
Vulcan Energy	**Vulcan Energy**	**GLJ Ltd.**	**JordProxa**	**Worley**	**Worley**
Vulcan Energy led the overall PFS, including study coordination, integration of technical, commercial and project workstreams, and selection of the development concept.	Vulcan Energy led the subsurface, field development planning and economics integration through its internal technical, commercial and project	GLJ Ltd. reviewed the updated lithium Mineral Resource and Geothermal Resource estimates and supported the Competent Person disclosure.	JordProxa developed the lithium carbonate process design package for Project Ludwig. JordProxa is a global leader in process technology for lithium supply chains, and supplies Lionheart.	Worley integrated the lithium carbonate process package into the overall facility configuration and supported definition of the lithium carbonate facility scope.	Worley prepared the Total Installed Cost estimate and Basis of Estimate for the lithium carbonate plant in Project Ludwig.

Geology and Subsurface Summary

The Project Ludwig development area is approximately 60 km north of Lionheart, within the same regional geothermal and lithium-bearing brine system. Project Ludwig benefits from an extensive geological, geophysical and geothermal dataset accumulated through decades of exploration and development across the Upper Rhine Graben, supplemented by Vulcan's own exploration, drilling and reservoir evaluation activities in the region.

From 2D seismic interpretation and interpretation of well data (off-property with geothermal-lithium brine data, on-property with oil and gas well data), the geological setting, target reservoir interval and lithium-bearing brine system are considered materially similar to those being developed at Lionheart, allowing Project Ludwig to benefit from Vulcan's existing subsurface knowledge, reservoir understanding and development experience. The PFS development plan has relied on updated geological, geothermal and lithium evaluations, while future work will focus on further Resource de-risking, 3D seismic acquisition, reservoir model refinement and ongoing optimisation of the field development plan. Based on well evidence proximal to Project Ludwig, the brine system and reservoir temperatures are considered materially similar to Lionheart, to support application of the same proprietary lithium extraction technology/engineering, and overall development approach. Both projects are located within the URVBF, while being sufficiently separated that production from one development is not expected to materially affect the other.

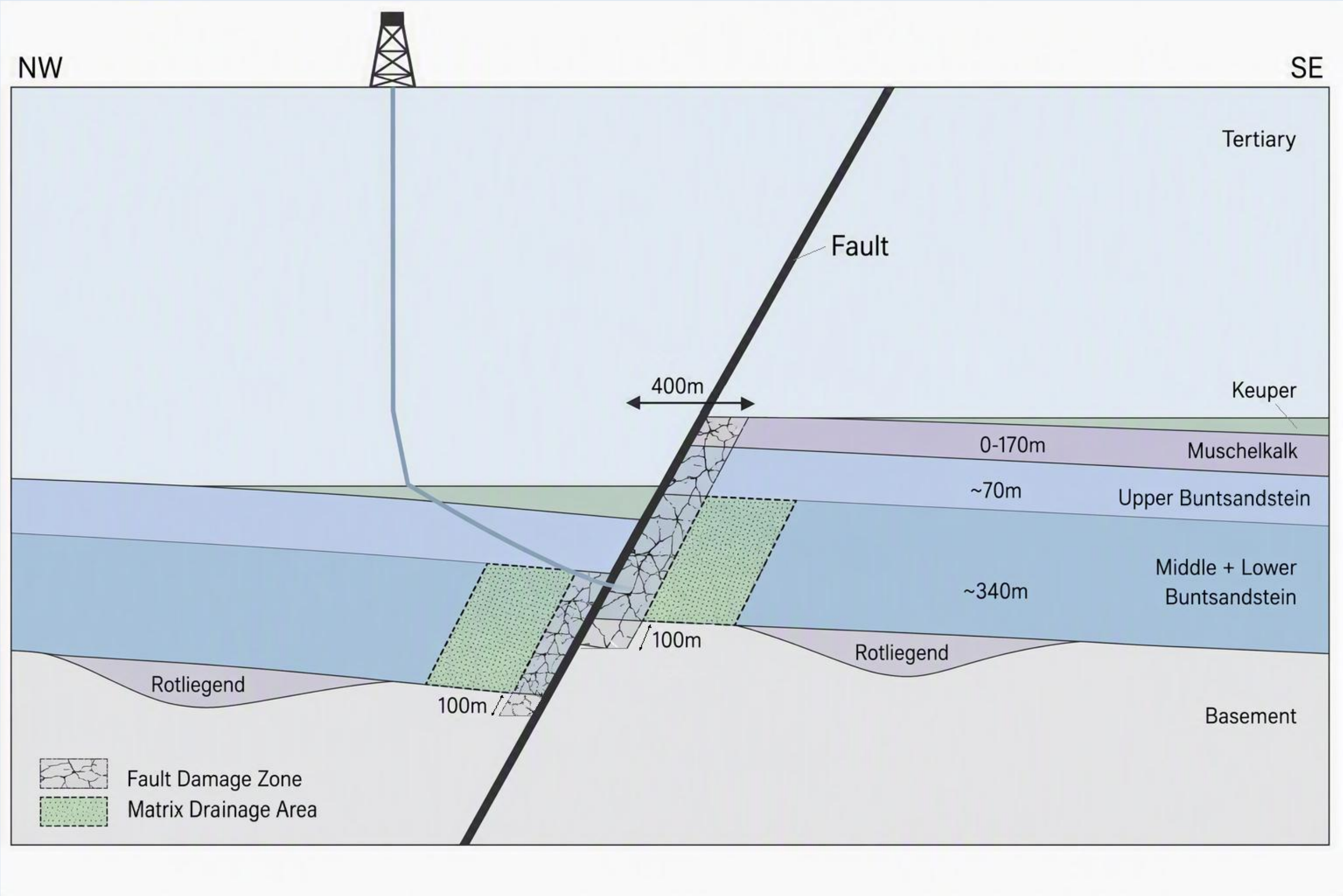

Figure 3 - Schematic cross-section showing target reservoir and well trajectory

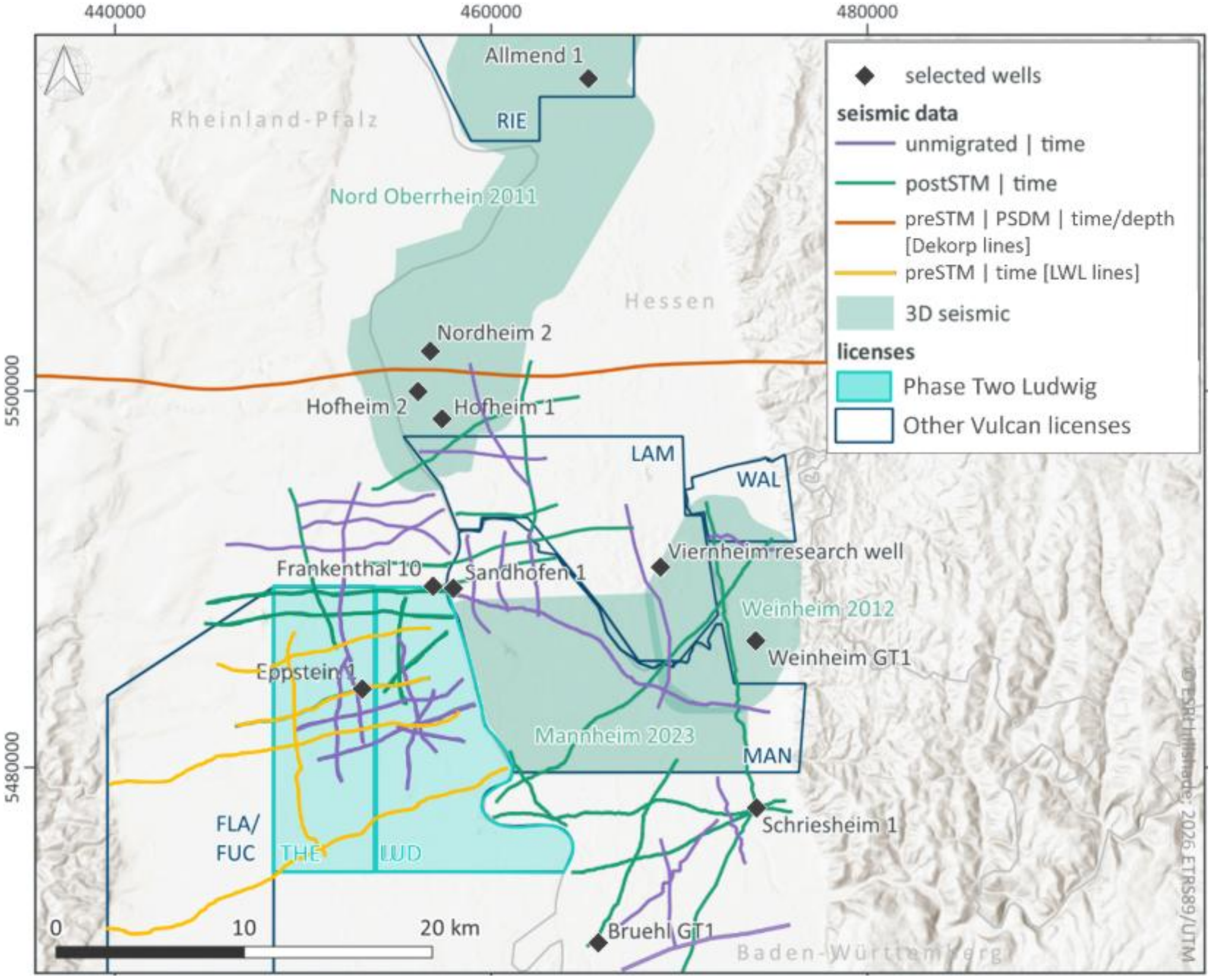

Figure 4 – Map showing location of Project Ludwig licenses and exploration data

Mineral and Geothermal Resources

Project Ludwig lithium Mineral Resource and Geothermal Resource estimate

Project Ludwig is supported by a substantial lithium Mineral Resource and Geothermal Resource base, providing the foundation for an estimated 30-year integrated lithium and renewable heat development. Updated Resource estimates underpin the selected development concept and support continued project maturation through future engineering, field development planning and project de-risking activities. The Mineral Resource estimates are in accordance with the JORC code (2012) - Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, and have been independently reviewed by GLJ Ltd. with their Competent Person Statement included in this release. The Geothermal Resource estimates are in accordance with the Geothermal Code (2010) - Australian Code for Reporting of Exploration Results, Geothermal Resources and Geothermal Reserves, and have been independently reviewed by GLJ Ltd. with their Competent Person Statement included in this release.

Global Mineral Resources Statement

Vulcan's combined Upper Rhine Valley Project (which includes Project Lionheart, Project Ludwig and other license areas) Measured, Indicated and Inferred Lithium Mineral Resource estimates reported as at 31 December 2025 have been updated to reflect the recent work on the Ludwig and Therese licenses which comprise Project Ludwig.

The update relates solely to the Ludwig and Therese licenses within Project Ludwig, with no changes to the remaining license areas. The revised estimates incorporate the results of recent technical studies and resource evaluation work, resulting in the conversion of a portion of the Mineral Resource from the Inferred to the Indicated category. Across the two licenses, the combined Indicated Mineral Resource increased by 596 kt, from 655 kt to 1,251 kt (+91%), while the combined total Mineral Resource increased by 698 kt, from 2,783 kt to 3,481 kt (+25%).

Table 3 - Vulcan's Mineral Resource Estimates – Effective September 2026

	License	Reservoir	Classification	GRV	Avg. NTG	Avg. Phie	Avg. Li	Elemental Li	LCE
				km^3	%	%	mg/L	kt	kt
Phase One Lionheart	Landau Sued	MUS, BST, ROT, BM	Measured	12	68	9	181	135	717
		MUS, BST, ROT, BM	Indicated	2.7	69	9	181	30	158
	Insheim	MUS, BST, ROT, BM	Measured	13.3	69	9	181	152	808
	Rift	MUS, BST, ROT, BM	Measured	9.5	70	9	181	110	586
		MUS, BST, ROT, BM	Indicated	29	71	9	181	355	1,892
Phase Two Ludwig	Ludwig	BST	Indicated	14.2	90	9	155	187	996
		MUS, BST, ROT, BM	Inferred	15.9	82	9	155	173	920
	Therese	BST	Indicated	3.6	90	10	155	48	255
		MUS, BST, ROT, BM	Inferred	20.4	88	9	155	246	1,310
Future Phases	Mannheim	BST	Indicated	11	90	10	155	154	820
		MUS, BST, ROT, BM	Inferred	41	83	8	155	452	2,405
	Fuchs-mantel	BST	Indicated	7	90	10	181	115	613
		BST	Inferred	37	65	9	181	391	2,082
	Kerner	BST	Indicated	5	90	10	181	76	406
		BST	Inferred	13	65	9	181	133	705
	Kerner Ost	MUS, BST, ROT	Indicated	4.3	73	8	181	67	355
	Taro	MUS, BST, ROT	Indicated	14.5	73	8	181	237	1,263
	Ortenau	MUS, BST, ROT	Indicated	57	73	8	181	659	3,507
		BST	Inferred	105	73	8	181	1,883	10,024
All Licences									
								Measured	**2,112**
								Indicated	**10,265**
								Inferred	**17,446**
Total									**29,822**

Note 1: Mineral Resources are not Ore 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 value percentages.
Note 3: 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 LCE.
Note 4: Reservoir abbreviations: MUS – Muschelkalk Formation, BST – Buntsandstein Group; ROT Rotliegend Group; BM - Variscan Basement
Note 5: NTG and Phie averages have been weighted to the rock volume of the reservoir.
Note 6: GRV refers to gross rock volume, also known as the aquifer volume.
Note 7: FDZ refers to fault damage zone, HRM refers to host rock matrix.
Note 8: Mineral Resources are considered to have reasonable prospects for eventual economic extraction under current and forecast lithium market pricing with application of Vulcan's A-DLE processing.
Note 9: The values shown are an approximation and with globalised rounding of values in the presented summary table as per JORC guidelines, cannot be multiplied through to achieve the Mineral Resource estimated volumes shown above.

Global Geothermal Resources Statement

A maiden Geothermal Resource Estimate was also carried out on Project Ludwig, to reflect the recent work on the Ludwig and Therese licenses. Vulcan has previously reported Geothermal Resources for Mannheim in 2025.

Table 4 – Vulcan's Geothermal Resource Estimates – effective September 2026

License	Reservoir	Classification	GRV	Average NTG	Average Phie	Rock specific heat capacity	Initial reservoir Temperature	Thermal Energy in Place	Recoverable Thermal Energy
			km^3	%	%	$Jkg^{-1}K^{-1}$	°C	PJ	PJ
Project Ludwig License Areas									
Ludwig	BST	**Indicated**	14	90	9	882	170	3,500	151
	MUS, BST, ROT, BM	**Inferred**	16	82	9	889	170	3,921	137
Therese	BST	**Indicated**	4	90	10	882	170	885	42
	MUS, BST, ROT, BM	**Inferred**	20	88	9	883	170	5,017	158
Project Mannheim License Areas									
Mannheim	BST	**Indicated**	11	90	10	882	170	2,848	171
	BST, MUS, BM	**Inferred**	41	83	8	887	170	1,0539	377
All Licences									
								Indicated	**364**
								Inferred	**672**
								Total	**1,036**

Note 1: Geothermal Resources are not Geothermal Reserves and do not have demonstrated economic viability.
Note 2: The Recoverable Energy is reported in PetaJoules. Numbers may not add up due to rounding of the resource value percentages.
Note 3: Reservoir abbreviations: MUS – Muschelkalk Formation, BST – Buntsandstein Group; BM - Variscan Basement.
Note 4: NTG and Phie averages have been weighted to the thickness of the reservoir.
Note 5: GRV refers to gross rock volume, also known as the aquifer volume.
Note 6: Geothermal Resources are considered to have reasonable prospects for eventual economic extraction with application of modifying factors.

Field Development Plan

The Project Ludwig PFS reflects an integrated geothermal heat energy and lithium project. Geothermal brine is piped to a central processing facility, where lithium chloride concentrate is extracted using Vulcan's proprietary adsorption-based direct lithium extraction technology platform, incorporating VULSORB® sorbent technology, and converted into battery-grade lithium carbonate using industry-standard third-party technology. The thermal energy contained within the brine will be simultaneously utilised for regional heat supply and process heat requirements. This integrated configuration enables the development to generate dual revenue streams from the same resource while minimising external energy demand.

The field development plan comprises 14 production wells and 14 injection wells drilled from five strategically located well sites across the Ludwig and Therese license areas. The Ludwig field development will leverage the same established Phase One Lionheart techniques for drilling, well testing and sampling. Produced brine is gathered through a network of approximately 16 km of pipelines called the inter-connected pipeline and power network (ICPP) and delivered to a centrally located lithium production facility where direct lithium extraction, lithium carbonate conversion and heat utilisation infrastructure are integrated into a single development hub.

The integrated plant has been designed to allow production 21,100tpa of battery-garde lithium carbonate while also supplying renewable heat to local customers.[6]

A defining feature of the development plan, analogous to Lionheart, is the direct utilisation of geothermal heat throughout the process flowsheet. Renewable heat generated by the production system is used internally to support lithium processing operations, with surplus heat to be made available for external sale. As a result, Project Ludwig is designed to remain net-energy-positive over its operating life, producing more renewable energy than it consumes and reducing exposure to external energy markets. This integrated energy model is a key contributor to the Project Ludwigs competitive operating cost position.

The development concept has been intentionally structured to build upon Vulcan's technical, operational and permitting playbook established throughout Lionheart. Lessons gained from technology development, drilling execution, reservoir evaluation, engineering design, project delivery and stakeholder engagement have been incorporated into the Project Ludwig configuration, allowing simplification of infrastructure, reduction of project interfaces and improved overall capital efficiency. The resulting development strategy demonstrates Vulcan's ability to apply a proven integrated geothermal-lithium blueprint to additional areas of the URVBF and forms a key element of the Company's broader "design one, build many" growth strategy.

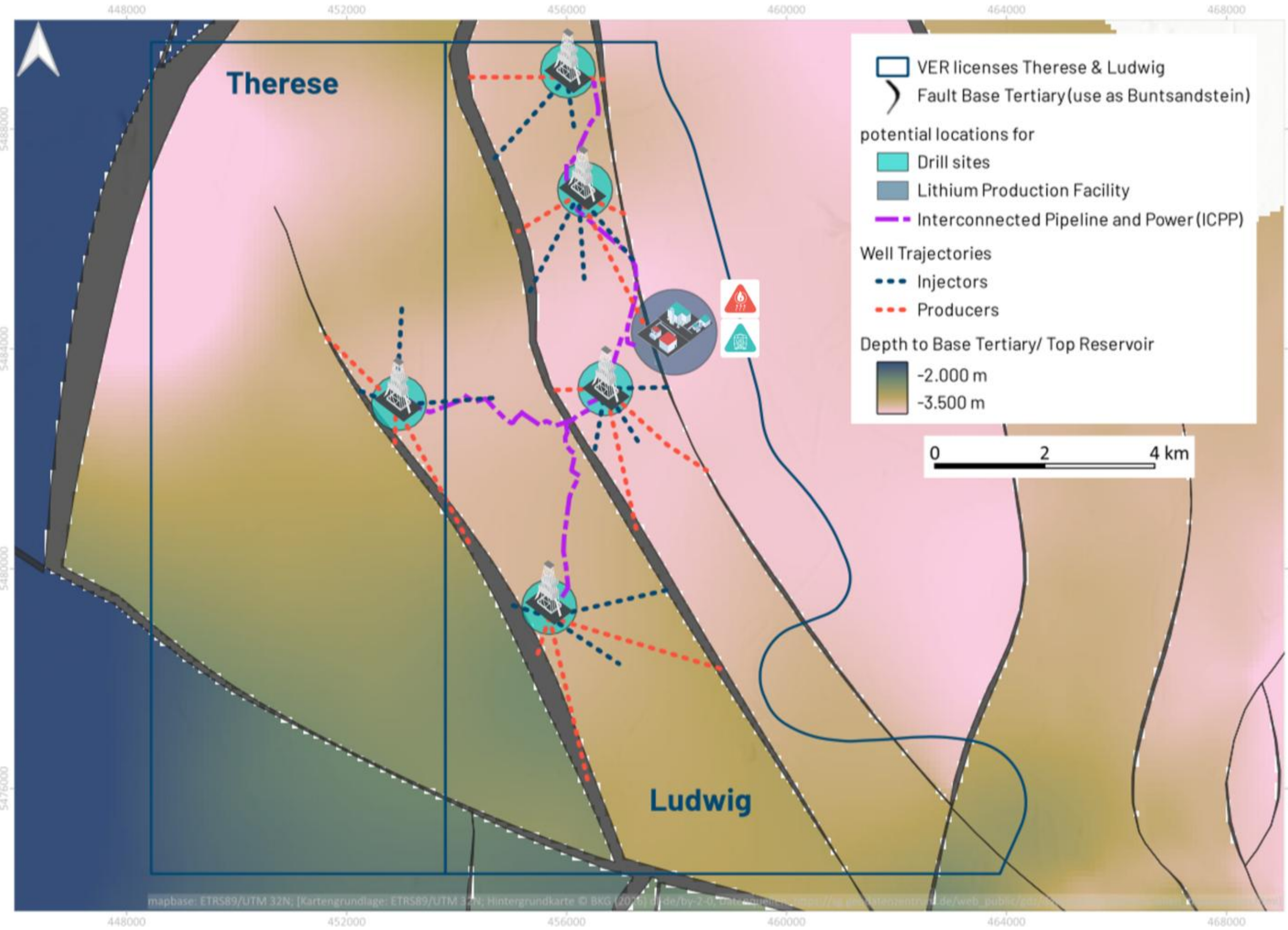

Figure 5 - Conceptual Field Development Plan for Project Ludwig

[6] To be read in conjunction with the key financial assumptions summarised in Table 8.

Permitting, Environmental and Social Compliance

Environmental, social and permitting matters for Project Ludwig have been assessed at a PFS level. No material environmental, social or permitting constraints have been identified that are expected to prevent project development, subject to completion of detailed engineering, environmental studies, stakeholder engagement and regulatory approvals in subsequent phases, in line with work already conducted at Lionheart.

Project Ludwig is located within an established industrial and geothermal region of the Upper Rhine Graben, which benefits from existing infrastructure and a proven regulatory framework for geothermal developments. Environmental and social impacts are expected to be primarily associated with temporary construction activities, including land disturbance, traffic, noise and dust, and are considered manageable through industry-standard design controls, mitigation measures and environmental and social management plans. Expected benefits include employment generation, regional investment, renewable heat supply opportunities and support for Europe's critical raw materials supply chain.

Project Ludwig will be developed under Germany's well-established mining and building permit framework, which has already been successfully applied by the Company to Project Lionheart. Vulcan has strong experience in permitting this type of project in the same German state courtesy of Phase One Lionheart, which can be directly applied to Project Ludwig.

Key approvals include mining operating plans, drilling permits and building permits for surface facilities. No unusual permitting hurdles have been identified, and early engagement with authorities, proven approval processes and careful site selection are expected to support project development and reduce permitting risk.

Vulcan will continue stakeholder engagement throughout the Project lifecycle in accordance with its Stakeholder Engagement Plan, focusing on transparent communication, early identification of stakeholder concerns and the delivery of community benefits, including renewable heat supply opportunities for industry and local communities.

Induced seismicity is a recognised consideration for geothermal developments and will be managed using Vulcan's established monitoring and operational control framework. Continuous seismic surveillance systems, Standard Operating Procedure (SOP) and Traffic Light System (TLS) protocols are already implemented across Vulcan-operated assets and are actively used to support current drilling, testing and operational activities at Phase One Lionheart. These systems will be extended to Project Ludwig, providing continuous monitoring of reservoir behaviour and predefined operational responses should elevated seismic activity be detected. Based on Vulcan's operational experience to date, including the absence of significant induced seismicity events across its operated assets, induced seismicity is considered a manageable operational risk within the Project's development framework.

Plant Design and Process Summary

Project Ludwig has been designed as an integrated lithium chemicals and renewable heat development that produces battery-grade lithium carbonate while simultaneously supplying renewable heat to local partners with the balance used for operations. The development combines geothermal brine production, lithium extraction, lithium carbonate conversion and heat utilisation within a single integrated facility configuration. This approach enables multiple value streams to be generated from the same geothermal brine resource, supporting both Europe's battery materials supply chain and heating decarbonisation objectives. The selected concept builds upon the technical and operational experience gained through Project Lionheart, while being specifically configured for lithium carbonate production and long-term renewable heat supply.

Lithium-rich geothermal brine produced from the field will be transported to a central lithium production facility, where lithium is extracted using VULSORB®.

The resulting intermediate lithium chloride solution is then concentrated and purified before entering the lithium carbonate conversion circuit developed by JordProxa. Within this process, lithium chloride is reacted with soda ash (sodium carbonate), precipitating battery-grade lithium carbonate crystals which are subsequently refined, dried and prepared for sale. Hydrochloric acid (HCl) and soda ash represent the principal chemical reagents within the downstream conversion circuit, supporting lithium recovery, purification and final product generation. The lithium carbonate process package has been integrated into the overall facility design by Worley, creating a streamlined process flow from geothermal brine production through to battery-grade lithium carbonate manufacture.

A defining feature of Project Ludwig is the direct integration of geothermal heat into the lithium production process. While Project Ludwig is expected to generate approximately 3,125 GWh per annum of renewable heat,[7] only a relatively small portion of this energy is required to support lithium processing operations, with the majority available for external heat customers. By using its own geothermal heat to satisfy internal process energy requirements, Project Ludwig significantly reduces reliance on externally sourced power while simultaneously creating an additional renewable heat revenue stream. This integrated energy model contributes to the competitive operating cost position and supports a low-carbon production pathway. The unified facility configuration also reduces major process interfaces and incorporates engineering, permitting and operating learnings from Project Lionheart, improving development efficiency while leveraging Vulcan's broader technology, execution and operational platform

Figure 6 illustrates the conceptual layout of the Project Ludwig Lithium Production Facility (LPF). The integrated facility combines direct lithium extraction, refining, lithium carbonate production and product handling infrastructure within a compact development footprint of approximately 250 m × 100 m.

[7] To be read in conjunction with the key financial assumptions summarised in Table 8.

Figure 6 - Conceptual 3D render of Lithium Production Facility

Capital Costs Summary

Project Ludwig leverages the Lionheart development blueprint with improved capital efficiency. The PFS development capital estimate of €1.26 billion (real 2026 and including 15% contingency), is approximately 15% lower than Lionheart on an equivalent LCE capacity basis. The Project Ludwig capital cost estimates are shown in Table 5. Capital efficiencies are driven by a simplified development configuration tailored to local market opportunities, including direct heat supply in place of on-site power generation, together with optimisation of the facility layout and the ability to leverage technology, engineering, permitting and execution capability already established through Lionheart. This demonstrates the value of Vulcan's strategy to replicate and scale an integrated geothermal lithium development model across the URVBF.

Table 5 – Ludwig PFS Summary Capital Cost Estimates

Capital Cost Area	€ m (real 2026)
Wells	282.7
Well sites	155.2
Interconnected Pipelines	177.4
Heat Plant	5.0
Lithium Extraction Plant	319.1
Lithium Conversion Plant	157.2
Total w/o contingency	**1,096.6**
Contingency (15%)	164.5
Total (with contingency)	**1,261.1**
Owners Costs	126.1
Decommissioning / Closure Cost	63.0

Note 1: The total development cost of €1261.1m does not include the Owners Costs and Decommissioning /Closure Costs.
Note 2: The financial model includes Decommissioning /Closure Cost estimates escalated and occurring two years after the cessation of production.

Operating Costs Summary

Project Ludwig is expected to deliver a competitive operating cost position, with estimated C1 costs of €4,101/t lithium carbonate equivalent (LCE) (real 2026 terms), broadly in line with Lionheart at €3,588/t LHM (€4,077/t LCE equivalent, real 2025 terms). This outcome is primarily driven by the integrated utilisation of geothermal energy across the development, allowing renewable heat produced from the geothermal brine to support both lithium production and external local heat sales, and use of Vulcan's highly efficient proprietary VULSORB® DLE technology to extract lithium from brine. The selected development concept further benefits from a simplified process configuration, reduced infrastructure requirements and the application of operational experience gained through Lionheart, supporting a resilient operating cost structure across the project life.

Market and Strategic Rationale Summary

Project Ludwig's planned lithium carbonate product route complements Lionheart's lithium hydroxide production, broadening Vulcan's exposure across key battery chemistries and end markets. Lithium carbonate plays an important role in lithium iron phosphate (LFP) batteries which are used in some electric vehicles and most battery energy storage systems, while lithium hydroxide remains a key product for high-nickel cathode chemistries used in higher energy density and higher performance electric vehicles.

At the core of both product routes is a lithium chloride (LiCl) intermediate generated using Vulcan's proprietary VULSORB® adsorption-based direct lithium extraction (A-DLE) platform. The LiCl intermediate can be refined to a high-purity precursor and converted through phase-specific downstream processing into either battery-grade Li_2CO_3 or LHM. This common LiCl architecture maximises product flexibility across Vulcan's phased growth strategy, enabling the same core extraction technology to support Li_2CO_3 production at Project Ludwig, LHM production at Lionheart and future product selection aligned with customer requirements and battery-market demand.

Project Ludwig extends Vulcan's strategy of developing multiple integrated lithium and renewable energy assets in Europe: a "design one, build many" approach. Project Ludwig builds on the technical, operational and commercial foundations established through Lionheart while creating a potential second long-life development platform capable of supplying battery materials and renewable heat to European markets. Through Vulcan's technology business, VULTEC, the Company retains ownership of key lithium extraction technology, process know-how and intellectual property developed during Lionheart. Through Vercana, Vulcans drilling business, the Company has established in-house drilling and well delivery capability. Together, these businesses provide Project Ludwig with access to technology, operational expertise and execution capability already developed and de-risked during Project Lionheart, supporting future phased developments across the URVBF.

The figures below illustrate how VULTEC's common LiCl intermediate platform connects Vulcan's geothermal-brine resource and proprietary extraction technology to multiple downstream lithium products and battery end markets.

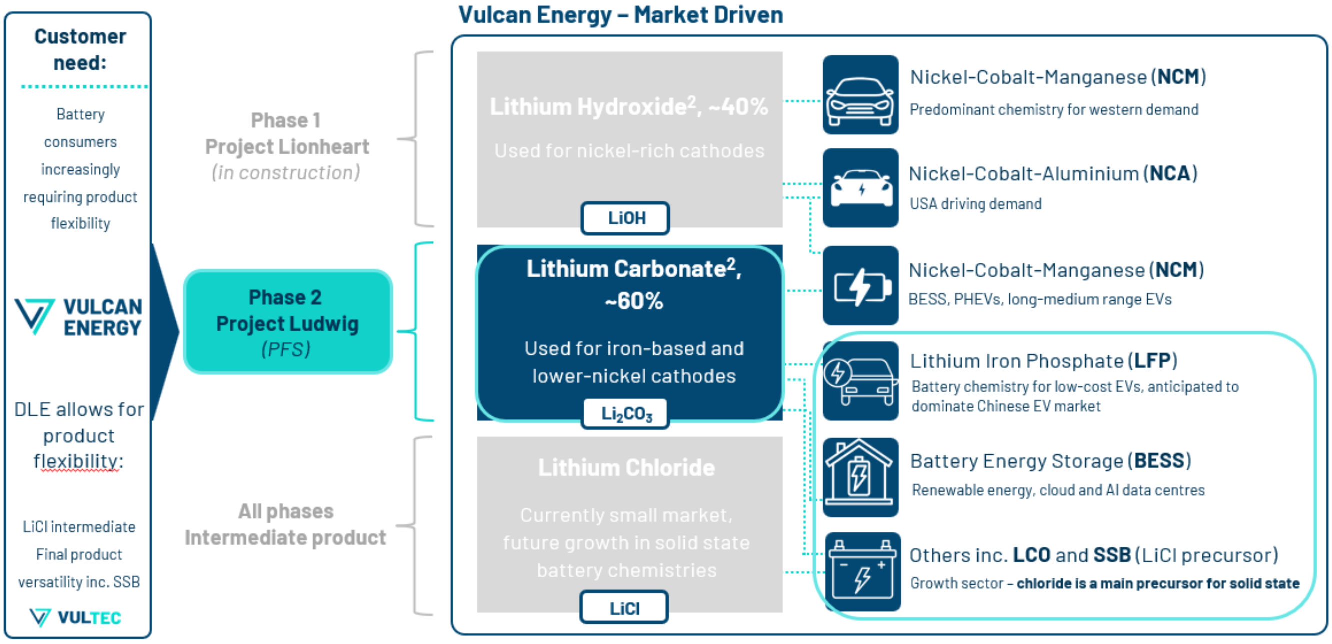

Figure 7 - VULTEC's common LiCl intermediate platform

Source (1): Fastmarkets 2023-2030 DLE Forecast; (2) Adamus Intelligence with percentages reflecting deployment in EV market in Q1 2025. *https://www.adamasintel.com/lithium-carbonate-hydroxide-deployment-regions-2023/?utm_source=chatgpt.com*

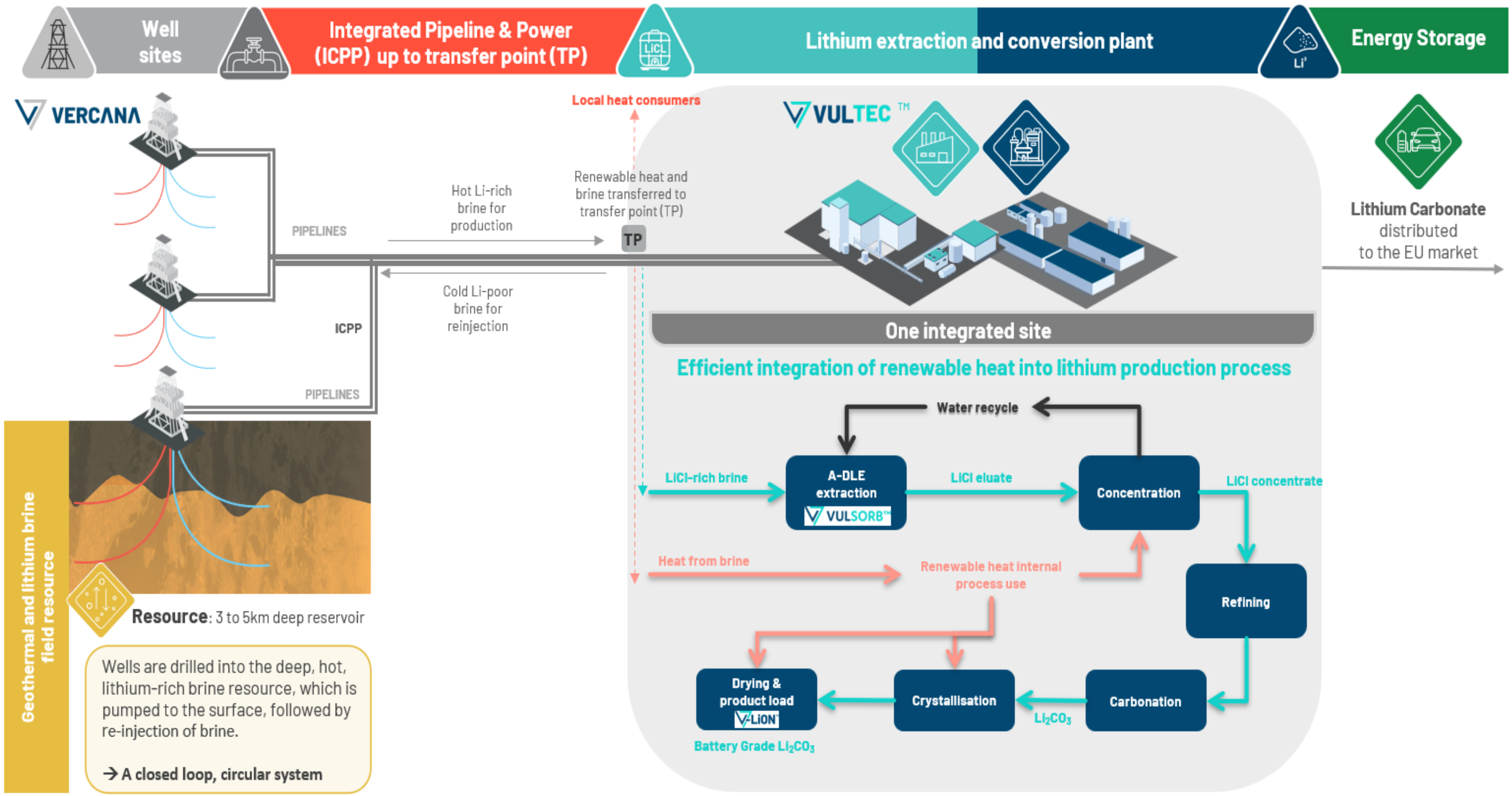

Figure 8 – Project Ludwig supply chain

Project Production Target and Economic Summary

The Production Target and forecast information for Project Ludwig have been prepared solely from the reported Indicated Mineral Resources and Geothermal Resources and are based on the development assumptions described in this PFS. No Lithium Inferred Mineral Resources have been included in the Production Target. No Ore Reserves or Geothermal Reserves have been estimated, and the Production Target should not be interpreted as being supported by an Ore Reserves or Geothermal Reserves.

The Project is expected to produce approximately 517 kt of battery-grade lithium carbonate (Li_2CO_3) over a 30-year operating life, with a plateau production rate of 21,100 tonnes per annum. The Company considers there to be a reasonable basis for the Production Target and forecast financial information.

Table 6 – Project Ludwig PFS Production Target Parameters

Production Parameters	Units	Value
Construction	years	2.5
Life of Project Production	years	30
Field Brine Production Rate	L/s	1050
Lithium Production Capacity	tonnes per annum	21,100 Li_2CO_3
Total Lithium Production (Life of Project)	kt	517 Li_2CO_3
Lithium Grade to Extraction Plant	mg/L	155
Geothermal Heat Capacity	GWh/year	3,125
Field Development Plan	14 production wells, 14 injection wells and five well sites, connected by approximately 16 km of pipelines to the lithium extraction and conversion facilities.	

Project Ludwig delivers robust economics, generating a post-tax NPV_8 of €1,727 million and a post-tax IRR of 20.2% from an initial capital investment of €1,261 million, as shown in Table 7. The favourable economic outcome reflects the scale of the recoverable lithium and geothermal energy, capital efficiency, product pricing assumptions and integrated development concept.

Table 7 also shows an indicative comparison of Project Ludwig to Project Lionheart. Project Ludwig targets delivery of an estimated equivalent lithium production capacity to Project Lionheart with an estimated approximate 15% lower capital intensity and comparable operating costs. Project Ludwig generates higher post-tax IRR of 20.2% compared with 13.7% for Phase One Lionheart. Vulcan notes that Project Lionheart and Project Ludwig are at different stages of development and the economic modelling for each Project Lionheart and Project Ludwig are subject to separate financial assumptions as further detailed in “Note 1” to the table below. Comparisons are provided to illustrate relative project characteristics and should be considered in the context of the different study assumptions and development stages of each project.

Table 7 – Project Ludwig Economic Summary and Indicative Comparison to Lionheart[8]

Economic Metrics (€)	Project Ludwig[1,2,3] Product: Lithium Carbonate (Li_2CO_3)	Lionheart[1,2,3] Product: Lithium Hydroxide Monohydrate (LHM)	Ludwig indicative comparison to Lionheart	
Lithium Production Capacity[4] (Battery-Grade)	21.1 kt/year Li_2CO_3 (517 kt life of project)	24.0 kt/year LHM (21.1 kt/year LCE)	⟷	Equivalent Capacity
Renewable Energy Production[4]	3,125 GWh/year (heat) (93,071 GWh life of Project)	275 GWh/year (electrical) + 560 GWh/year (heat)	↑	
CAPEX at FID	€ 1,261 m (real 2026)	€ 1,476 m (real 2025)	↓	15% lower development costs
Capital intensity[7]	€ 59,770 /t Li_2CO_3	€ 61,500 /t LHM (€ 69,995 /t LCE)	↓	~15% lower capital intensity on LCE basis
C1 Cost / tonne[4,8] (Life of Project)	€ 4,101 /t Li_2CO_3	€ 3,588 /t LHM (€ 4,077 /t LCE)	⟷	Comparable operating costs on LCE basis
Annual Average Revenue[4,9] (Life of Project)	€ 563 m/year	€ 566 m/year	⟷	Comparable Revenue
IRR pre-tax[10] (unlevered)	25.0%	15.6%	↑	+9.4 percentage points
IRR post-tax[10] (unlevered)	**20.2%**	**13.7%**	↑	+6.5 percentage points
NPV_8 pre-tax[11]	€ 2,607 m (@ FID 2029)	€ 1,838 m (@ FID 2025)	↑	
NPV_8 post-tax[11]	**€ 1,727 m** (@ FID 2029)	**€ 1,152 m** (@ FID 2025)	↑	

Note 1: Project Ludwig economic metrics are based on the 2026 Pre-Feasibility Study (PFS) on the assumptions set out in this announcement, while Phase One Lionheart metrics are based on the material assumptions set out or referred to in slide 39 of the investor presentation announced on 3 December 2025 and the independent expert report included as section 17 to the ASX announcement titled 'Information Memorandum' released on 11 December 2024 (Lionheart Financial Forecast Announcements). Refer to the Lionheart Financial Forecast Announcements for the detailed breakdown of the Phase One Lionheart economics and economic assumptions to the estimated Phase One Lionheart economics. Comparisons are provided to illustrate relative project characteristics and should be considered in the context of the different study assumptions and development stages of each project.
Note 2: Economic metrics are presented assuming capital costs are funded on a 100% equity basis, with no financing costs assumed. IRR metrics are unlevered.
Note 3: Production and cost comparisons are presented on an LCE (Lithium Carbon Equivalent) or LHM (Lithium Hydroxide Monohydrate) basis where applicable.
Note 4: Design capacity of the plant. Note 5: Assuming FID is achieved in 2029. Note 6: Project Ludwig development CAPEX includes a 15% contingency.
Note 7: Capital intensity is calculated as a ratio of Development Capex (with contingency) to plant capacity (tonnes).
Note 8: C1 costs represent the direct operating costs of producing saleable lithium product and exclude sustaining capital, depreciation, financing costs and taxes. C1 costs are reported in real 2026 terms and include a 10% operating cost contingency for the life of the project.
Note 9: Annual Average Revenue is on a nominal basis for the integrated Lithium and Geothermal Projects. For Project Ludwig total heat production includes some heat that is consumed internally. Annual average nominal heat revenue for Project Ludwig is approximately €42m/year.
Note 10: Internal Rate of Return (IRR) values are unlevered and are presented for indicative comparison purposes only. Differences in IRR also reflect differing study assumptions, lithium products and project maturities.
Note 11: Net Present Value discounted at 8% (NPV_8) values reflect different effective dates aligned with each project's Final Investment Decision (Project Ludwig: assumed 2029; Phase One Lionheart: 2025). NPV_8 values are presented for indicative comparison purposes only and should not be interpreted as a like-for-like valuation comparison. Differences in NPV_8 also reflect differing study assumptions, lithium products and project maturities.
Note 12: The above economic outcomes are based on the key financial assumptions summarised in Table 8.
Note 13: The Project Ludwig Production Target is supported by Indicated Lithium Mineral Resources, and the forecast financial information is principally driven by lithium recovery and lithium product revenues.

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[8] Vulcan notes that Project Lionheart and Project Ludwig are at different stages of development and the economic modelling for each Project Lionheart and Project Ludwig are subject to separate financial assumptions as further detailed in "Note 1" and other notes to the table above. Comparisons are provided to illustrate relative project characteristics and should be considered in the context of the different study assumptions and development stages of each project. Refer to the 'Project Production Target and Economic Summary' section of this announcement for the full details of the key financial assumptions underpinning the Project Ludwig economic summary.

The economic outcomes, in respect of Project Ludwig, presented in Table 7 are based on the key financial assumptions summarised below in Table 8. The pricing assumptions reflect the Company's current view of the long-term market in Europe and form the basis of the forecast financial information presented in this PFS. Pricing is consistent with Vulcan's average forecast realised price for LHM in Project Lionheart from European customers from binding offtakes over the first 10 years of production. This is also broadly consistent with spot prices at the date of PFS release, and long-term price forecast (real) from lithium analysts at Canaccord Genuity.

Table 8 – Key Financial Assumptions

Assumption	Units	Project Ludwig
Lithium Carbonate Price (real 2026)	€ /t Li_2CO_3	20,588
Long-term Inflation Rate	% p. a	2.0
Exchange rate (EUR/USD)	-	1/1.15
Discount Rate (nominal)	%	8.0
Combined Tax Rate	%	25.425
Development CAPEX Contingency	%	15.0
Operating Cost Contingency	%	10.0
Financial Basis	-	100% equity, unlevered

Note 1: The financial model has been prepared using nominal cash flows. Lithium carbonate prices, renewable heat prices and operating costs are based on real 2026 values and are escalated by 2.0% per annum over the life of the Project. Future cash flows are discounted at a nominal rate of 8.0%.

Note 2: Taxation assumptions comprise corporate income tax of 10.55% (from 2032 onward) and trade tax of 14.875%, resulting in a combined tax rate of 25.425%.

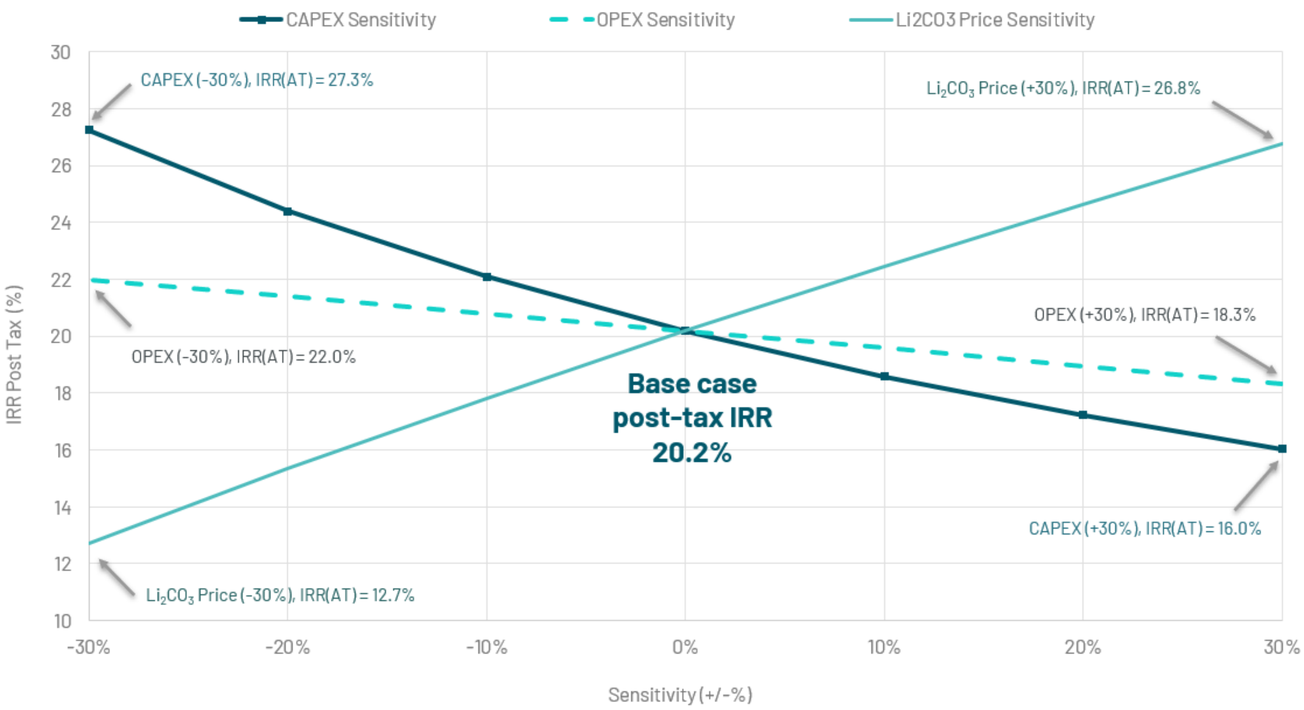

Figure 9 – IRR Post-Tax Sensitivities to CAPEX, OPEX and Lithium Carbonate Price

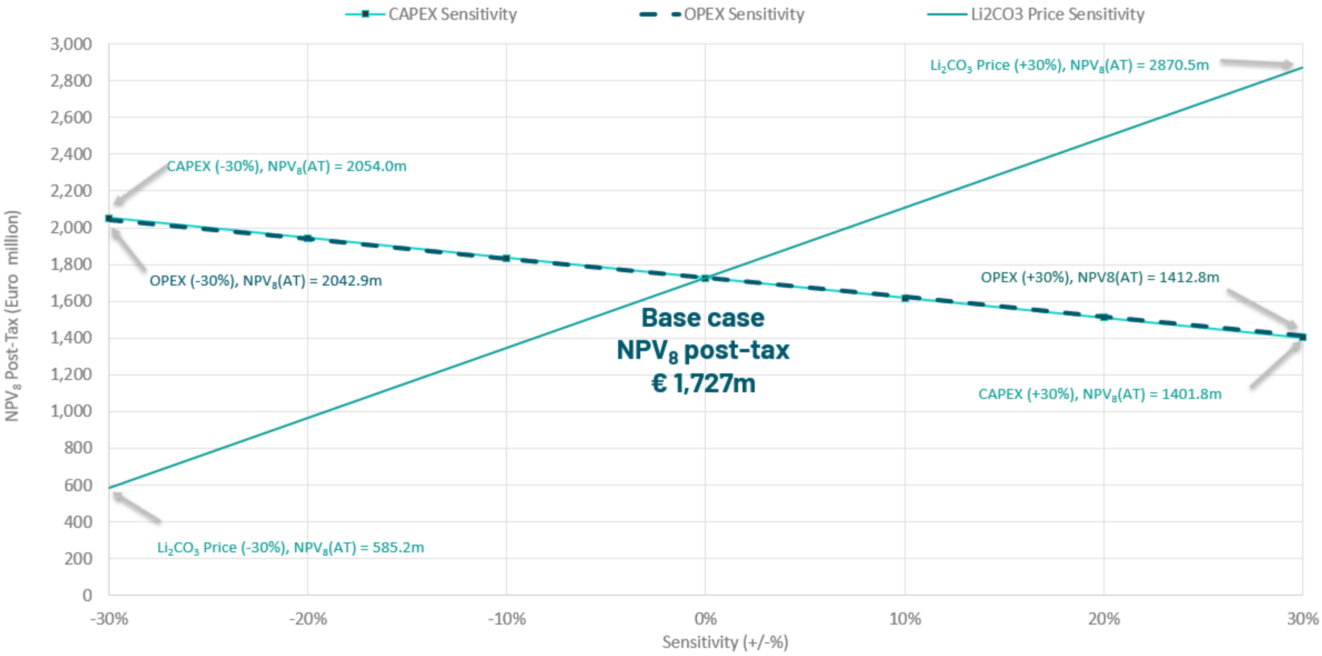

Figure 10 – NPV_8 Post-Tax Sensitivities to CAPEX, OPEX and Lithium Carbonate Price

Figure 9 and 10 show the impact of ±30% sensitivities to CAPEX, OPEX and lithium price on post-tax IRR and NPV_8. Project economics are most sensitive to lithium price. IRR is more sensitive to CAPEX than OPEX, while CAPEX and OPEX have a broadly similar impact on NPV_8. The similar NPV_8 sensitivities to CAPEX and OPEX reflect the long operating life of the Project (30 years) and the material contribution of operating costs to life-of-project cash flows.

Recent Activities and Relevant Market Developments Summary

Project Ludwig has been developed against the backdrop of continued advancement of Project Lionheart, with drilling, subsurface evaluation, lithium extraction development, piloting and demonstration activities providing technical and operational learnings. Vulcan has spent approximately 8 years developing Project Lionheart which has included technology maturation from lab scale, pilot, demonstration scale (with industrial scale equipment) and ongoing optimisation. Vulcan is operating commercial demonstration plants, and commercial-scale wells, across the entire lithium value chain and continuously generating intermediate and final chemical product samples, all of these activities supporting what is a bankable technology. Vulcan has acquired its own drilling business (Vercana), its significant intellectual property assets are housed within a subsidiary called VULTEC and both support Vulcan's autonomous ability to operate across the integrated supply chain. At the time of FID, Lionheart had attracted approximately €500 million of investment over the past eight years, including around €95 million dedicated to the development of Vulcan's lithium extraction technology. Beyond the substantial technical knowledge and intellectual property generated, the Company has established a strong reputation and earned a valuable social license to operate. Project Ludwig is expected to leverage this foundation, benefiting from the expertise, technological advancements, stakeholder relationships, and investment made to date.

During the PFS, Vulcan further refined the development concept, including the direct lithium carbonate production route, renewable heat supply configuration and integrated field development plan. Key technical studies included completion of the lithium carbonate process design package by JordProxa, integration of the facility design and Class 4 cost estimate by Worley, and independent review of updated lithium Mineral Resource and Geothermal Resource estimates by GLJ Ltd.

Project Ludwig is also aligned with the growing European focus on securing sustainable domestic supply chains for critical raw materials and heating decarbonisation. The European Union's Critical Raw Materials Act identifies lithium as a strategic raw material and establishes targets to increase domestic extraction, processing and recycling capacity within Europe by 2030. Further, European industrial policy is increasingly tilting toward local production. Proposals under the EU's Industrial Accelerator Act (IAA) point to tighter localisation requirements for EV and battery investment, including closer scrutiny of greenfield projects, local ownership, employment commitments, and eligibility for subsidies and public procurement. In addition, Germany continues to support geothermal heat and industrial/district heating decarbonisation initiatives with royalty exemptions in place across many German jurisdictions for both geothermal energy and lithium production.

Funding Strategy

Vulcan is targeting an asset-level financing strategy to advance Project Ludwig to FID and beyond. Partner selection processes are under way with the aim to secure project level equity from strategic partners. Vulcan will seek to bring in minority investors in this manner and maintain a majority control position. At FID, Vulcan will seek to secure asset-level project finance on favourable terms to the Company given anticipated risk reduction following outcomes from Project Lionheart construction and commencement of commercial production (both must occur prior to an FID on Project Ludwig). In addition, Vulcan will seek to secure public funding support, both during project development and for the FID financing of Project Ludwig. Vulcan intends to pursue a staged development approach, with initial development funding supporting appraisal, permitting and Definitive Feasibility Study activities prior to a Final Investment Decision. While financing arrangements for Project Ludwig remain subject to future studies, market conditions and approvals, Vulcan expects funding through an appropriate combination of project finance, strategic partnerships and available government support.

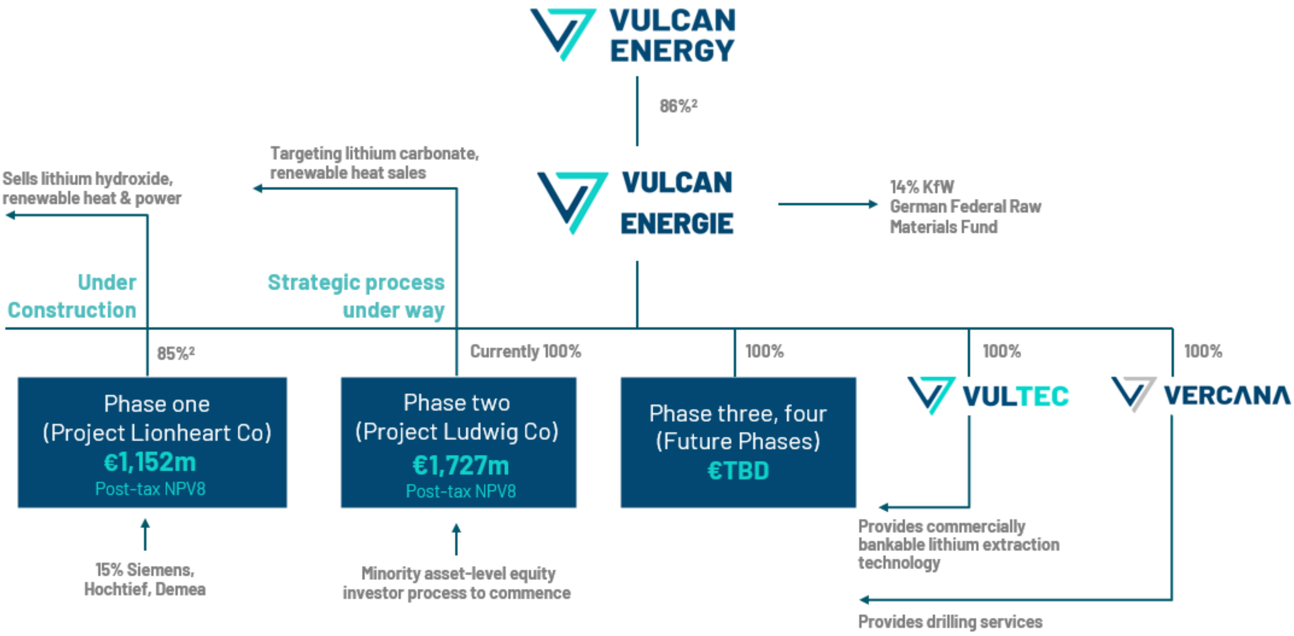

Figure 11 – Diagram showing where Project Ludwig sits in the Vulcan corporate structure relative to Phase One Lionheart and any future phases

Note 1: Apart from the Project Ludwig PFS, Vulcan has not completed sufficient studies for future phases and there is no guarantee of Vulcan being able to replicate Phase One Lionheart on the same basis/metrics or at all and these statements should be considered and relied upon accordingly. Note 2: Refer to ASX announcement, 3 December 2025 (slide 20) for specifics relating to the (1) KFW investment to earn into 14% of the Vulcan German HoldCo and (2) Siemens, Hochtief and Demea earn into ~15% of Project Lionheart Co.

Next Steps

- **Advance Project Ludwig** into the next phase of project definition and optimisation, building on the outcomes of the PFS and the experience gained through Lionheart development.
- **Further develop the Resource** through seismic acquisition, subsurface evaluation, appraisal well drilling and testing, and continued refinement of the geological and reservoir models.
- **Optimise the field development plan**, including well placement, production strategy and reservoir management approach, to support future project development decisions.
- **Progress engineering definition**, cost estimation and execution planning through the Definitive Feasibility Study phase.
- **Continue maturation of the integrated lithium carbonate and renewable heat development concept**, including commercial discussions relating to heat offtake and integration opportunities.
- **Advance Project Ludwig toward a future FID** as Vulcan's next potential growth development within the URVBF.

<ENDS>

For and on behalf of the Board

Daniel Tydde | Company Secretary

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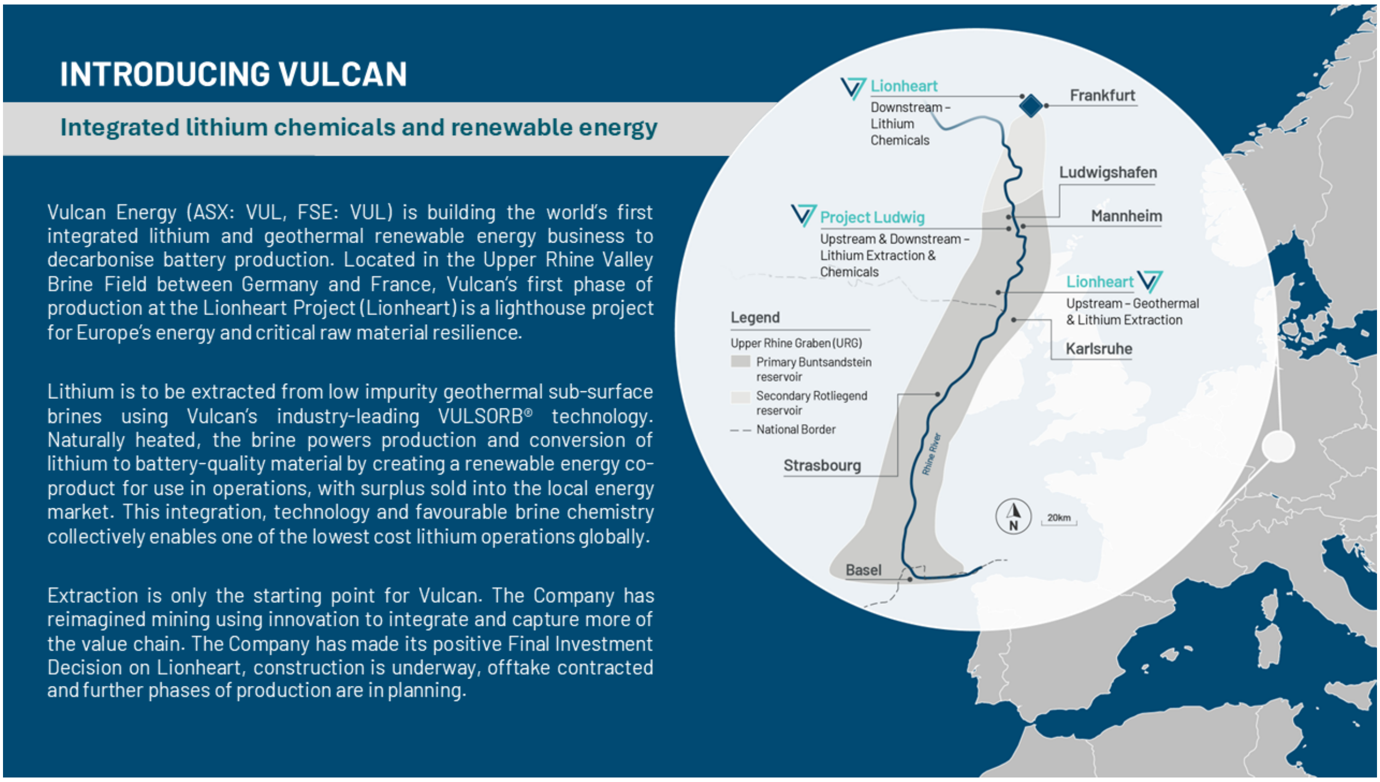
About Vulcan Energy



Disclaimer

The Pre-Feasibility Study (PFS) is based on the material assumptions outlined in this announcement. While Vulcan considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct, or that the range of outcomes indicated by the PFS will be achieved.

To achieve the range of outcomes indicated in the PFS, additional funding will be required. Investors should note that there is no certainty that Vulcan will be able to raise the amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to, or otherwise affect the value of, Vulcan's existing shares. It is also possible that Vulcan could pursue other financing strategies such as a partial sale or joint venture of the Ludwig Project. If it does, this could materially reduce Vulcan's proportionate ownership of Project Ludwig.

The PFS including the production target and the forecast financial information derived from the production target, referred to in this announcement includes summary excerpts from the PFS and does not purport to be all-inclusive or complete.

Forward looking statements

General

Some of the statements appearing in this announcement may be in the nature of forward-looking statements. Forward looking statements include, but are not limited to limited to, the Production Target and forecast financial information in this announcement, other results and assumptions of the PFS, Mineral Resource estimates in this announcement, and other statements that are not historical facts.

When used in this announcement, the words such as "planned", "expected", "estimated", "may", "intends", "anticipates", "believes", "potential", "could", "nominal", "conceptual" and similar expressions are forward looking statements. Forward looking statements, opinions and estimates included in this announcement are based on assumptions and contingencies which are subject to change without notice. Although Vulcan believes that its expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that actual results will be consistent with these forward-looking statements. Actual events or results may differ materially from the events or results expressed or implied in any forward-looking statement. No forward-looking statement is a guarantee or representation as to future performance or any other future matters, which will be influenced by a number of factors and subject to various uncertainties and contingencies, many of which will be outside Vulcan's control.

There are a number of risks, both specific to Vulcan, and of a general nature which may affect the future operating and financial performance of Vulcan, and the value of an investment in Vulcan, including, but not limited to the risks listed in the 2025 annual report dated 27 March 2026 (Annual Report – Period Ending 31 December 2025) as well as the risks contained in Appendix 3 of the investor presentation dated 3 December 2025 (Financing and FID Presentation), changes in commodity and renewable energy prices, foreign exchange rate fluctuations, interest rate fluctuations and general economic conditions, increased costs and demand for production inputs lithium, the speculative nature of exploration and project development (including the risks of obtaining necessary licences and permits and diminishing quantities or grades of reserves), political and social risks, changes to the regulatory framework within which Vulcan operates or may in the future operate, environmental conditions including climate change and extreme weather conditions, geological and geotechnical events, environmental issues, the recruitment and retention of key personnel, industrial relations issues and litigation.

Investors are advised that the assumptions and inputs to the forecast financial information included in this announcement may require review as project development progresses. While Vulcan considers all material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be corrector, or that the Production Target or estimated outcomes indicated by the PFS (such as the financial forecast information) will be achieved. Given the various uncertainties involved, investors should not make any investment decisions based solely on the results of the PFS or other content of this announcement. Vulcan does not undertake any obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after today's date or to reflect the occurrence of unanticipated events, other than as required by law. No representation or warranty, express or implied, is made as to the fairness, accuracy, completeness or correctness of the information, opinions or conclusions contained in this announcement. To the maximum extent permitted by law, none of Vulcan, its Directors, employees, advisors or agents, nor any other person, accepts any liability for any loss arising from the use of the information contained in this announcement. You are cautioned not to place undue reliance on any forward-looking statement. The forward-looking statements in this announcement reflect views held only as at the date of this announcement.

This announcement is not an offer, invitation or recommendation to subscribe for, or purchase securities by Vulcan. Nor does this announcement constitute investment or financial product advice (nor tax, accounting or legal advice) and is not intended to be used for the basis of making an investment decision. Investors should obtain their own advice before making any investment decision.

Production Targets and Forecast Financial Information – Project Ludwig

The Company has concluded that it has a reasonable basis for providing the forward-looking statements (such as the Production Target and forecast financial information in relation to Project Ludwig) included in this announcement. The detailed reasons for that conclusion are outlined throughout this announcement and all material risk factors, sensitivities and assumptions concerning the JORC modifying factors, upon which the Production Target and forecast financial information are based are disclosed in this announcement. This announcement has been prepared in accordance with the 2012 edition of the "Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves" (JORC Code) and the ASX Listing Rules.

Actual results could differ materially from a conclusion, forecast or projection in the forward-looking information.

There is no certainty that the assumptions on which the Production Target and forecast financial information in this announcement are based will prove to be correct or that the Production Target or estimated outcomes indicated by the PFS (such as the financial forecasts) will be achieved.

The Production Target and estimated outcomes indicated by the PFS (such as the financial forecasts) are also subject to various risk factors, such as those (non-exhaustively) outlined in above and elsewhere in this announcement. Given the uncertainties involved and detailed in this announcement, investors should not make any investment decision based solely on the results of the PFS.

The Mineral Resource estimates (which underpin the Production Target and the financial forecast information in this announcement) were prepared by Competent Persons in accordance with the requirements of the JORC Code (2012).

Production Targets and Forecast Financial Information – Project Lionheart

The information in this announcement that relates to production targets in relation to Project Lionheart is extracted from the Bridging Engineering Study Results announcement dated 16 November 2023 (Bridging Study Announcement). Vulcan confirms that all material assumptions underpinning the production targets included in the original market announcement continue to apply and have not materially changed.

This announcement contains forecast financial information in relation to Project Lionheart (including forecast financial information derived from the Company's production targets). This forecast financial information is based on the material assumptions set out in (or referred to in slide 39 of the Company's ASX announcement titled "Financing and FID presentation" released on 3 December 2025 (Investor Presentation) and the Independent Expert Report included as section 17 to the ASX announcement titled "Information Memorandum" released on 11 December 2024 (Information Memorandum), both of which are available to view on Vulcan's website at http://v-er.eu. Vulcan confirms that those assumptions set out in the ASX announcements referred to above (for the avoidance of doubt, having regard to the extent to which the assumptions referred to in the Information Memorandum have been modified by the updated information set out in (or referred to in) slide 39 of the Investor Presentation) continue to apply and have not materially changed.

The Company believes that it has a reasonable basis for making the forward-looking statements in this announcement (including with respect to forecast financial information).

Competent Person Statement – Project Ludwig

JORC Code

The information in this announcement that relates to estimates of Mineral Resources in relation to Project Ludwig is based on and fairly represents, information that was reviewed, and audited by Mike Livingstone, P.Geo., who is a full-time employee of GLJ Ltd. and deemed to be a 'Competent Person'. Mr Livingstone is a Professional Geoscientist of the Association of Professional Engineers and Geoscientists of Alberta (APEGA), with certification in the Province of Alberta, Canada, a 'Recognised Professional Organisation' included in a list that is posted on the ASX website from time to time. Mr Livingstone has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code. Mr Livingstone consents to the disclosure of the technical information as it relates to the Mineral Resources in relation to Project Ludwig in this document in the form and context in which it appears.

Geothermal Code

The information in this announcement that relates to estimates of Geothermal Resources in relation to Project Ludwig is based on and fairly represents, information that was reviewed, and audited by Mike Livingstone, P.Geo., who is a full-time employee of GLJ Ltd. and deemed to be a 'Competent Person'. Mr Livingstone is a Professional Geoscientist of the Association of Professional Engineers and Geoscientists of Alberta (APEGA), with certification in the Province of Alberta, Canada, a 'Recognised Professional Organisation' included in a list that is posted on the ASX website from time to time. Mr Livingstone has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the Australian Geothermal Reporting Code. Mr Livingstone consents to the disclosure of the technical information as it relates to the Geothermal Resources in relation to Project Ludwig in this document in the form and context in which it appears.

Previous Disclosure – Project Lionheart and Future Phases projects

The information in this announcement that relates to estimates of Mineral Resources and Ore Reserves in relation to Project Lionheart and the Future Phases projects is extracted from the Bridging Engineering Study Results announcement on 16 November 2023 (Bridging Study Announcement) and the Future Phase Pipeline – Mannheim Resources Growth announcement on 9 July 2025[9], both of which are available to view on Vulcan's website at http://v-er.eu. Vulcan confirms that in respect of the estimates of Mineral Resources and Ore Reserves included in this announcement:

(a) it is not aware of any new information or data that materially affects the information included in the original market announcement, and that all material assumptions and technical parameters underpinning the estimates in the original market announcement continue to apply and have not materially changed; and

(b) the form and context in which the Competent Persons' findings are presented in this announcement have not been materially modified from the original market announcement.

The information in this announcement that relates to Exploration Results is extracted from the "Positive start to Phase One Lionheart Project field development" announcement on 19 November 2025 which is available to view on Vulcan's website at http://v-er.eu. Vulcan confirms that in respect of the Exploration Results included in this announcement:

(a) it is not aware of any new information or data that materially affects the information included in the original market announcement, and that all material assumptions and technical parameters underpinning the Exploration Results in the original market announcement continue to apply and have not materially changed; and

(b) the form and context in which the Competent Persons' findings are presented in this announcement have not been materially modified from the original market announcement.

[9] The Mannheim Announcement relates solely to the lithium brine Resource estimation for the Mannheim sector.

Listing Rule 5.8 Item (Mineral Resource)	Location of information in announcement
Geology and geological interpretation	Page 6 Geology and Subsurface Summary section Page 42 JORC Table One – Geology, supporting geological setting, deposit style and mineralisation model Page 48 JORC Table One – Geological Interpretation, supporting interpretation of the resource model
Sampling and sub-sampling techniques	Page 8 Mineral Resources Statement Page 30 JORC Table One – Sampling Techniques, supporting brine sampling methodology Page 34 JORC Table One – Sub-sampling Techniques and Sample Preparation, supporting sample collection and preparation procedures Page 38 JORC Table One – Sample Security, supporting chain of custody procedures
Drilling techniques	Page 9 Field Development Plan Page 13 Capital Cost Summary Page 32 JORC Table One – Drilling Techniques, supporting drilling and well construction methodology Page 33 JORC Table One – Drill Sample Recovery, supporting sample recovery procedures Page 42 JORC Table One – Drill Hole Information, supporting subsurface drilling information used in the Mineral Resource estimate
The criteria used for classification, including drill and data spacing and distribution. This includes separately identifying the drill spacing used to classify each category of mineral resources (inferred, indicated and measured) where estimates for more than one category of mineral resources are reported	Page 7 Mineral Resources section Page 8 Global Mineral Resources Statement Page 37 JORC Table One – Data Spacing and Distribution, supporting geological continuity and spacing assumptions Page 36 JORC Table One – Location of Data Points; supporting survey data Page 54 JORC Table One – Classification, supporting the basis for Indicated and Inferred classification Page 55 JORC Table One – Discussion of Relative Accuracy/Confidence, supporting confidence levels assigned to the Mineral Resource estimate
Sample analysis method	Page 35 JORC Table One – Quality of Assay Data and Laboratory Tests, supporting analytical methods and QA/QC procedures; Page 36 JORC Table One – Verification of Sampling and Assaying, supporting validation of assay results. Page 44 JORC Table One – Data Aggregation Methods supporting assessment of lithium grade
Estimation methodology	Page 7 Project Ludwig Lithium Mineral Resource Estimate section Page 8 Global Mineral Resources Statement section Page 48 JORC Table One – Database Integrity, supporting data quality controls Page 49 JORC Table One – Estimation and Modelling Techniques, supporting Mineral Resource estimation methodology and assumptions Page 54 JORC Table One – Classification, supporting the basis for Indicated and Inferred classification Page 55 JORC Table One – Audits or reviews and discussions of relative accuracy/confidence - independent assessment of methods and interpretations
Cut-off grade(s), including the basis for the selected cut-off grade(s)	Page 8 Global Mineral Resources Statement section Page 8 Table 3 Vulcan's Mineral Resource Estimates – Effective September 2028 and sub notes Page 49 JORC Table One – Estimation and Modelling Techniques, supporting reasonable prospects for eventual economic extraction.

	Page 52 JORC Table One – Cut-off Parameters, supporting reporting assumptions
Mining and metallurgical methods and parameters, and other material modifying factors considered to date	Page 9 Field Development Plan section Page 12 Plant Design and Process Summary section Page 17 Project Production Target and Economic Summary section Page 52 JORC Table One – Mining Factors or Assumptions, supporting extraction methodology Page 52 JORC Table One – Metallurgical Factors or Assumptions, supporting processing assumptions Page 53 JORC Table One – Environmental Factors or Assumptions, supporting environmental modifying factors

Listing Rule 5.16 Item (Production Target)	**Location of information in announcement**
All material assumptions on which the production target is based. If the economic assumptions are commercially sensitive to the mining entity, an explanation of the methodology used to determine the assumptions rather than the actual figure can be reported	Page 17 Table 6 - Project Production Target Parameters section Page 19 Table 8 - Key Financial Assumptions section Page 9 Field Development Plan section Page 12 Plant Design and Process Summary section Page 13 Capital Costs Summary section Page 14 Operating Costs Summary Sections
A statement that the estimated ore reserves and/or mineral resources underpinning the production target has been prepared by a competent person or persons in accordance with the requirements of the JORC Code.	Page 25 Competent Person Statement section Competent Person Statement – Project Ludwig (JORC Code)
The relevant proportions of: • Probable ore reserves and proved ore reserves; • Inferred mineral resources, indicated mineral resources and measured mineral resources; • An exploration target; and • Qualifying foreign estimates, underpinning the production target.	Page 8 Table 3 Vulcan's Mineral Resource Estimates Page 17 Production Target and Economic Summary section Page 3 and Page 18 Economic Summary; Tables 1 and 7
If a proportion of the inferred mineral resources, a cautionary statement proximate to, and with equal prominence as, the reported production target, stating that: *"There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised."*	Not applicable – no Lithium Inferred Mineral Resources are included in the Production Target.
If a proportion of the production target is based on an exploration target, a statement of the factors that lead the entity to believe that it has a reasonable basis for reporting a production target in that context, and a cautionary statement proximate to, and with equal prominence as, the reported production target, stating that: *"The potential quantity and grade of an exploration target is conceptual in nature; there has been insufficient exploration to determine a mineral resource and there is no certainty that further exploration work will result in the determination of mineral resources or that the production target itself will be realised".*	Not applicable – Production Target is not based on an Exploration Target.
If the production target is based solely on inferred mineral resources:	Not applicable – Production Target is supported by Indicated Lithium Mineral Resources.

• a statement of the factors that lead the entity to believe that it has a reasonable basis for reporting a production target based solely on inferred mineral resources; • the level of confidence with which the inferred mineral resources are estimated and the basis for that level of confidence; • a technical report of a sufficient level of confidence to support the production target. The technical report must be prepared by, or under the supervision of, a named independent competent person or persons and include the information referred to in Rule 5.22(b) and (c); and • a cautionary statement proximate to, and with equal prominence as, the reported +production target, stating that: *"There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised. The stated production target is based on the company's current expectations of future results or events and should not be solely relied upon by investors when making investment decisions. Further evaluation work and appropriate studies are required to establish sufficient confidence that this target will be met."*	

Listing Rule 5.17 Item (Forecast Financial Information)	**Location of information in announcement**
All material assumptions on which the forecast financial information is based. If the economic assumptions are commercially sensitive to the "mining entity, an explanation of the methodology used to determine the assumptions rather than the actual figure can be reported.	Page 15 Table 5 - Capital Cost Estimates Page 17 Table 6 - Project Production Target Page 19 Table 8 - Key Financial Assumptions Page 13 Capital Costs Summary section Page 14 Operating Costs Summary section Page 3 and Page 18 Economic Notes to Tables 1 and 7
The production target from which the forecast financial information is derived (including all the information contained in Rule 5.16).	Page 17 Table 6 - Project Production Target
If a significant proportion of the production target is based on an exploration target, the implications for the forecast financial information of not including the exploration target in the production target.	Not applicable – Production Target is not based on an Exploration Target.

JORC Table One

Sampling Techniques and Data

Criteria	JORC Code Explanation	Commentary

Sampling techniques	• Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or 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 (e.g. '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 (e.g. submarine nodules) may warrant disclosure of detailed information.
		• The Ludwig and Therese licenses, which make up "Project Ludwig", are located in the Upper Rhine Valley Brine Field (URVBF) within the Upper Rhine Graben (URG). Vulcan Group has access to existing, deep geothermal wells with proven drilling information and lithium brine grades within the URVBF region.
		
		• There have been no samples taken within the Project Ludwig area due to lack of existing wells producing from the target formations, however, off-property samples from the URVBF region have been used to support the mineralisation assumptions for Project Ludwig, combined with shallower, on-property oil and gas drilling data and 2D seismic data.
		
		• Within the Lionheart area, geothermal wells access hot brine from the PermoCarboniferous Rotliegend Group, Lower Triassic Buntsandstein Group, and the Middle Triassic Muschelkalk Group, (collectively, Permo-Triassic) sandstone and carbonate aquifers/reservoirs overlying the granitic basement, as well as the upper 100 m of the basement itself. Vulcan Group brine sampling programs collected Permo-Triassic brine samples from available wells through the following programs:
		
		  ○ 2019 to present (2026): Extensive and ongoing brine sampling and analysis at the Landau and Insheim geothermal wells and power plants to support lithium extraction pilot plant studies, process optimisation, and project development activities.
		
		  ○ 2019 to 2021: Regional brine sampling and analysis from geothermal wells across the URGBF, including Soultz (GPK2), Vendenheim undertaken to verify historically reported lithium concentrations and support regional resource assessment.
		
		• Brine can be sampled at the wellhead, (the hot side of the geothermal production circuit) or after the heat exchanger (the cold side of the geothermal production circuit) prior to reinjection of the brine back down into the aquifer. Brine samples taken at the wellhead require a cooling

Criteria	JORC Code Explanation	Commentary
		mechanism (e.g., brine flows through a tube immersed in ice) and a mobile degasser unit to reduce CO2. No special equipment is required on the cold side of the production circuit. • The Mineral Resources CP for the Definitive Feasibility Study (DFS CP) for the DFS report dated February 2023 collected independent brine samples at the Landau and Insheim resource area during the November 2022 site visit and submitted these for analysis at AGAT Laboratories, an accredited and ISO 9001:2015 registered commercial analytical services firm located in Calgary, Canada. Splits of these samples were also submitted blindly to the Vulcan Group laboratory located in Karlsruhe, Germany. Results of the 2021-2022 sampling program are consistent with previous Vulcan Group sampling programs and also with historical reporting associated with this field. • Brine sampling programs were conducted in 2019 and 2021 by Vulcan Group employees who maintained a chain of custody protocol from sample site to delivery of the samples to the Karlsruhe Institute of Technology (KIT), University of Heidelberg (Uni HD), and IBZ-Salzchemie GmbH & Co. KG in Halsbruecke, Germany, for analytical work. Industry standard collection techniques were applied to collect new samples averaging 10 litres in volume. A split of each sample collected by Vulcan Group in 2019 was shipped by commercial courier to the Pre-Feasibility Study (PFS) Mineral Resources CP from APEX Geoscience Ltd. and analysed at the accredited AGAT Laboratories facility in Edmonton, Alberta, Canada. In addition, four brine samples collected by Vulcan were shipped by commercial courier to the PFS Mineral Resources CP in Edmonton, Alberta, Canada for analysis at the accredited and ISO 9001:2015 registered facilities of AGAT Laboratories and also at the accredited and ISO 9001:2015 registered Bureau Veritas Laboratory (formerly Maxxam Analytical). • The current Mineral Resources CP reviewed the techniques of the regional brine sampling program carried out by Vulcan Group, along with their related analytical procedures, and concluded that these were conducted using reasonable and industry-standard techniques in the field of brine sample collection and assaying and that there are no significant issues or inconsistencies that would cause the validity of the sampling or analytical techniques used by Vulcan Group to be questioned. • Regional lithium concentrations range from 155 mg/L at Brühl GT-1 to 217 mg/L at Vendenheim VDH-1 and Cronenbourg-1. Recent sampling from the Lionheart Project's new well LSC-1

Criteria	JORC Code Explanation	Commentary
		returned approximately 183 mg/L Li, as previously disclosed, consistent with producing Lionheart wells Landau GT-La1 (181 mg/L) and Insheim GTI-2 (183 mg/L). • In combination, these data support the Mineral Resource CP's conclusion that the Permo-Triassic brine in the URVBF and specifically within the Ludwig and Therese licenses reservoir units is consistently enriched in lithium.
Drilling techniques	• Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).	• A range of well data from various sources are available for this Project covering different sections of the Mesozoic and Paleozoic rock formations of the URGBF. The majority of well data are from geothermal wells (GT) in the area that typically have been drilled into fault damage zones in the reservoir units and terminated in granitic basement. Insheim and Landau within the Lionheart development area are producing geothermal wells, the Appenhofen well on the Rift licence provides key data for the Buntsandstein reservoir, and the Vendenheim well was drilled into the granitic basement. The closest proximity geothermal well, Brühl GT1 was successfully drilled into the drilled into a fault damage zone and terminated in the Buntsandstein reservoir by a third party and was subsequently sealed. Additional well data are available from publications addressing areas of the Landau and Römerberg oil fields or geothermal Projects in Rittershoffen (e.g., well GRT-1) and Soultz-sous-Forêts (e.g., wells EPS-1, GPK-1, and GPK-2). Also contributing to the current Vulcan Group database are regional studies conducted in the URGBF in association with the transnational GeORG Project, which combines data from individual wells, excerpts from various well databases, and outcrop data to establish overall ranges on reservoir properties, lithologies and facies. • Geothermal and lithium production wells are usually designed with larger diameters than holes commonly drilled for production purposes in the oil industry. This is necessary to optimise fluid flow hydraulics for both brine production and injection wells. • Current geothermal well drilling in the URGBF generally consists of a 30" diameter (30") conductor casing drilled vertically to depth followed by several additional sections. These comprise a 20" surface casing in a 26" hole, a 13 3/8" intermediate liner in a 17 ½" hole, and a 9 5/8" production liner in a 12 ¼" hole, above a 7" liner in an 8 ½" hole. The final diameter hole is drilled into the targeted reservoir and to the A-88 Criteria JORC Code Explanation Commentary well's total depth. Each section reduces in diameter as the drill hole deepens and their designed intervals are dependent on factors such as lithology and stability.

Criteria	JORC Code Explanation	Commentary
		• Drilling muds are typically water based and have weights chosen to correspond with lithological and pore pressure conditions. • Conventional rock coring within the reservoir interval may occur, and logging of cuttings returned with the drilling mud (mud logging) typically provides lithological and stratigraphical information for the units encountered (i.e., formation tops and formation thickness, etc.). Mudlogging is highly relevant in cases of drilling geothermal production or injection wells. Drilling data with regards to depth, time, rate of penetration (ROP), weight on bit (WOB), revolutions per minute (RPM), pump pressure, mud flow rates, and gas chromatography, among others, are constantly monitored and recorded. Resulting data are typically available or summarised in associated reporting. • Vulcan Group has not yet conducted any new drilling programs designed specifically to support appraisal, evaluation, or mineral resource estimation within the Ludwig and Therese licenses; however, recent sampling and testing from Vulcan's Lionheart wells LSC-1, LSC-1a and LSC-1b confirmed reservoir quality, permeability, temperature and lithium-in-brine concentrations consistent with the Lionheart Field Development Plan, including lithium concentrations of approximately 183 mg/L Li and production test results indicating Productivity Index values of 2.1-2.5 l/s/bar, supporting estimated production rates of approximately 105-125 l/s at a 50 bar drawdown.
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 Group owns its own production/re-injection wells in Insheim and Landau, along with all associated technical information. This includes a large amount of drilling, geological, petrophysical and lithium brine data that apply to the Lionheart development area. • Brine samples from regional geothermal wells and the Insheim and Landau wells were generally recovered directly from the flowing brine stream within associated geothermal facility brine circuits, typically on both the "hot" and "cold" sides of such circuits. The brine sample collection method and sample collection documentation are in accordance with lithium brine industry standards and include procedures to avoid dilution of brine by drilling or process fluids prior to sample collection. • Vulcan Group has conducted new drilling and core sampling programs as part of its Phase 1 Project: Lionheart. 47 m conventional core were won in the Middle Buntsandstein of well LSC-1

Criteria	JORC Code Explanation	Commentary
		and underwent a thorough evaluation program. This included routine and special core analyses, CT-scans, petrographical analyses and macroscopic core description.
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 Group's Ludwig and Therese license benefited greatly from access to publicly available detailed lithological logs and down hole geophysical logs (where available) from the various oil and gas and geothermal wells within the URVBF. Government agencies have compiled such data for more than 30,000 oil and gas wells, geothermal, thermal, mineral water and mining boreholes across the entire region, within and adjacent to Vulcan Group's resource areas. • During 2020, Vulcan Group acquired additional detailed lithological and downhole geophysical measurements from geothermal well Brühl GT13.L which is located approximately 5 km from Vulcan Group's Ludwig license. It penetrated through the same Permo-Triassic strata being assessed by Vulcan Group in Project Ludwig, identified from 2D seismic data. Wireline logging runs were performed in the open hole and included: FMI-GR (resistivity image, calliper), DSI-GPIT-PPS-GR (sonic, calliper), LDS-GR (density, photo electric factor), and UBI-GR (acoustic image). The downhole information provided both qualitative (e.g., litho-logs) and quantitative information such as porosity and permeability measurements. These data were used to study and assess the hydrogeological characteristics and variations between, for example, host rock matrix porosity and fault zone fracture porosity. • Well logs from the Eppstein 1 and Brühl GT1 wells were used to confirm and validate the seismic interpretation of key stratigraphic marker horizons. • The detailed lithologic and geophysical well logging data acquired by Vulcan Group from various sources was assessed based on quality and resolution and incorporated to verify and refine the geological model that underlies the mineral resource estimation.
Sub-sampling techniques and sample preparation	• If core, whether cut or sawn and whether quarter, half or all cores taken. • If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	• Vulcan Group has been operating lithium extraction piloting and demonstration programs for over 3 years, regularly collecting brine samples from the hot and cold circuit sample points at Insheim and Landau. These samples and resulting geochemical analysis provide a large data sampling for the URVBF. • Vulcan Group's sampling protocol includes collection of the following three aliquots: ○ one aliquot of the unfiltered, non-acidized brine sample for anion analysis

Criteria	JORC Code Explanation	Commentary
	• 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.	○ one aliquot of unfiltered brine with supra-pure HNO3 for total metal analysis via ICP-OES; and ○ a filtered and acidized sample for analysing solutes (cations/ trace metals) and dissolved metal analysis via ICP-OES. • Insertion of Sample Blanks and Sample Standards into the sample stream is included in the Vulcan Group sampling protocol. • In addition, duplicate samples are collected at each sample site, and the duplicate sample geochemical analyses was conducted at numerous laboratories that included independent University and commercially accredited laboratories. All labs have experience with analysing lithium in brine. • As part of the 2019 brine analysis program, archived Brühl GT1 brine samples were analysed. The unfiltered brine sample was originally collected during a short production test in 2013 and stored for 6 years at approximately 20 °C. No sampling procedure documentation is available. The well was not available for additional sampling due to project circumstances and sealing of the well by the third-party owner. • The archived amount of brine from the Brühl sampling program was limited, and therefore, insufficient for a secondary check analysis at the University of Heidelberg, as per Vulcan's sampling protocol.
Quality of assay data and laboratory tests	• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. • For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. • Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory	• The brine sample collection, sample handling, analytical techniques, and QA/QC protocols used by Vulcan Group conform to industry standards. • The archived Brühl sample (mean value measured via ICP-OES and ICP-MS: 109 ± 5 mg/l Li) was recognized as being strongly influenced by dilution, consistent with the use of freshwater during production testing, and for compensating loss of drilling fluids. Vulcan conducted an assessment and interpretation of the lithium concentration results based on reservoir temperature estimates using geothermometers developed for geothermal brines (dilution corrected value: 155 ± 3 mg/l Li), slightly lower than Vulcan's regionally measured average of 181 mg/l Li.

Criteria	JORC Code Explanation	Commentary
	checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	• The Mineral Resources CP concludes that Vulcan Group lithium brine sampling and analysis uses industry standard protocols and are acceptable for use in the Mineral Resource Estimates.
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 Group does not have operating geothermal wells with proven drilling information and lithium grades within the AOI. The Ludwig Project is in appraisal stage and there is a clear pathway towards drilling an appraisal well in order to gather in-license brine samples. • A site visit was completed by the Mineral Resources CP for the Phase One Lionheart and Taro DFS (DFS CP) who visited the Vulcan Group properties and Karlsruhe offices and laboratory for three full days, from November 8-10, 2022. At both the Landau and Insheim operations, the DFS CP collected five brine samples from the production wells. Two of samples were analysed at the Vulcan Group analytical laboratory in Karlsruhe, Germany (one sample location identified to Vulcan Group and one did not identify). Two of the samples were analysed at the Karlsruhe Institute of Technology (KIT) Laboratory, (one sample location identified to Vulcan Group and one did not identify). The fifth sample was analysed by AGAT Laboratories, an independent, ISO 9001:2015 registered laboratory in Calgary, Alberta, Canada (delivered by CP). All three labs routinely process high TDS brine, perform trace element analysis for lithium, and have rigorous internal QA/QC protocols. The mean lithium results from the three labs for site visit samples were similar (KIT 181 mg/L, Vulcan Group 177 mg/L and Canadian lab 171 mg/L). The results are also comparable to the lithium grade of 181 mg/L used in the current Resource Estimation for the southern Vulcan Group licences, which is based on previously collected data. • Verification samples were also collected by during a site inspection in 2019. Samples were analysed at 2 separate commercial labs in Calgary, Alberta Canada (AGAT Laboratory and Bureau Veritas Laboratory). The analytical results showed a mean value of 180 mg/L Li. This result is similar to the average analytical result for Vulcan Group's regional well sampling and Insheim resource area well sampling programs (181 mg/L Li).
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.	• The grid system used is ETRS89 / UTM zone 32N (EPSC: 25832). • 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.

Criteria	JORC Code Explanation	Commentary
	• Quality and adequacy of topographic control.	
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.	• The Project Ludwig Mineral Resource Estimation uses subsurface lithological information from existing off-property geothermal wells including Brühl GT1. These well locations are supplemented with 2D seismic data from within the AOI and 3D seismic data from the directly adjacent Mannheim license, and on-property oil and gas wells. • Starting in late 2022, Vulcan Group acquired, processed, re-processed and interpreted state of the 3D seismic data over the Mannheim, Lampertheim, Lampertheim II and Waldnerturm licenses. • Larger subsurface 3D geological models were constructed by Vulcan Group, to outline the Permo-Triassic aquifers and fault domains underlying the URVBF, in support of Mineral Resource Estimation. • Average lithium concentrations derived from regional deep-brine sampling across the entire Upper Rhine Graben, including measurements collected by third parties, and from detailed Vulcan Group sampling within the Lionheart Phase 1 project area (2019-2026) are broadly comparable. Both datasets yield an average lithium concentration of 181 mg/L Li, which serves as a regional reference benchmark. • For this PFS, a lithium concentration of 155 mg/L Li (±3 mg/L), derived from the Brühl Gt 1 well and corrected for dilution, was conservatively adopted as the representative grade. The Competent Person (CP) has reviewed the underlying data and interpretation and considers this assumption to be conservative to realistic. Given the consistency of the lithium grades within the reservoir, and the sedimentary, continuous nature of the reservoir itself, the data spacing, and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource Estimation procedure(s) and classifications applied.
Orientation of data in relation to geological structure	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. • If the relationship between the drilling orientation and the orientation of key mineralised structures is	• The 3D geological model was constructed by Vulcan Group using the third party GeOrg model and 2D seismic data. The GeORG model comprises the horizons Base Tertiary, Top Buntsandstein and Top Basement, as well as the Buntsandstein formation thickness and faults. The interpreted thickness for Upper Buntsandstein is further supported by formation thickness information from the recent Vulcan LSC wells at Lionheart as well as the adjacent Mannheim 3D seismic survey.

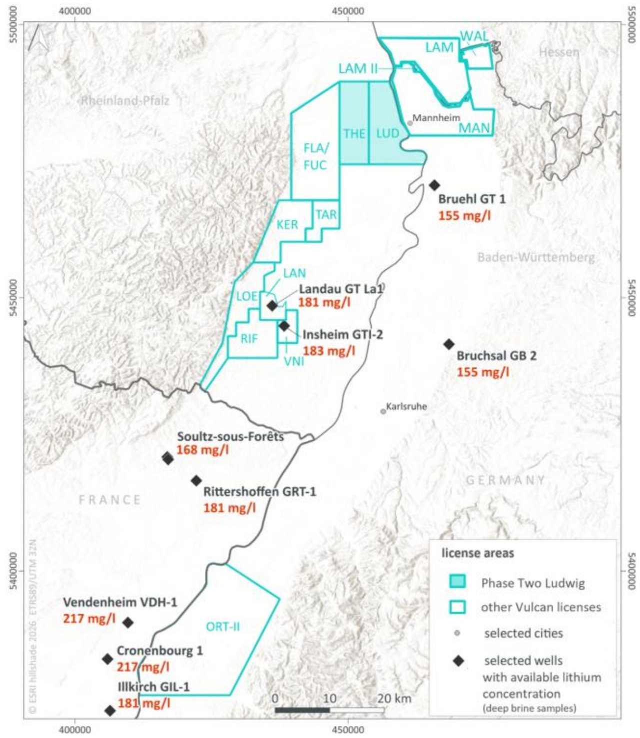
Criteria	JORC Code Explanation	Commentary
	considered to have introduced a sampling bias, this should be assessed and reported if material.	• Historical and Vulcan-conducted geochemical analysis of the aquifer brine from the Permo-Triassic strata shows the brine is consistently enriched with lithium, which is very consistent both temporally and spatially within the reservoir. • Dedicated 2D seismic data over the Project Ludwig area was acquired in 2025 and broadly confirmed the3rd party GeORG model, which was used as basis for modelling and resource estimation. • The orientation of the Permo-Triassic strata is generally flat-lying and continuous in the URVBF area. High-angle faults have created a complex horst and graben structural environment. The Permo-Triassic strata are generally laterally continuous, despite being locally offset by rift-related faulting. It is noted that the Permo-Triassic strata have been mapped for approximately 250 km along the north-northeast strike length of the entire URVBF. • In the opinion of the Mineral Resources CP, Vulcan Group's revised Project Ludwig geological models, based on the totality of seismic data within and outside of the license area, and offset geothermal drilling data available to date, provide an acceptable level of confidence in the spatial location and orientation of the top and bottom surfaces of Muschelkalk, Buntsandstein Group and Rotliegend successions, as well as the basement surface and fault zones. Further, the resulting models are considered to provide a reasonable approach for estimating Gross Rock Volumes, for use in Mineral Resource Estimation.
Sample security	• The measures taken to ensure sample security.	• No samples have been taken from the Project Ludwig area as there is not a representative well within the area. Samples referenced are for the Lionheart project or other offset wells within the URVBF. Vulcan Group's 2019-2026 brine sampling programs were conducted by Vulcan Group employees. Samples were transferred with chain of custody from sample site to analytical laboratories that included: the Vulcan Group Lab in Karlsruhe, the Karlsruhe Institute of Technology (KIT), University of Heidelberg (Uni HD), and IBZ-Salzchemie GmbH & Co. KG in Halsbruecke, Germany.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	• A review and check of the Project Ludwig Mineral Resource Estimation was completed by an external consultant (GLJ) independent from Vulcan Group. The Mineral Resources CP participated in numerous discussions and meetings, regarding methods and interpretations for

Criteria	JORC Code Explanation	Commentary
		the exploration and appraisal work to define the geometry and hydrogeological characterisation of the Permo-Triassic aquifer that forms the basis of the current resource model.

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 license to operate in the area.	• The Ludwig and Therese licenses areas which comprise Project Ludwig are within the URVBF which comprises 17 Vulcan held license areas on the German side (15 exploration license areas and two production license areas). • The Ludwig license has an area of 9,643.58 hectares (96.44 km^2) and is centred at 457286 m Easting, 5480854 m Northing, in the ETRS89 UTM Zone 32N projection. • The Therese license has an area of 8,111.81 hectares (81.12 km^2) and is centred at 451123 m Easting, 5482018 m Northing, in the ETRS89 UTM Zone 32N projection. • An Exploration License is issued pursuant to the German Federal Mining Act (Bundesberggesetz: bBergG) which defines freely mineable Mineral Resources as property of the state that is administered by state authorities. Accordingly, state permits are required for exploration and extraction. Vulcan Group requires both an Exploration License and an Extraction License or Mining Proprietorship to ultimately produce from its holdings. Any future geothermal brine and lithium production from any site would also require granting of a Production License plus completion of an operating plan and planning approval procedure that comply with the Act on the Assessment of Environmental Impacts. • An Exploration License is granted for a maximum of five years and can be extended at least twice by a further three years under certain conditions. If exploration has not commenced within one year of the license being granted, the license may be revoked. The same result may apply if exploration is interrupted for more than one year. The Exploration License is merely a legal title for the exploration of Mineral Resources in the granted area and is not sufficient to carry out technical programs such as seismic surveys or exploration work in the form of drilling. For such purposes, an operating plan (Betriebsplan) must be approved by the responsible state authority. • The Mineral Resource CP was advised by Vulcan Group that all Exploration Licenses covering the Project Ludwig area were in good standing at the Effective Date of the current Mineral Resource Estimate.

Criteria	JORC Code Explanation	Commentary
		• Any future geothermal and/or lithium brine production would require an operating plan and planning approval procedure that complies with the Act on the Assessment of Environmental Impacts.
Exploration done by other parties	• Acknowledgment and appraisal of exploration by other parties.	• The URG is under active exploration for its geothermal and lithium potential by multiple companies. Geothermal production is currently occurring at several sites other than those in which Vulcan Group is involved. As a result, important geological and brine data developed in support of non-Vulcan Group initiatives and evaluations is present. This has been accessed to the maximum degree possible by Vulcan Group for application in its own exploration and development programs. • Historical brine geochemical analytical results include historical analysis from the Landau, Insheim, Soultz, Brühl, and Vendenheim geothermal sites from 2019 to 2021. The historical data are presented in referenced journal manuscripts, or acquired from the operators, and the Mineral Resources CP reviewed the analytical protocols which are considered 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 was also used as part of the Mineral Resource Estimation process. • For Project Ludwig, the mean Li concentration from Brühl GT-1 has been used, as it is considered the closest analogue based on its close proximity to the Project area. This assumption may be conservative, however, as Brühl GT-1 represents the lower end of the regional lithium concentration range observed across the Upper Rhine Valley Brine Field (155-217 mg/L Li), while Vulcan's most recent measurements from the Lionheart Project returned approximately 183 mg/L Li. Accordingly, there may be upside potential should lithium concentrations within the Project area prove to be closer to the broader regional and recent Vulcan results. • From the nearest geothermal offset well Brühl GT1 a production test brine sample is available with a corrected lithium value is 155 ± 3 mg/l i.e. equal to the concentration of the Bruchsal brine.

Criteria	JORC Code Explanation	Commentary
		 • GeotIS and GeORG data were evaluated and used to support construction of the 3D geological model used in Vulcan Group's current Mineral Resource Estimates. GeotIS and GeORG are digital geological atlases with emphasis on geothermal energy. They provide access to extensive compilations of well data, seismic profiles, information, and interpreted schematic cross sections from the evaluation of 2D seismic data with emphasis on deep stratigraphy and aquifers in Germany. The raw data, such as seismic data, are not available, as they are owned by the respective energy companies, but data profiles have been collated and interpreted for inclusion in the representative geo-dataset information systems. • Detailed studies of data from geothermal well Brühl GT1 which was drilled in 2013, were carried out by Vulcan Group in 2019-2020 to better understand the hydrogeological characteristics of the fault/fracture zones within the surrounding Permo-Triassic strata. The dataset included

Criteria	JORC Code Explanation	Commentary
		detailed lithological log and downhole wireline log information that included FMI-GR (resistivity image, caliper), DSI-GPIT-PPS-GR (sonic, caliper), LDS-GR (density, photo electric factor), and UBI-GR (acoustic image). Vulcan Group commissioned GeoT, now part of Vulcan Group, to describe and characterise this well data.
Geology	• Deposit type, geological setting and style of mineralisation.	• The lithium mineralisation in the URVBF is situated within confined, subsurface aquifers associated with the Permo-carboniferous Rotliegend Group, the Lower Triassic Buntsandstein Group, and the Middle Triassic Muschelkalk Group (collectively, the Permo-Triassic strata) sandstone aquifers and carbonates situated at depths of between approximately 2,100 m (Top) and 3,900 m (Base) below surface. • The Permo-Triassic strata are comprised predominantly of terrigenous sand facies, with minor shales, carbonates, and anhydrites, 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 sandstone sub-units. Within the Permo-Triassic strata, porosity, permeability, and fluid flow rates are dependent on the fault, fracture and micro-fracture zones that are targeted by geothermal companies in the URVBF. • Lithium mineralisation occurs in the brine that is occupying the Permo-Triassic aquifer pore space. • With respect to a deposit model, the lithium chemical signature of the brine is believed to be controlled by geothermal fluid-rock geochemical interactions. With increasing depth, total dissolved solids (TDS) increase in NaCl-dominated brine. Lithium enrichment associated with these deep brines is related to interaction with hot crystalline basement fluids and/or dissolution of micaceous materials at higher temperatures. • In the opinion of the Mineral Resources CP, the current geological models provide a level of confidence that is reasonable in terms of identifying the spatial location and orientation of the Buntsandstein Group and Muschelkalk zone, Rotliegend zone, basement and constituent faults for use in the current Mineral Resource Estimates.
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:	• Within the Ludwig and Therese licenses, Vulcan Group has yet to conduct any new drilling or coring programs. However, the current Mineral Resource Estimation was able to utilise subsurface lithological information from historical wells adjacent to the holding, as well as shallower in-license wells.

Criteria	JORC Code Explanation	Commentary
	• 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.	• There are numerous historical geothermal wells or petroleum wells drilled by other companies that extend deep enough to penetrate Permo-Triassic strata within the broader URVBF license area. • An overview of the available drill hole data within the Permo-Triassic aquifers covered by Vulcan Group's URVBF holdings is provided in the table below. The dataset includes well logs, core temperature measurements, and other relevant subsurface information from both within and adjacent to the Project Ludwig area. Not all wells contain lithium concentration data; however, they are included where they provide valuable geological, hydrogeological, or geothermal information for interpreting the URVBF reservoir.

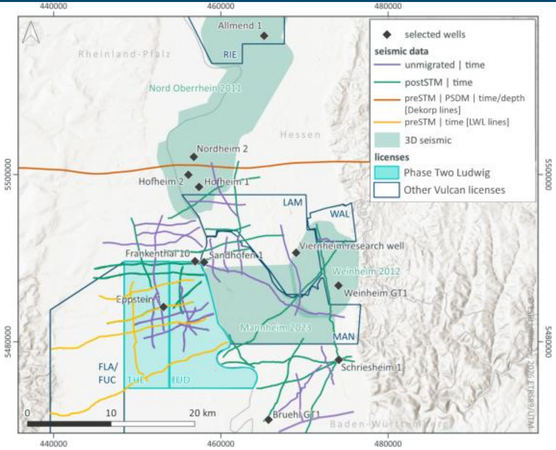
Criteria	JORC Code Explanation	Commentary
		(table below)

Well	Distance to Project Ludwig	Deepest formation drilled	Logged key sections	Logs*	Core report*	Temperature data*	Other
Eppstein 1	in-field well	Unclear; Tertiary	Tertiary	SP, GR, RES, NEU, SON	-	BHT	Checkshot
Frankenthal 10	in-field well	Unclear, Tertiary	-	-	-	-	-
Sandhofen 1	0.4 km	Quaternary	Quaternary	SP, GR, RES, NEU	-	-	-
Heuchelheim 2	1.8 km	Unclear, Tertiary	-	-	-	-	-
Waldsee 1	2.6 km	Tertiary	-	-	-	-	-
Brühl GT1	4.3 km	Middle Buntsandstein	Buntsandstein	GR, DEN, SON, IMG Litholog	-	Temperature log	Production & Injection test
Worms 4	7.4 km	Tertiary	Tertiary	SP, GR, RES, NEU, SON, DEN, Litholog	-	-	-
Hofheim 3	8.8 km	Tertiary Rotliegend	Tertiary, Rotliegend	SP, RES	-	-	-
Schriesheim 1	10 km	-	Tertiary	SP, RES	-	-	Checkshot
Viernheim	11.1 km	Pliocene	Tertiary	SP, GR, RES, SON, DEN	-	BHT	-
Weinheim GT 1 & 2	14.3 km	Hydrobia Beds	Tertiary	GR, RES, NEU, SON	-		-
Offenbach GT1	25.2 km	Middle Buntsandstein	Muschelkalk, Buntsandstein	GR SON, IMG, Litholog	-	Temperature log	Checkshot
Landau GtLa1	28.7 km	Basement	Buntsandstein, Rotliegend, Basement	GR, IMG, Litholog	-	Published log (Schindler et al., 2010)	
Landau GtLa2	28.7 km	Basement	Buntsandstein, Rotliegend, Basement	GR, IMG, Litholog	-	Published log (Schindler et al., 2010)	Checkshot
Schleidberg LSC-1	30.0 km	Basement	Keuper, Muschelkalk, Buntsandstein, Rotliegend, Basement	GR, NEU, SON, DEN, NMR, IMG, Litholog, Pressures, VSP	IMG & DECT derived Poro-Perm-DEN-SGR	Temperature logs	Production & injection test
Insheim GTI2	31.3 km	Basement	Keuper, Muschelkalk, Buntsandstein, Rotliegend, Basement	GR, IMG, Litholog	-	Undisturbed temperature log	Production & Injection test
Insheim GTI1	31.3 km	Basement	Keuper, Muschelkalk, Buntsandstein, Rotliegend, Basement	SP, GR, RES, IMG, Litholog	-	Undisturbed temperature log	Checkshot, Injection test
Appenhofen 1	34.1 km	Middle Buntsandstein	Keuper, Muschelkalk, Buntsandstein	SP, GR, RES, NEU, SON, DEN	Poro-Perm	BHT	Hydraulic test, Checkshot
Kraichgau 1002	44.4 km	Rotliegend	Muschelkalk, Buntsandstein, Rotliegend	GR, Litholog	Poro-Perm, Facies	-	-

Mnemonics:
SP – Spontaneous Potential; GR – Gamma Ray; SGR – Spectral Gamma Ray; RES – Resistivity logs; NEU – Neutron; SON – SONIC; DEN – Density; NMR – Nuclear Magnetic Resonance; IMG – Image Logs (Sonic or Resistivity); Litholog – Continous lithological record based on drill cuttings, gas shows, and drilling parameters; VSP – Vertical Seismic Profiling; DECT – Dual Energy CT Rock Types; BHT – Bottomhole Temperature.

Criteria	JORC Code Explanation	Commentary
Data aggregation methods	• In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated. • Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low-grade results, the procedure used for such aggregation should be stated and some typical	• The brine geochemical results analysed within the URVBF have demonstrated that the Permo-Triassic brine in the URG has a relatively homogeneous lithium chemical composition. • For the Ludwig Project area, the lithium concentration measured from the Brühl GT1 well, at 155 mg/L lithium with an error range of +/- 3 mg/L, was conservatively used as representative of the lithium grade of both the Ludwig and the Therese licenses, after correction was made for dilution. • The CP has reviewed the interpretations and considers the resource grade to be conservative to realistic, given wider averages of 181 mg/l Li across the broader URVBF.

Criteria	JORC Code Explanation	Commentary
	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 values applied in the current Vulcan Group Mineral Resource Estimate were converted to Lithium Carbonate Equivalent ("LCE") using a conversion factor of 5.323, based on the stoichiometric quantity of lithium in Li_2CO_3. Reporting lithium values in LCE units is standard lithium 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 (e.g. 'down hole length, true width not known').	• As mineralisation is related to liquid brine within a confined aquifer, intercept widths are not a relevant concept. Well perforation points essentially gather mineralised brine from the aquifer at large, assuming the pumping rate is sufficient to create drawdown in the aquifer. • Vulcan Group has operating geothermal wells with proven drilling information and ongoing measurement of lithium grades, within the Insheim and Landau licenses in the core of the URVBF. • With respect to the geothermal well data used, all engineering aspects of the wells are documented. The Mineral Resources CP has a good indication of the true vertical depths of the perforation windows used to sample and pump brine from the Permo-Triassic aquifers to the surface.
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.	• The current associated News Release and previous News Releases by Vulcan Group include explanatory figures that were used in reporting of Project information to support respective Mineral Resource Estimation disclosures. • All map images include scale and direction information such that the reader can properly orientate the information being portrayed.

Criteria	JORC Code Explanation	Commentary
		
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.	• Reporting of exploration results is presented in the associated News Release and in the Technical Reports associated with Vulcan Group's URVBF Exploration Licenses, including Ludwig and Therese. • There are no outlier analytical results in the geochemical dataset used to evaluate the lithium concentration of Permo-Triassic aquifer brine. The lithium brine values, within analytical error margins, are interpreted to be relatively homogenous in the vicinity of Vulcan Group's Exploration Licenses, as informed by brine analytical data assembled by Vulcan Group.
Other substantive exploration data	• Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	• A substantive amount of historical data was used to investigate and characterise the configuration and hydrogeological properties of the Permo-Triassic aquifers. These aquifers include the Buntsandstein Group, Rotliegend Group (where present) and Muschelkalk Group (where present). Hydrogeological properties include porosity and permeability. • Historical geochemical data were used to assess the lithium concentration in Permo-Triassic aquifer brine. A total of 43 historical brine analysis records were compiled. These historical data were verified by Vulcan Group, and it is the opinion of the Mineral Resources CP that: o The Permo-Triassic aquifer is relatively homogeneous in terms of lithium concentration within the extent of the Upper Rhine Graben. o The verification of historical geochemical results produced a geochemical dataset that is adequately reliable for inclusion in the current Mineral Resource Estimation.

Criteria	JORC Code Explanation	Commentary
		○ Numerous geothermal, or oil and gas wells, were historically drilled by companies other than Vulcan Group within the boundaries of the URVBF licenses.
Further work	• The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling). • Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	• The following next steps are planned as the Vulcan Group works towards an FDP and the execution of the Ludwig project: ○ Acquisition of 3D seismic data in the Ludwig, Therese and adjacent licenses, implementing the learnings from the Ludwig 2D acquisition. ○ Execution of an appraisal well at Project Ludwig, and subsequently completion of a Definitive Feasibility Study (DFS).

Estimation 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.	• A review of compiled data was conducted by the Mineral Resource CP who, to the best of their knowledge, can confirm the data was generated with proper procedures, has been accurately transcribed from the original source and is suitable for use in the Mineral Resource Estimation. • Numerous hydrodynamic property studies and data were compiled from throughout the URVBF by Vulcan Group, to support the selection of appropriate values for Effective Porosity (Phie) and Net to Gross ratio (NTG) to use in Mineral Resource Estimation. In the opinion of the CP, these studies, and the Mineral Resource Estimation parameters that were derived, are reasonable and appropriate. • The Mineral Resources CP is satisfied with the integrity of the chemistry, geological and hydrodynamic datasets and information sources used to estimate Mineral Resources.
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 Mineral Resources CP has not visited the Ludwig or Therese license areas. The geothermal lithium Project Ludwig is in early stages of development and does not have any geothermal or lithium structures or facilities located in the license area at this time. • For previous Vulcan Group Mineral Resource estimation reporting, the CPs have visited the Vulcan Group facilities and office on the days of July 30-31, 2024, and November 8-10, 2022.
Geological interpretation	• Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.	• The new 2D interpreted seismic data has enabled verification of presence and broad orientation and lateral extend of the faults of

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	• 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.	• The fault/fracture zones were distinguished in the seismic profiles. The vertical displacement of the fault zones on the seismic profiles enabled definition of the activity level of the fault zone, with many interpreted to be active. The fault zones were picked only where they could be positively identified in the seismic lines and the faults were correlated in consideration of their offset, dip angle and depth. • The vertical displacement of the fault zone on the seismic profiles was also used to make calculated inferences on the horizontal width of the fault zone in the geological model.
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 geometry of the Permo-Triassic strata in the URVBF has a gentle northward dip against the Base Tertiary unconformity which leads to gradual erosion of pre-Tertiary strata. This mostly affects Keuper and Muschelkalk and Upper Buntsandstein which are completely eroded in most parts of the AOI. • Top Buntsandstein is buried at depths between 2100 m (southwestern part of license area) and 3700 m TVDSS (northwestern part of license area) with an average thickness of 290 m. In the northwestern part, total Buntsandstein thickness is interpreted to be ca. 130 m, with Upper Buntsandstein being completely eroded. Based on the GeORG data, in the eastern part of the AOI Buntsandstein appears to lie directly on top of Basement, whereas in the western part Rotliegend is present with a thickness of up to 100 m. This, however, has to be confirmed by 3D seismic data and a yet to be drilled appraisal well.
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	• The Lithium Mineral Resource Estimation is defined as the summation of the following, for all unique units within the Ludwig and Therese licenses: • *Total Volume of the Brine-Bearing Aquifer (GRV) x Average Effective Porosity (Phie) x Average Net to Gross (NTG) x Average Concentration of Lithium in the Brine (C).* • The parameter values used in the Mineral Resource Estimate are summarised in the table below and the results of Mineral Resource Estimate by Classification.

Criteria	JORC Code Explanation	Commentary

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 (e.g. 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.
- 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.

		Reservoir	Classification	GRV	Avg. NTG	Avg. Phie	Avg. Li	Elemental Li	LCE
				km^3	%	%	mg/L	kt	kt
Phase Two Ludwig	Ludwig	BST	Indicated	14.2	90	9	155	187	996
		MUS, BST, ROT, BM	Inferred	15.9	82	9	155	173	920
	Therese	BST	Indicated	3.6	90	10	155	48	255
		MUS, BST, ROT, BM	Inferred	20.4	88	9	155	246	1,310
Total								Indicated	1,251
								Inferred	2,230

Note 1: Mineral Resources are not Ore 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 value percentages.
Note 3: Reservoir abbreviations: MUS – Muschelkalk Formation, BST – Buntsandstein Group; BM– Basement.
Note 4: 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).
Note 5: NTG and Phie averages have been weighted to the thickness of the reservoir. These averages are consolidations of multiple local zones and therefore multiplied together will not equate to the global elemental lithium values presented. The elemental lithium values presented are determined separately using detailed data for each zone and then summed together to show a total value for the purposes of this summary table.
Note 6: GRV refers to gross rock volume, also known as the aquifer volume. GRV values presented in this table are rounded to the first significant figure for presentation purposes. The elemental lithium values presented are calculated using GRV values that have not been rounded.
Note 7: Mineral Resources are considered to have reasonable prospects for eventual economic extraction under current and forecast lithium market pricing with application of Vulcan Group's A-DLE processing.
Note 8: The values shown are an approximation and with globalised rounding of values in the presented summary table as per JORC guidelines, cannot be multiplied through to achieve the Mineral Resource Estimated volumes shown above.

1. The workflow implemented for the calculation of the Project Ludwig lithium Mineral Resource Estimations included the following steps:

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		2. Based on the publicly available GeORG data and data from the Vulcan LSC wells, structural surfaces for the Base Tertiary, Top Upper Buntsandstein, Top Middle Buntsandstein, Top Rotliegend, Top Basement, and an additional 100 m interval within the Basement were defined. 3. Based on the publicly available GeORG data, the faults within the Muschelkalk, Buntsandstein, Rotliegend and Basement were defined. 4. A conservative Fault Damage Zone (FDZ) half-width of 200 m was defined for all faults based on the average displacement across the faults within the URVBF 5. Estimation of volumes for applicable matrix bodies (Buntsandstein only) and FDZs within applicable geological units 6. Identification of applicable Effective Porosity and Net to Gross Values for each of the volumes Estimated above. The Effective porosity was based on wireline well log data of three wells within the URVBF (Appenhofen 1, Offenbach GT1, and Brühl GT1) as well as published porosity and permeability core plug measurement data within the URVBF. In total, there are over 300 effective porosity measurements from core and outcrop analysis, and over 250 permeability measurements and/or interpretations for the Buntsandstein Group. Data points for the Rotliegend group include 62 core plug porosity measurements, as well as over 550 permeability measurements from core plugs. Porosity versus permeability plots using these data help determine cut-offs for effective fluid flow within reservoirs (Canadian Oil and Gas Evaluation Handbook, 2005; Nelson, 1994) achievable because of the availability of production data from producing geothermal and oil and gas wells within the URVBF (Landau 207, 211, Appenhofen, Römerberg A to E). For the Permo-Triassic sediments in the URVBF, a porosity cut-off of 5%, equivalent to a permeability cut-off of 0.02 mD, is reasonable for significant fluid flow to occur. Net thickness is then determined from this relationship by applying the 5% effective porosity cut-off to the gross interval thickness. Determination of applicable average lithium concentration (C) for each license, based on Vulcan Group's brine sampling and interpretation program. Determination of average grade (C) is discussed under "Data Aggregation" Methods" in the Reporting of Exploration Results Section of this JORC Table. 7. Spreadsheet compilation of all volumes and applicable parameter values, followed by resource calculation, according to the equation noted above.

Criteria	JORC Code Explanation	Commentary
		8. Confirmation of reasonable prospects of eventual economic extraction for the identified resource zones. 9. The current Mineral Resource Estimation for Ludwig and Therese licenses replaces and supersedes the previously published estimates. 10. The only element being estimated is lithium, and consideration of deleterious elements is beyond the scope of this Project and Mineral Resource Estimate. Determination of such factors is dependent on application of specific mineral processing and lithium recovery flowsheet assessments and comprehensive market studies. Based on the lithium extraction piloting that Vulcan Group has conducted since April 2021 in Phase One Lionheart, no deleterious elements have been noted which have a materially negative effect on Vulcan Group's sorption-type lithium extraction process. 11. The average lithium-in-brine concentration used in the Mineral Resource Estimations for the AOI is 155 mg/L. 12. No top cuts or capping upper limits have been applied, or are deemed to be necessary, as confined lithium brine deposits typically do not exhibit the same extreme values as precious metal deposits. This statement is applicable to the Permo-Triassic aquifer lithium brine data in this study. 13. A cut-off grade / resource quantity analysis was not strictly applicable to the resource, due to the use of average grade in the static resource estimate. 14. The unit volumes, parameter values, and resource Estimate calculations were checked and validated by the Mineral Resources CP. In the opinion of the CP, the volumes, parameter values and calculations are appropriate and provide Mineral Resource Estimate results that are reasonable for the assigned resource categories.
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 lithium resource in the URG is a brine-hosted resource.
Cut-off parameters	• The basis of the adopted cut-off grade(s) or quality parameters applied.	• Cut-off considerations are discussed above.

Criteria	JORC Code Explanation	Commentary
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.	• The mining method for lithium in Project Ludwig is through lithium extraction from geothermal brine from deep wells and utilizing a Direct Lithium Extraction (DLE) process. It is the CPs opinion that geothermal facilities and lithium brine extraction operations represent a feasible co-production opportunity that has potential for future economic viability. • The methods for lithium extraction have been tested by Vulcan Group at a pilot plant demonstrating the sorption process on its geothermal brine from Insheim operating geothermal facility, since April 2021 and a Demo plant at Landau since 2023. The results of these operations back up the assumptions used in Vulcan Group's Lionheart design and provide the basis for assumptions and predictions regarding extraction technologies.
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.	• Vulcan Group uses an Adsorption-type DLE (A-DLE) process, similar to commercially operating A-DLE processes used on salar-type brines in Argentina and China. Because of environmental and meteorological considerations, Vulcan Group uses geothermal heat, instead of fossil gas and solar evaporation ponds, to drive the adsorption process and drive the subsequent concentration of the lithium eluate respectively. • Vulcan Group's lithium engineering team designed, and has since operated, a lithium extraction pilot plant demonstrating the sorption process on its geothermal brine since April 2021 and a Demo plant since 2023. The results of these operations back up the assumptions used in Vulcan Group's Lionheart design and provide the basis for assumptions and predictions regarding metallurgical amenability. • The Project Ludwig future development is planned to be based on the similar design to the Lionheart Project design for commercial operation where brine from the geothermal production wells feeds one lithium extraction plant (LEP), to produce battery grade lithium chemicals.
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.	• German Federal and State policy is targeting carbon neutral power and heating production, and EU policy targets the onshoring and bolstering the sustainability of lithium and other critical raw materials production. It is the opinion of the CP that combined geothermal energy and lithium extraction projects (such as Vulcan Group's Project) have the necessary environmental

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	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.	credentials to enable stakeholder support. The imprimatur of Phase One Lionheart also provides additional support for this for Project Ludwig, as the next phase of development. • Vulcan Group's process has been designed to be very low waste and circular, in that all brine produced is re-injected into the reservoir, in materially the same state but just with most of the lithium extracted. • The surface footprint of planned operations, being geothermal wells and plant, and lithium extraction plants, are very small compared to a traditional mine or salar operations, and sites will be selected for location on industrial or farming land. • As a result, Project Ludwig is expected to have a comparatively low environmental footprint and contribute positively to climate outcomes through the decarbonisation of the lithium supply chain and the provision of renewable energy.
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, 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. • Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	• Bulk density is not applicable, or necessary to be applied, to the liquid, brine-hosted resource. • Details of the resource calculations are provided above.
Classification	• The basis for the classification of the Mineral Resources into varying confidence categories. • Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input	• The Vulcan Group Ludwig and Therese license area has reasonable prospects for eventual economic extraction based on aquifer geometry, delineation of fault zones using newly acquired and legacy 2D seismic data, brine volume, brine composition, hydrogeological characterisation, porosity, fluid flow, and the advancement of Vulcan Group's lithium

Criteria	JORC Code Explanation	Commentary
	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.	adsorption technology and subsequent test work through their pilot plants through thousands of hours of continuous processing data, and thousands of cycles of test work. • The updated Project Ludwig lithium Mineral Resource Estimation are classified as Indicated and Inferred Mineral Resources, depending on location and availability of data. • Pertinent points to support an Indicated and Inferred Mineral Resource classification within the Project Ludwig area include: 1) a greater level of confidence in the subsurface geological model due to Vulcan Group's acquisition, processing and interpretation of new 2D seismic data, 2) knowledge of Vulcan Group's commissioned lithium adsorption mineral processing test work and results, following thousands of hours of test work conducted over the course of 3 years, 3) Vulcan Group's acquisition of production/re-injection wells in the core of the field at Insheim, and agreement to access other production/re-injection wells at the neighbouring Landau geothermal plant, which has resulted in hundreds of additional analyses from live geothermal brine, and 4) Vulcan Group's integration of extensive reservoir production simulation into its models. • The Mineral Resource Estimate has been prepared by a multi-disciplinary team that include geologists, reservoir engineers, hydrogeologists, geothermal specialists, and chemical engineers with relevant experience in Permo-Triassic and other brine geology/hydrogeology and lithium brine processing environments. There is collective agreement that the Vulcan Group Project has reasonable prospects for economic extraction at current and forecast lithium market pricing levels. Technical Report author Mike Livingstone, P. Geo takes responsibility for this statement, as Mineral Resources CP.
Audits or reviews.	• The results of any audits or reviews of Mineral Resource Estimates.	• A previous audit of the lithium Mineral Resource estimates for the Ludwig and Therese licenses was conducted and reported in earlier reports.
Discussion of relative accuracy/confidence	• Where appropriate a statement of the relative accuracy and 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	• In the opinion of the Mineral Resources CP, the Project Ludwig Indicated and Inferred lithium Mineral Resource Estimations are reasonable for the Permo-Triassic aquifer within the Ludwig license area. • Risks and uncertainties as they pertain to the lithium Mineral Resource Estimate include:

Criteria	JORC Code Explanation	Commentary
	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.	○ Risks and uncertainties associated with deep geothermal brine exploration are linked to the high cost of deep well drilling. As exploration and appraisal results become available and development continues, incorporation of associated results will reduce inherent Mineral Resource Estimation uncertainty and Project risk. ○ The lithium concentrations used for the basis of the Project Ludwig Mineral Resource Estimation may be different than assumed. Confirmation will not be possible until a new well or wells are drilled and tested within the Project Ludwig area. ○ The reader should be aware that the reality of any geothermal or lithium brine recovery program is that the extent of brine recovery from the resource estimate zone will be a function of the design of the recovery/reinjection system and the connectivity of the subsurface brine zones. To some extent, it will not be feasible to capture all brine from the subsurface strata included in the mineral resource estimate. ○ The planned brine production system will be based on doublets with a production well and reinjection well. It is noted that dilution factors caused by injecting the spent brine into the hydraulic system could influence the operational timeline of a given well doublet, beyond the extent to which already modelled. ○ Localised high permeabilities can lead to channelling effects such that the geothermal reservoir potentially becomes inefficient in terms of capturing brine from a broader zone. Thus, the exploitation of fault zones can constitute a trade-off between high permeability and reduced reservoir volumes.

Geothermal Code Table

Geothermal Assessment and Reporting Criteria Table

Pre-Drilling Exploration Technical Data

Parameter	Consideration Description	Commentary

Geological Maps and interpretation	• Nature and quality of available mapping (e.g. scale, completeness, age, authors, 2D, 3D etc.) including basis for interpretation and any implications for likely Geothermal Resource types
	
	• Description of any relevant Geothermal Plays previously recorded in the vicinity or same geological province
		• The Vulcan Group Ludwig and Therese licenses that make up the "Ludwig Project" are part of a future Phase of development within the Upper Rhine Valley Brine Field (URVBF) licenses held by the Vulcan Group.
		
		• The Insheim and Landau license areas to the south of the Ludwig and Therese licenses have existing operating geothermal wells. The Geothermal Play in the URVBF, centred around the Lionheart area, is well understood based on over a decade of historical geothermal brine production.
		
		• The addition and reinterpretation of new infield 2D seismic and GravMag data from within the Project area and 3D seismic data from the adjacent Mannheim license increased the Geothermal Resources CPs confidence level in the subsurface 3D geological models that supported Geothermal Resource Estimation.
		
		• Seismic profiles of proprietary infield 2D and near field 3D seismic data, subsurface stratigraphic horizons were correlated within and beyond the Ludwig Project area. The marker horizons were validated against formation tops and / or wireline logs from nearby wells (e.g. Brühl GT1 and Eppstein 1).
		
		• A subsurface 3D geological model was constructed by Vulcan Group using the 3rd party GeORG model as basis, to outline the Permo-Triassic aquifers and fault domains underlying the URVBF. Below is a description of the additional data that were used to refine stratigraphic thicknesses of the existing model and to verify the location and the lateral extend of faults:
		
		  ○ Migrated and unmigrated legacy and newly acquired and processed 2D seismic data sets across and beyond the Ludwig and Therese licenses.
		
		  ○ In 2023, the Vulcan Group completed the Mannheim 3D seismic survey, which is located directly adjacent to the Ludwig license area. Key interpretation insights derived from this survey, including the stratigraphic thicknesses of individual

Parameter	Consideration Description	Commentary
		reservoir units and sub-units, the localisation of sub-crops, and the overall structural framework with associated fault geometries, are considered directly transferable to the Project area. • The orientation of the Permo-Triassic strata in Ludwig and Therese is generally flat-lying and increasingly eroded towards the Northern part of the area. High-angle faults have created a complex horst and graben structural environment. However, the Permo-Triassic strata are generally laterally continuous, despite being locally offset by rift-related faulting. It is noted that the Permo-Triassic strata have been mapped for approximately 250 km along the north-northeast strike length of the entire URVBF.
Data Location and spacing	• Adequacy of base maps • Methodology and quality of sample location (e.g. GPS etc.) • Datum and projection used along with any relevant parameters (locations should be reported using recognised co-ordinate systems and not local grids wherever possible) • Spacing of available data points • Extent of data interpolation/extrapolation including explanation of techniques applied	• The grid system used is ETRS89 / UTM zone 32N (EPSC: 25832). • 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. • The subsurface lithological information is from existing wells within the Insheim and Landau licenses, and from geothermal wells within the URVBF but outside of Vulcan's Project Ludwig license areas including at Vendenheim and Brühl GT1. These well locations are supplemented with extensive 2D seismic data and 3D seismic data. • Vulcan Group has operating geothermal wells within the Insheim and Landau license areas that form the core of the URVBF. Existing production/re-injection wells are located within 10 m of each other on the surface at each site, and within 2 km of each other at the target depth. The Landau and Insheim production wells, as well as Appenhofen well, are approximately 5 km apart on the surface. For Project Ludwig, there are no in-field wells available that intersect the intervals of interest in the Mesozoic, however the Brühl GT1 well provides detailed data from 6 km away.
Evidence for past or present water/rock interaction	• Location and description of observed hydrothermal alteration and mineralisation	• Intense hydrothermal alteration was observed in Rotliegend (Permian) rhyolitic tuffs encountered by the well Trebur GT1 in the Northern URG. • Fracture mineralisation due to hydrothermal fluid circulation is observed and expected (e.g. Soultz EPS1, Römerberg oil field, Waldhambach, Cleebourg outcrop).
Hydrology	• Nature and quality of near-surface hydrological data and the basis for interpretation including indicators of deeper hydrology	• Several hot and mineralized springs are known along the boundary fault system of the Upper Rhine Graben (URG). These include natural springs, such as those in Baden-Baden (with temperatures reaching up to 69 °C), as well as artificially tapped fluids from

Parameter	Consideration Description	Commentary
		deep wellbores, like at the Weinheim/Miramar spa, where aquifer temperatures reach 65 °C at ~1 km depth. • Most of these hot springs originate from relatively shallow, meteoric water that infiltrates to moderate depths. Due to their shorter residence times in the basement rocks of the graben shoulders, these waters typically have lower concentrations of lithium and other dissolved solutes. For example, the thermal waters in Baden-Baden have a total dissolved solids (TDS) concentration of about 3 g/l, in contrast to the much more concentrated deep brines found within the URG, which have TDS values ranging from 100 to 130 g/l. • In a few locations along the boundary fault, deep saline brines also rise to the surface, where they become diluted by near-surface groundwater. This mixing can lead to salinities that render the groundwater unsuitable for drinking water production. A key example is near Trebur, in the northern URG, where the upper groundwater aquifer contains mixed water with a TDS of 6.7 g/l, equivalent to the salinity of the Baltic Sea. • At Weinheim, rising brines with a TDS of approximately 110 g/l infiltrate laterally into high-permeability Miocene sand lenses. Clay-rich layers above these sands prevent the fluid from reaching the shallow groundwater, helping to isolate the mineralized brine. • Another notable case is the Odenwaldquelle spring, located south of Heppenheim. Here, mineralized water with a TDS of about 1.5 g/l is extracted from protected wells 80–200 meters deep in Oligocene marine sands. Originally, brine from the boundary fault spread laterally into these sands, but it is now heavily diluted by meteoric water from the overlying shallow aquifer, which consists of granite wash. Thanks to this dilution, the water from the Odenwaldquelle is suitable for sale as mineralized drinking water. • In general, near-surface groundwater in the URG is not affected by natural salinity from deep brines, but rather by anthropogenic pollutants, such as nitrate from fertilizers. Therefore, groundwater production often relies on deeper aquifers. • With few exceptions (such as at major neo-tectonically active faults), the calcium-bicarbonate-dominated shallow aquifers (TDS: 0.3 to 1.0 g/l) are well separated from

Parameter	Consideration Description	Commentary
		the deep NaCl-dominated brines (TDS: 100 to 130 g/l) by over 2,000 meters of sediment, including clay-rich layers from the Tertiary and Upper Triassic. • The deep brines in question, which are incorporated into this resource estimation, are completely separated from groundwaters by an impermeable clay layer.
Sampling techniques	• Nature and appropriateness of geological, geochemical or fluid sampling procedures including collection, steps taken to ensure samples are representative, sample identification and preservation	• The Vulcan Group has access to existing operating deep geothermal wells with proven drilling information, fluid sampling, and sample collection. • Within the Lionheart area, geothermal wells access hot brine from the Permo-Carboniferous Rotliegend Group (where present), Lower Triassic Buntsandstein Group, and the Middle Triassic Muschelkalk Group, (collectively, Permo-Triassic) sandstone and carbonate aquifers/reservoirs overlying the granitic basement, as well as at least the upper 100 m of the basement itself. • Vulcan Group regularly collects brine samples from the open hole reservoir section from Landau and Insheim geothermal wells which can be sampled at the wellhead, (the hot side of the geothermal production circuit) or downstream of the heat exchanger (the cold side of the geothermal production circuit) prior to reinjection of the brine back down into the aquifer. Brine samples taken at or near the wellhead require a cooling device (e.g., flow-through cooler operating with cold freshwater). No special equipment is required on the cold side of the production circuit. • Brühl GT-1, the nearest geothermal offset well to Project Ludwig, provides additional support for the lithium grade estimate through a production-test brine sample analysed by Vulcan in 2019. Following correction, the sample returned a lithium concentration of 155 ± 3 mg/L, which has been used to validate and refine the Project Ludwig lithium concentration estimate. • Fluid samples were collected by Vulcan from the LSC-1a well during production testing using Vulcan's Mobile Advanced thermal water measurement System (MARS), following the Company's hydrochemical sampling procedures aligned with industry practice. Samples were collected after stable flow conditions had been achieved and after extensive well purging, with field stabilisation confirmed through pH and chloride monitoring. Samples were filtered and preserved as appropriate for laboratory analysis, labelled and documented in accordance with chain-of-custody procedures, and subsequently analysed by both Vulcan's laboratory and independent external

Parameter	Consideration Description	Commentary
		laboratories. Sample representativity was supported by stabilised field parameters, production of multiple wellbore volumes prior to sampling, and laboratory QA/QC including standards, blanks and inter-laboratory verification.
Analytical Techniques	• Identification and experience of analytical laboratory • Nature, quality and appropriateness of laboratory techniques and related quality control procedures (e.g. in determination of petrographic, geochemical, fluid or gas analysis, physical rock properties, isotope, age data etc.) • The level of analytical uncertainty and whether acceptable levels of accuracy and precision are considered to have been established	• Rock densities from measurements and calculation based on mineral content (pure density, without pore volume). • Reservoir-temperature-corrected rock specific heat capacities from Bär, 2012 (calculated from lambda at 20°C); corrected to expected reservoir temperature according to formula from Vosteen & Schellschmidt (2003, in Bär 2012). • Water properties at reservoir temperature from PETher (2017) project. • Where available, data from existing producing wells for temperature and geochemical analysis. • The analytical uncertainty for the data used for the Geothermal Resource Estimation is considered low as standard laboratory techniques were used.
Temperature measurement and Geothermometry	• Nature and quality of available surface temperature data (e.g. ambient, 1m probe, aerial infra-red scans, existing shallow wells etc.) • Nature, quality and appropriateness of techniques used to determine temperatures from fluid or rock chemical geothermometry, including source of fluids, level of uncertainty in measurement and key assumptions made • Nature of thermal features used to determine temperature and their relation to chemical sampling	• Temperature measurements have been performed in approximately 1000 wells throughout the URG so far. Most measurements are collected in the Geophysics Information System (Fachinformationssystem Geophysik: FIS Geophysik) of the Leibniz-Institute for Applied Geophysics (LIAG) (Kühne 2006). Different measuring techniques were applied to generate these data. This results in significant quality variations. The most reliable results are provided by undisturbed temperature logs, where the thermal field reached equilibrium after drilling. However, disturbed temperature logs or bottom-hole temperature measurements are also common, and temperature data were acquired during production tests and hydrochemical analyses. • Typically, temperature measurements in boreholes are carried out immediately after drilling operations stopped and are hence affected by a cooling effect from the mud circulation. This effect was corrected within an uncertainty margin of ±8 K.
Temperature Gradient	• Nature, quality and appropriateness of calculations used to determine temperature gradient including the nature and source of surface temperature data and the associated level of uncertainty	• Subsurface temperatures show a positive thermal anomaly in the entire URG. The median geothermal gradient in the central to northern part of the URG is 48 K/km modelled at 3,000 m depth and 41 K/km at 5,000 m depth. This general trend of increased gradients in the shallower part of the basin followed by lower gradients at greater depth is explained by a thermal blanketing effect due to the clay rich sediments of the Keuper, Jurassic and/or Tertiary. They disrupt and curtail the high convective

Parameter	Consideration Description	Commentary
	• Depth intervals of determined gradients	heat transport in the Mesozoic and Palaeozoic units below. This effect can be observed in temperature profiles of almost all geothermal wells in the URG. • Local geological processes such as erosion, uplift or paleoclimate are not relevant in the region of the URG.
Thermal conductivity (K)	• Whether determined analytically, modelled or assigned • Where determined analytically, identification and experience of analytical laboratory and nature, quality and appropriateness of analyses used (e.g. number and frequency of samples, technique used to determine K, type of samples (e.g. core etc.), sample preparation (e.g. sample dimension, polish etc.) and analytical specifications (e.g. orientation of samples, wet or dry analysis, temperature at which K was determined etc.)) • Where modelled, the nature, quality and appropriateness of the model used, the source and quality of input parameters, corrections applied and/or key assumptions made • Where assigned, the basis for interpretation including key assumptions and data sources • The estimated level of uncertainty	• Analytical values of thermal conductivity of URG rocks are derived from the GeORG report (2013) and Bär (2012). • Thermal conductivity has not been utilized as an input value for the current resource estimation for Ludwig and Therese. • Thermal conductivity will be an important factor in future hydrothermal simulation modelling.
Heat Flow	• Whether based upon measured or assumed parameters • Where based on measured data, the nature and quality of the measurements (temperature and thermal conductivity), including characteristics of any thermal features from which they were derived, frequency and distribution of the samples, method/s used for depth matching temperature and thermal conductivity data,	• The temperature in the subsurface of the URG is controlled by conductive and convective heat transport. Fluid flow and convective heat transport occur predominantly along active fault zones that are associated with high fracture permeability. Hence upwelling of deep groundwater is the main reason for localised thermal anomalies. • Three main factors were identified that can significantly influence the subsurface temperature field:

Parameter	Consideration Description	Commentary
	assumptions made and any evidence of temporal change • Where reliant upon assumed or assigned data, then the basis for interpretation, including key assumptions and data sources • In all cases nature, quality and appropriateness of the model/s used (e.g.1D, 2D or 3D modelling), corrections applied and key assumptions made regarding physical conditions, vertical heat flow, topographic models etc. • The estimated uncertainty including key assumptions made	○ The relatively low thermal conductivity of clay-rich sediments in the Tertiary and/or Keuper (regional seals) (Zhang 1993; Wangen 1995; Freymark et al. 2017) ○ Regionally different heat flows from the pre-Tertiary subsurface, especially the radiogenic heat production rate of the crystalline basement (Freymark et al. 2017) ○ Convective heat transport via fault zones (e.g. (Koltzer, Scheck-Wenderoth, Cacace, Frick, & Bott Sippel, 2019) Koltzer et al. 2019; Bächler et al. 2003; Guillou-Frottier et al. 2013, 2020) • Due to the complexity of interacting factors influencing the temperature field, heat flow is expected to be very heterogeneous. The uncertainty in heat flow on a small scale is expected to be substantial and will be estimated as soon as sufficient in-field temperature measurements are available.
Heat generation determination	• Basis for the identification of significant sources of subsurface heat generation • Nature, quality and appropriateness of model used to calculate heat generation capacity and the level of uncertainty in the results	• Radiogenic heat generation – main contributor, temperature anomalies due to thermal blanketing, radiogenic heat; heat from mantle; radiogenic heat depending on basement mineralogy and thermal blanketing. • Heat generation processes have been discussed and modelled in Freymark et al. (2017). Vulcan did not perform a separate modelling of heat generation processes and currently refers to the published model by (Freymark, et al., 2017)
Geophysical techniques	• Nature, quality and appropriateness of any geophysical techniques used to describe or define geothermal anomalies including uncertainty and key assumptions made before, during and after interpretation, modelling, calibration of rock properties especially with drill hole data, contractors used and available survey parameters (e.g. resistivity, seismic, gravity, magnetic, MT) for both regional and local surveys	• The 3D geological model was constructed by the Vulcan Group based on the publicly available GeORG model and formation thickness information derived from the neighbouring MAN license, nearby wells such as at Brühl GT1, and from the Vulcan wells in Lionheart. The quality of the available legacy 2D seismic data within the Ludwig AOI does not permit a detailed interpretation of the pre-tertiary section. Therefore, no seismic interpretation was incorporated into the model. • Newly acquired and selected legacy 2D seismic lines were used to validate the location of the GeORG faults within the Tertiary section. • The thickness, depth and structural setting is broadly consistent with the interpretation from the 3D seismic in the neighbouring MAN license. The MAN interpretation is tied to nearby wells.

Parameter	Consideration Description	Commentary
Data integrity and verification	• Measures taken to ensure data have not been corrupted between initial collection and use in models/calculations • Data validation process • The verification of significant results by application of alternative techniques and/or independent personnel	• A review of compiled data was conducted by the Geothermal Resource CP who, to the best of their knowledge, can confirm the data was generated with proper procedures, has been accurately transcribed from the original source and is suitable for use in the Geothermal Resource Estimations. • 3D geological models were prepared for the Vulcan Group licenses, with the use of extensive 2D seismic data and 3D data. These data were interpreted by Vulcan Group and represented in modelling software Petrel. Interpreted features included picks for the upper and lower surfaces of the Muschelkalk Formation, Buntsandstein Group and Rotliegend Group (where present), plus fault locations. Model representations were checked by the Geothermal Resources CP (GLJ). In the opinion of the Geothermal Resources CP, these geological representations, and the seismic data used to develop them are reasonable and appropriate for Resource Estimation. • Numerous hydrodynamic property studies and data were compiled from throughout the URVBF by Vulcan Group, to support the selection of appropriate values for Effective Porosity (Phie) and Net to Gross ratio (NTG) to use in Geothermal Resource Estimation. In the opinion of the CP, these studies, and the Geothermal Resource Estimation parameters that were derived them, are reasonable and appropriate.

And Tenement, Environment and Infrastructure Data

Parameter	Consideration Description	Commentary
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 license to operate in the area.	• The Vulcan group retains within the URVBF 17 license areas on the German side (15 exploration license areas and two production license areas). • Insheim, Landau-Sued and Rift Nord licenses are referred to as Vulcan Group's Lionheart Project area. The Ludwig and Therese licenses are referred to as "Project Ludwig". • The exploration license for geothermal, brine and lithium in the license fields Ludwig and Therese are held by the company Vulcan Energie Ressourcen GmbH. By letter dated 13 December 2021 (Ref.: BB1-2001/20-001, OGO), the Rhineland-Palatinate State Office for Geology and Mining, pursuant to Section 7(1) of the Federal Mining Act (BBergG), granted Vulcan Energie Ressourcen GmbH a license

Parameter	Consideration Description	Commentary
		to prospect for the mineral resources of geothermal energy and other forms of energy arising in connection with its extraction (geothermal energy) and lithium for commercial purposes within the Ludwig license area until 21 December 2024. The Therese license was granted by the same mining authority (Ref.: BB1-2002/20-001, OGO, dated 13.Dec. 2021) until 21.12.2024. • An extension was applied and granted by the Mining Authority for the Ludwig and Therese license areas by a further three years in accordance with Section 16(4) of the Federal Mining Act (BBergG) and granted until end of 2027. • An Exploration License is issued pursuant to the German Federal Mining Act (Bundesberggesetz: BBergG) which defines freely mineable Mineral Resources as property of the state that is administered by state authorities. Accordingly, state permits are required for exploration and extraction. Vulcan Group requires both an Exploration License and a Production License or Mining Proprietorship to ultimately produce from its holdings. • Any future geothermal brine production from any site would also require granting of a Production License plus completion of an operating plan and planning approval procedure that comply with the Act on the Assessment of Environmental Impacts. • An Exploration License is granted for a maximum of five years and can be extended at least twice by a further three years under certain conditions. If exploration has not commenced within one year of the license being granted, the license may be revoked. The same result may apply if exploration is interrupted for more than one year. The Exploration License is merely a legal title for the exploration of Mineral Resources in the granted area and is not sufficient to carry out technical programs such as seismic surveys or exploration work in the form of drilling. For such purposes, an operating plan (Betriebsplan) must be approved by the responsible state authority. • An Exploration License shall accord the holder the exclusive right to: Explore for the geothermal resources specified in the license; to extract and acquire ownership in the resources that must be stripped or released during planned

Parameter	Consideration Description	Commentary
		explorations; to erect and operate facilities that are required for exploring the resources and for carrying out related activities. • The Geothermal Resource CP was advised by Vulcan Group that all Exploration and Production Licenses covering its Ludwig Project area are in good standing at the Effective Date of the current Geothermal Resource Estimate. • The Ludwig license has an areal coverage of 9,643.58 hectares (96.44 km^2) and is centred at 457286 m Easting, 5480854m Northing, in the ETRS89 UTM Zone 32N projection. • The Therese license has an areal coverage of 8,111.81 hectares (81.12 km^2) and is centred at 451123 m Easting, 5482018 m Northing, in the ETRS89 UTM Zone 32N projection. • The CP notes that there is always some risk or uncertainty that government regulations and policies could change between the issuance and termination dates of Exploration Licenses, Production Licenses and related permits issued by state authorities.
Terrain, geotechnical issues and access	• Identification of significant geotechnical, geohazard or access issues which could affect future drilling locations or sterilise sectors	• The Vulcan Group does not envisage any significant geohazard, geotechnical or access issues, which could affect future drilling locations or sterilise sectors.
Environmental Issues	• Identification of significant environmental issues (for example, water requirements, induced seismicity) which could affect future drilling locations or sterilise sectors	• Any future geothermal and/or lithium brine production would require an operating plan and planning approval procedure that complies with the Act on the Assessment of Environmental Impacts. • In the URVBF, induced seismicity is a potential risk which can be caused by injection of brine. The CP notes that mitigation of such risk may be addressed by the following activities, among others: o Performing regular seismic monitoring, as is currently practiced by Vulcan Group at its Insheim and Landau wells and plant o Standing off from the granitic basement, and producing only from the Buntsandstein reservoir o Reducing production flow rates temporarily if seismicity occurs during the operations

Parameter	Consideration Description	Commentary
		○ For the Project AOI, seismic hazard assessments and reports will be performed by external consultants as part of the further project development.
Land use issues	• Identification of significant land use conflicts which could affect future drilling locations or sterilise sectors	• Whilst location next to potential industrial and municipal heat offtakers is a highly desirable factor for geothermal developments, in the highly populated urban landscape in-between the area of Ludwigshafen, Frankenthal, VG Maxdorf and Mutterstadt significant land-use conflicts may constrain current and future drilling activities and sterilize potentially prospective sectors. Competing land uses include residential expansion, industrial and commercial developments, transport infrastructure (roads, railways and utilities), and protected environmental or recreational areas. The close proximity of sensitive receptors such as residential neighbourhoods, schools and public facilities may limit the availability of suitable drilling sites and increase permitting complexity. Furthermore, future urban development plans could progressively reduce access to currently undeveloped land, creating constraints for well pad placement, pipeline routes and associated infrastructure. As a result, early identification and safeguarding of strategically important areas is required to minimize the risk of future sterilisation and maintain flexibility for geothermal and lithium resource development. This aligns with internal project observations highlighting the need to assess political, community and site-location constraints in and around the Ludwig development area.
Infrastructure	• Proximity to and quality of relevant infrastructure and water supply, in particular transmission lines when the project is being considered for electricity generation	• Excellent infrastructure for the construction of drilling sites and facilities, including transmission lines and water supply, exist in the area of interest.
Exploration by other parties	• Acknowledgment and appraisal of exploration by other parties to the extent the data are available	• The URG is under active exploration for geothermal development by multiple companies. Geothermal production is currently occurring at several sites other than those in which Vulcan Group is involved. As a result, important geological and brine data developed in support of non-Vulcan Group initiatives and evaluations is present. This has been accessed to the maximum degree possible by Vulcan Group for application in its own exploration and development programs. • Historical brine geochemical analytical results include samples taken from Landau (in 2011, 2013: Sanjuan et al. 2016), Insheim (in 2013: Sanjuan et al. 2016), Soultz (in 2013: Sanjuan et al. 2016), Brühl (in 2013; Kraml unpublished), Bruchsal (in 2012: Sanjuan et al. 2016), and Vendenheim (in 2018: Sanjuan et al. 2020) geothermal sites.

Parameter	Consideration Description	Commentary
		• The samples are believed to represent a uniform brine composition since they originate in the crystalline basement and rise convectively up to the top-seal formed by Keuper and/or Lower Tertiary clay layers. • The fluids are tapped directly in the basement (Soultz, Vendenheim) or via a fault damage zone in one of the Paleozoic to Mesozoic overlying formations. In the case of Brühl GT1 and Bruchsal GB2, the well perforations extend over the Buntsandstein Group from which the brine intake occurs. The samples were taken at the surface near the well head during regular operation (Bruchsal GB2) and during a production well test (Brühl GT1). • The historical geochemical information was used as background information and was also used as part of the Geothermal Resource Estimation process. • GeotIS and GeORG data were evaluated and used to support construction of the 3D geological model used in Vulcan Group's current Geothermal Resource Estimates. GeotIS and GeORG are digital geological atlases with emphasis on geothermal energy. They provide access to extensive compilations of well data, seismic profiles, information, and interpreted schematic cross sections from the evaluation of 2D seismic data with emphasis on deep stratigraphy and aquifers in Germany. The raw data, such as seismic data, are not available, as they are owned by the respective energy companies, but data profiles have been collated and interpreted for inclusion in the representative geo-dataset information systems. • The Lionheart and Mannheim 3D modelling was improved beyond the constraints of GeoORG subsurface information through Vulcan Group's 2020 (Lionheart) and 2022 (Mannheim) acquisition of 2D seismic profile lines for these areas. The 2D seismic data acquisition was then extended to Vulcan Group's other license areas across the URG. These data were acquired by Vulcan Group specifically for the purpose of improving the associated 3D geological model. The seismic information and subsequent 3D geological models were re-interpreted by Vulcan Group as part of Vulcan Group's ongoing exploration work. • Any modelling or data artifacts within the model space were addressed by Vulcan Group and/or an independent consultant (GLJ) with involvement of the CP, in advance of the current Geothermal Resource modelling.

Subsurface and Well Discharge Data

<table>
<tr><th>Parameter</th><th>Consideration Description</th><th>Commentary</th></tr>
<tr><td>Drilling Data</td><td>Type of drilling used (e.g. core, rotary etc.) including basic spud/collar details (e.g. date drilled, depth etc.)
Availability of drilling records and data from rig instrumentation (e.g. ROP, WOB, circulation losses, mud logging, drilling breaks, well kicks etc.)
Nature and quality of directional survey data
Type of completion used and related details (e.g. depth to casing etc.)</td><td>Whilst Vulcan has existing operating wells and is drilling new wells within its Lionheart sector, the Vulcan Group has yet to conduct any new drilling or coring programs within the Project Ludwig area. However, the current Geothermal Resource Estimation was able to utilise subsurface lithological information from existing production/re-injection wells that Vulcan Group owns or has agreements to access, as well as historical wells within and adjacent to its license areas and near to the Ludwig and Therese licenses.
There are numerous historical geothermal wells or petroleum wells drilled by other companies that extend deep enough to penetrate Permo-Triassic strata within the URGBF license area.
Location coordinates plus orientation information for wells used to assess the geochemical concentration of brine within Permo-Triassic aquifers covered by Vulcan Group's URGBF holdings are tabulated below.
Coordinate system: DHDN/3-degree Gauss zone 3, EPSG:31467.
<table>
<tr><th>Hole Name</th><th>Wellhead Easting (m)</th><th>Wellhead Northing (m)</th><th>Wellhead Elevation (m)</th><th>Azimuth (deg)</th><th>Total Depth (TVDSSm)</th><th>Top Perforation (TVDSSm)</th><th>Base Perforation (TVDSSm)</th></tr>
<tr><td>Brühl GT1</td><td>3465862</td><td>5472347</td><td>98.3</td><td>n/a</td><td>-3174</td><td>-3022</td><td>-3183</td></tr>
<tr><td>Landau Gt-La1</td><td>3436152</td><td>5450302</td><td>149</td><td>270</td><td>-2896</td><td>-2324</td><td>-2896</td></tr>
<tr><td rowspan="2">Landau Gt-La2</td><td rowspan="2">3436149</td><td rowspan="2">5450308</td><td rowspan="2">149</td><td rowspan="2">90</td><td rowspan="2">-3107</td><td>-2135</td><td>-2641</td></tr>
<tr><td>-2726</td><td>-2922</td></tr>
<tr><td>Schleidberg LSC-1b</td><td>3439248</td><td>5448024</td><td>156,8</td><td>232</td><td>-2971</td><td>-2497</td><td>-2921</td></tr>
<tr><td>Insheim GTI2</td><td>3438345</td><td>5446617</td><td>139.78</td><td>34</td><td>-3525</td><td>-2775</td><td>-3081</td></tr>
<tr><td>Insheim GTI1</td><td>3438343</td><td>5446624</td><td>139.78</td><td>146</td><td>-3410</td><td>-3113</td><td>-3410</td></tr>
<tr><td rowspan="5">Insheim GTI1b</td><td rowspan="5">3438343</td><td rowspan="5">5446624</td><td rowspan="5">139.78</td><td rowspan="5">146</td><td rowspan="5">-3611</td><td>-2319</td><td>-2624</td></tr>
<tr><td>-2657</td><td>-2680</td></tr>
<tr><td>-2850</td><td>-2873</td></tr>
<tr><td>-2972</td><td>-3611</td></tr>
<tr><td>-3253</td><td>-3525</td></tr>
<tr><td>Soultz EPS1</td><td>3417106</td><td>5422154</td><td>176.6</td><td>n/a</td><td>-2035</td><td>-</td><td>-</td></tr>
</table></td></tr>
<tr><td>Well sample recovery</td><td>Nature and quality of down-hole samples (e.g. cuttings, core, fluids etc.) and sampling intervals including the basis for determination of sampling depths and measures taken to ensure samples are representative</td><td>Through its flagship Lionheart Project, Vulcan has access to:
Cuttings samples, LSC-1 and LSC-2: washed and dried, in envelopes & tubes
Conventional core, LSC-1: 2750 – 2797.5 mMD, 98% recovery, stabilised with foam
PVT fluid, LSC-1: 1 chamber from 2861 mMD, contaminated by drilling mud
Fluid samples for the assessment of density and specific heat capacity are available from the Insheim and Landau wells</td></tr>
</table>

Parameter	Consideration Description	Commentary
Geological log	• The nature and scale of logging as well as the basis for geological interpretation and identification of alteration zones (e.g. qualitative vs. quantitative logs, lithology, palaeontology, palynology, mineralogy, fluid inclusions, Vitrinite reflectance etc.) • Whether there is any evidence from mineralogy indicating acid or high-gas fluids	• Vulcan Group's Ludwig Project, located in the larger URVBF, benefited greatly from access to publicly available detailed lithological logs and down hole geophysical logs (where available) data for the various oil and gas and geothermal wells that occur within or adjacent to the licensed areas. Government agencies have compiled such data for more than 1500 oil and gas wells, geothermal, thermal, mineral water and mining boreholes (deeper than 200 m) across the entire URVBF, within and proximal to Vulcan Group's license areas. • During 2020, Vulcan Group acquired additional detailed lithological and downhole geophysical measurements from geothermal well Brühl GT1-L3 which is located approximately 5 km southeast of the Ludwig license area. It penetrated through the same Permo-Triassic strata being assessed by Vulcan Group. Wireline logging runs were performed in the open hole and included: FMI-GR (resistivity image, caliper), DSI-GPIT-PPS-GR (sonic, caliper), LDS-GR (density, photo electric factor), and UBI-GR (acoustic image). The downhole information provided both qualitative (e.g., litho-logs) and quantitative information such as porosity and permeability measurements. These data were used to study and assess the hydrogeological characteristics and variations between, for example, host rock matrix porosity and fault zone fracture porosity. • From 2020 to 2022, Vulcan Group reinterpreted existing 2D seismic data across its URVBF license areas. This interpretation benefited particularly from detailed study of historical well logs from two wells (Appenhofen 1 and Brühl GT1). These logs were acquired by companies other than Vulcan Group, but their content facilitated Vulcan Group's interpretation and correlation of subsurface stratigraphy. That is, the historical well logs data helped with interpretation of seismic line profiles and to confirm and validate key stratigraphic marker horizons including the Buntsandstein surface and various fault zones that are critical to the current Geothermal Resource Estimation process. • In late 2022 to early 2023, the Vulcan Group acquired, processed, and interpreted state of the art depth imaged 3D seismic data in the Lionheart and Mannheim areas. The new 3D seismic was integrated with existing subsurface data resulting in a high confidence reservoir model of the brine reservoir. • The detailed lithologic and geophysical well logging data acquired by Vulcan Group from various sources was assessed based on quality and resolution and incorporated into the

Parameter	Consideration Description	Commentary
		modelling that underlies the Geothermal Resource Estimation program carried out by the company. • The adjacent Mannheim license area is largely covered by 3D seismic surveys (Mannheim 3D and Weinheim 3D were processed together and merged). Further legacy 2D lines are available and were interpreted to tie the infield interpretation with the key offset wells Brühl GT1, which intersected and successfully tested a fault damage zone within the Buntsandstein target interval. as well as with the well Eppstein 1, located int the Therese license. Based on validation discussions with Vulcan Group staff, plus review of compiled logging data and related geological and Geothermal Resource Estimation digital models, the Geothermal Resource CP has concluded that such data are acceptable for use in Vulcan Group's current Geothermal Resource Estimation. • No H2S is expected in the Project area, but there is a potential for minor hydrocarbon gas accumulations in shallower formations.

Parameter	Consideration Description	Commentary

Well	Distance to Project Ludwig	Deepest formation drilled	Logged key sections	Logs*	Core report*	Temperature data*	Other
Eppstein 1	in-field well	Unclear; Tertiary	Tertiary	SP, GR, RES, NEU, SON	-	BHT	Checkshot
Frankenthal 10	in-field well	Unclear, Tertiary	-	-	-	BHT	-
Sandhofen 1	0.4 km	Quaternary	Quaternary	SP, GR, RES, NEU	-	-	-
Heuchelheim 2	1.8 km	Unclear, Tertiary	-	-	-	-	-
Waldsee 1	2.6 km	Tertiary	-	-	-	-	-
Brühl GT1	4.3 km	Middle Buntsandstein	Buntsandstein	GR, DEN, SON, IMG Litholog	-	Temperature log	Production & Injection test
Worms 4	7.4 km	Tertiary	Tertiary	SP, GR, RES, NEU, SON, DEN, Litholog	-	-	-
Hofheim 3	8.8 km	Tertiary, Rotliegend	Tertiary, Rotliegend	SP, RES	-	-	-
Schriesheim 1	10 km	-	Tertiary	SP, RES	-	-	Checkshot
Viernheim	11.1 km	Pliocene	Tertiary	SP, GR, RES, SON, DEN	-	BHT	-
Weinheim GT 1 & 2	14.3 km	Hydrobia Beds	Tertiary	GR, RES, NEU, SON	-	BHT (GT1)	-
Offenbach GT1	25.2 km	Middle Buntsandstein	Muschelkalk, Buntsandstein	GR SON, IMG, Litholog	-	Temperature log	Checkshot
Landau GtLa1	28.7 km	Basement	Buntsandstein, Rotliegend, Basement	GR, IMG, Litholog	-	Published log (Schindler et al., 2010)	
Landau GtLa2	28.7 km	Basement	Buntsandstein, Rotliegend, Basement	GR, IMG, Litholog	-	Published log (Schindler et al., 2010)	Checkshot
Schleidberg LSC-1	30.0 km	Basement	Keuper, Muschelkalk, Buntsandstein, Rotliegend, Basement	GR, NEU, SON, DEN, NMR, IMG, Litholog, Pressures, VSP	IMG & DECT derived Poro-Perm-DEN-SGR	Temperature logs	Production & injection test
Insheim GTI2	31.3 km	Basement	Keuper, Muschelkalk, Buntsandstein, Rotliegend, Basement	GR, IMG, Litholog	-	Undisturbed temperature log	Production & Injection test
Insheim GTI1	31.3 km	Basement	Keuper, Muschelkalk, Buntsandstein, Rotliegend, Basement	SP, GR, RES, IMG, Litholog	-	Undisturbed temperature log	Checkshot, Injection test
Appenhofen 1	34.1 km	Middle Buntsandstein	Keuper, Muschelkalk, Buntsandstein	SP, GR, RES, NEU, SON, DEN	Poro-Perm	BHT	Hydraulic test, Checkshot
Kraichgau 1002	44.4 km	Rotliegend	Muschelkalk, Buntsandstein, Rotliegend	GR, Litholog	Poro-Perm, Facies	-	-

SP – Spontaneous Potential; GR – Gamma Ray; SGR – Spectral Gamma Ray; RES – Resistivity logs; NEU – Neutron; SON – SONIC; DEN – Density; NMR – Nuclear Magnetic Resonance; IMG – Image Logs (Sonic or Resistivity); Litholog – Continous lithological record based on drill cuttings, gas shows, and drilling parameters; VSP – Vertical Seismic Profiling; DECT – Dual Energy CT Rock Types; BHT – Bottomhole Temperature.

Parameter	Consideration Description	Commentary
Downhole temperature pressure and flow logs	• Nature (e.g. continuous log, maximum recording thermometer, injectivity test, Pressure Build Up etc.), quality (e.g. tool precision, operating parameters, time allowed, resolution, type and frequency of calibration) and appropriateness (e.g. tool operating parameters relative to hole conditions, tool resolution, processing or corrections required and/or applied) of instrument/s used • Characteristics and quality of measurement(s) (depth, frequency, timing, precision, accuracy etc.) including level of uncertainty • Appropriateness of interpretation with consideration for all significant influences (e.g. presence of local aquifers or known fluid circulation, well status at time of logging (e.g. shut in, flowing, injection rate etc.)) • Nature and quality of any temperature correction/s applied or justification for neglecting correction (e.g. length of time elapsed between drilling and temperature measurement) • If no corrections are applied and the measured temperature is likely to be affected by the drilling thermal anomaly this must be clearly state	• Pressure and temperature logs are available from Brühl GT1; Landau GtLa1, GtLa2; Insheim GTI1, GTI2; Appenhofen-1 and used by Vulcan group. • Flow logs are available from Insheim GTI1, GTI2. • In some cases, the raw data is not available, but it is possible to get an estimate of injectivity/productivity indices by analysing the plots in published reports. • Consideration is given for geothermal well completions which may consist of an uncemented slotted liner in an open hole. This can introduce uncertainty to the interpretation of production/injection logging tests since a change of flow in the liner can be associated to an inflow/outflow in the formation or a flow within the annulus. • Within the Project area, the only deep wells that have been drilled so far are Eppstein 1 (Therese license) and Frankenthal 10 (Ludwig license) from which subsurface temperature data are reported. Regional temperature data from borehole measurements in the wider region, however, are publicly available (www.geotis.de, Agemar et al. 2014) and used to model reservoir temperatures.
Other downhole logging	• Nature (e.g. FMI, Gamma, calliper etc.), quality (e.g. tool precision, operating parameters, resolution, type and frequency of calibration) and appropriateness (e.g. tool operating parameters relative to hole conditions, tool resolution, processing or corrections required and/or applied) of instrument/s used	• Available logs: GtLa1: GR, FMI; GtLa2: GR, FMI; GTI2: GR, FMI, Litholog; GTI1: GR, FMI, Litholog, Res; Appenhofen 1: spectral GR, DEN, NEU, Sonic, Res, SP, Caliper, Brühl GT1: GR, Density, FMI, UBI, Sonic, Litholog; Offenbach GT1: FMI; LSC-1: GR, CAL, Res, Sonic, Res-IMG, Sonic-IMG, FT, Sample, VSP, CBL-VDL; LSC-2: GR, CAL, Sonic, DEN, NEU, Res, Res-IMG, CBL-VDL. • The quality allows an adequate assessment of the formations and the properties. • The hole conditions in all evaluated wells were stable and allowed a good formation evaluation campaign and subsequent interpretation.

Parameter	Consideration Description	Commentary
	• Nature and quality of measurement(s) (depth, frequency, timing) • Appropriateness of interpretation with consideration for all significant influences (e.g. hole condition, temperature, formation invasion etc.	• The interpretation of logs is not hindered by hole conditions; no formation invasion; stable hole conditions; temperature not exceeding tool-functionality.
Aquifers	• Location of permeable zones/aquifers, their significance and relationship to structures and stratigraphy • Nature, quality and appropriateness of model/s used to determine adjusted heat flow	• The URG represents a well-studied classical non-magmatic convection-dominated and fault-controlled geothermal play system in an extensional domain. • The geothermal system in the URG is characterised by: o Convection via active faults and fractures which are kept open via frequent natural seismicity o A reservoir (Buntsandstein) capable of storing and conducting hot brine, which is characterized by a high fracture permeability and additional matrix pore space o Recharge takes place by infiltration of meteoric water to maintain the fluid budget in the reservoir and balances discharges and water consuming fluid/rock interactions • The temperature in the subsurface of the URG is controlled by conductive and convective heat transport. Fluid flow and convective heat transport occur predominantly along active fault zones that are associated with high fracture permeability. Hence upwelling of deep groundwater is the main reason for localised thermal anomalies.
Depth of reservoir	• Depth of anticipated reservoir development	• For Ludwig and Therese, the top reservoir depth of the primary reservoir interval in the Middle and Lower Buntsandstein is between 2100-3500 m TVDSS.
Injection tests	• Nature and quality of injectivity tests conducted across permeable zones • Nature (e.g. calculated or observed, flow versus wellhead pressure) and appropriateness of determined injection capacity of well including key assumptions and temperature data • Any evidence of temporal change	• Injection testing has been conducted across multiple analogue geothermal wells within the Upper Rhine Valley Brine Field (URVBF), including Insheim GTI-1, GTI-1b and GTI-2, Landau GT-La1 and GT-La2, Brühl GT-1 and Appenhofen-1. Testing programmes included Drill Stem Tests (DST), step-rate injection tests, constant-rate injection tests, circulation tests, pulse-injection tests and Injection Logging Tests (ILT) designed to evaluate injectivity, hydraulic communication, reservoir pressure response and flow distribution within permeable reservoir and fault-zone intervals. Appenhofen-1 was subjected to five DSTs in 1983, including testing of the Upper Buntsandstein interval (2,393 - 2,420 m MD). Following drilling of GTI-1, two injection tests were conducted on 13-14 October 2008, consisting of a Step Rate Test (SRT) with one-hour rate increments followed by a three-hour constant-rate injection period. Additional circulation and pulse-injection tests were subsequently performed. GTI-2 was subjected to constant-rate and step-rate injection testing between April and May 2009, together with

Parameter	Consideration Description	Commentary
		circulation tests between GTI-1 and GTI-2 to evaluate reservoir communication. Following injectivity decline in GTI-1, additional injection testing was undertaken between July and November 2009 prior to stimulation and subsequent drilling of the GTI-1b sidetrack. GTI-1b was then tested using injection-rate steps of 30, 60 and 80 l/s on 26 October 2010. Injection Logging Tests were conducted in GTI-2 in 2014 and again in 2023 under both shut-in and flowing conditions to evaluate flow distribution and reservoir contribution from different permeable intervals. Brühl GT-1 was subjected to a dedicated step-rate injection test between 10 and 12 May 2013 using injection rates of 30, 60 and 90 l/s to quantify injectivity of the Middle Buntsandstein fault zone. • Injectivity performance is assessed using Injectivity Index (II), expressed in l/s/barg. In the Insheim geothermal system, injection testing of GTI-1, GTI-1b and GTI-2 demonstrated injectivity characteristics broadly equivalent to approximately 1.7 - 2.0 l/s/barg. At a reference injection overpressure range of approximately 50-70 barg, these injectivity indices correspond to injection capacities of approximately 85 – 140 l/s per well. Injection and circulation testing also confirmed hydraulic communication between GTI-1 and GTI-2 and demonstrated the ability of the reservoir to accept reinjected brine over extended operational periods. • Following stimulation of GTI-1 during 2009, injectivity performance decreased relative to initial testing, indicating an adverse response to the acidisation and water-injection programme. This decline led to the drilling of the GTI-1b sidetrack, after which injection testing demonstrated recovery of injectivity performance to levels comparable to the original well system. Subsequent Injection Logging Tests in GTI-2 performed in 2014 and 2023 confirmed continued injectivity and identified contribution from both Buntsandstein and Muschelkalk reservoir intervals, with the Muschelkalk perforation contributing approximately 6% of measured outflow during the 2023 survey. • Brühl GT-1 represents the strongest injectivity analogue within the dataset. A step-rate injection test performed between 10 and 12 May 2013 at injection rates of 30, 60 and 90 l/s yielded an Injectivity Index (II) of approximately 30 l/s/barg for the Middle Buntsandstein fault zone, excluding inlet pressure losses. At this injectivity, an injection rate of 100 l/s would require an injection overpressure of only approximately 3.3 barg, demonstrating exceptionally strong reservoir acceptance capacity and hydraulic connectivity compared with typical URVBF operating conditions. The measured injectivity was also consistent with the productivity behaviour observed during flow testing, indicating a highly connected reservoir system.

Parameter	Consideration Description	Commentary
		• Evidence of temporal change has been evaluated through repeat testing, circulation tests and successive logging campaigns. Apart from the localised injectivity reduction observed in GTI-1 following stimulation, which was subsequently mitigated by drilling GTI-1b, the analogue dataset demonstrates sustained injectivity over time. More than a decade of operation at Insheim has shown effective reservoir pressure support through reinjection, with no evidence of field-scale loss of injectivity that would adversely affect long-term geothermal operation. Repeated testing and logging campaigns indicate stable hydraulic performance of the reservoir system over time. • These injectivity tests are relevant to Project Ludwig because they were conducted within the same Upper Rhine Valley Brine Field geothermal system and principally within equivalent Buntsandstein reservoir units. The analogue wells demonstrate successful reinjection into both matrix- and fault-controlled reservoir systems, sustained injectivity over long operating periods, and effective reservoir pressure support through reinjection. Collectively, the analogue dataset supports the technical feasibility of the injection strategy adopted for Project Ludwig and indicates that the planned reinjection rates are achievable within the target reservoir system.
Multi-well tests	• Nature (e.g. circulation, interference, tracer etc.) and quality of well tests and measurements, including duration and sampling methods where relevant • Appropriateness of test interpretation including any corrections or omissions and any evidence of temporal variation	• Multi rate test were performed on Insheim producer and injector wells to access flow levels vs drawdown and calculate productivity/injectivity index. Production/injection volumes were usually limited by surface pools capacity where produced brine was accumulated; however, the volume was enough to make 3-4 steps (2-4 hours duration each) of Multi rate test - sufficient number of steps. With pressure measurement at well head and bottom hole multi-rate tests could be considered as good quality.
Well discharge testing	• Nature (e.g. James method, separator and orifice plates, Tracer Dilution Flow Test etc.) and duration of tests (including completeness of the measurement suite over the wellhead pressure discharge curve) • Quality and reliability of monitoring equipment • Characteristics observed over time including any chemical and/or physical indications of dilution by	• Nature and duration of testing. Production and injection testing has been conducted on analogue wells at Insheim, Landau, Brühl, Appenhofen and more recently at Lionheart (LSC-1, LSC-1a and LSC-1b). Test programmes typically comprise production tests, injection tests, multi-rate (step-rate) tests and shut-in pressure build-up/pressure fall-off periods. Test durations range from individual flow steps of approximately 1-4 hours to extended circulation and production tests lasting several days. At Insheim, multiple production, injection and circulation tests were conducted on GTI-1 and GTI-2, while Brühl GT-1 included both production and step-rate injection testing. At Lionheart, the LSC-1b test consisted of multiple stabilised production steps to establish Productivity Index (PI) and Injectivity Index (II) relationships. These test programmes provided pressure, temperature and flow-rate

Parameter	Consideration Description	Commentary
	drilling fluids, stability, multi-zone behaviour, possible scaling or dry-out, tracer returns	measurements across a range of operating conditions and drawdowns, enabling assessment of well discharge performance and reservoir response. • Quality and reliability of monitoring equipment. Monitoring systems included calibrated flow meters, wellhead pressure gauges, temperature sensors and, where available, downhole pressure and temperature measurement devices. Historic testing programmes incorporated both wellhead and bottom-hole pressure measurements, while the recent LSC-1b programme recorded pressure and flow-rate data continuously at approximately 1 Hz. The available instrumentation was considered sufficient to derive Productivity Index (PI) and Injectivity Index (II) values, evaluate pressure response and establish representative well deliverability parameters. • Characteristics observed during testing. The analogue wells demonstrate stable reservoir behaviour during both production and injection operations. At Insheim, more than ten years of commercial operation has not resulted in material decline of produced temperatures or flowing pressures, indicating effective reservoir pressure support through reinjection. The absence of temperature decline suggests no significant thermal breakthrough from colder reinjected brine despite producer-injector spacing of approximately 1.5 km. Circulation and interference testing performed between GTI-1 and GTI-2 confirmed hydraulic communication within the reservoir while maintaining long-term operational stability. • Evidence of dilution, multi-zone behaviour, scaling or other effects. No material evidence of reservoir dry-out has been reported from the analogue production wells. During LSC-1a drilling and sampling, lithium-in-brine measurements were corrected for a minor degree of drilling-fluid dilution, with corrected concentrations remaining consistent with regional expectations. In the Insheim system, reinjection has successfully maintained reservoir pressure without indication of significant thermal or chemical breakthrough. Some wells exhibit contribution from multiple reservoir intervals, including Buntsandstein, Muschelkalk and associated fault-zone flow paths, demonstrating multi-zone reservoir behaviour. Production and injection tests at Brühl GT-1 and Insheim GTI-1/GTI-2 indicate strong fault-zone connectivity and stable hydraulic performance. No persistent scaling behaviour has been identified as a controlling limitation on the well-test interpretations used in this assessment. • Relevance to Project Ludwig. These discharge-test results are considered directly relevant to Project Ludwig because they were acquired from wells completed within the same Upper Rhine Valley Brine Field geothermal system and principally the same Buntsandstein reservoir

Parameter	Consideration Description	Commentary
		units expected to be developed in Project Ludwig. The analogue dataset demonstrates stable long-term production behaviour, effective pressure support through reinjection, strong productivity and injectivity characteristics, and no evidence of adverse reservoir depletion over operating timescales relevant to development planning. Collectively, these observations support the technical reasonableness of the flow-rate and reservoir-performance assumptions adopted for Project Ludwig.

Naturally Convective Systems and Hot Sedimentary Aquifer Resource Parameters

Parameter	Consideration Description	Commentary
Flow rate	• Nature (e.g. individual vs. interference, duration, depth etc.), quality and appropriateness of techniques used to record flow rates in wells together with key assumptions made • Where rates are derived from individual well tests these must be detailed individually and must not be summed except with suitable acknowledgement of possible interference • Magnitude and uncertainty of temperature and pressure drawdown observed during flow tests, in relation to chemical indications of stability and long-term trends	• Flow-rate and pressure-response data are available from recent Lionheart well testing, most notably the LSC-1b production test. The LSC-1b well test was designed to evaluate reservoir deliverability through controlled injection and flow periods with continuous pressure measurements, with pressure and flow-rate data recorded at approximately 1 Hz. Productivity Index (PI) and Injectivity Index (II) values were derived from individual time-based test intervals and were not summed across wells. • For LSC-1b, a multi-step production well test confirmed PI values in the range of 2.1 to 2.5 l/s/bar. Applying Vulcan's planned operating drawdown of approximately 50 barg, this is equivalent to an estimated production capacity of approximately 105 to 125 l/s, supporting the Phase One Lionheart Field Development Plan assumption of approximately 84 to 94 l/s average well production. • The LSC-1b test was conducted using nitrogen-assisted lift, with nitrogen injected through the drill pipe and production taken through the annulus. The announcements state that the achievable test rate was constrained by the maximum nitrogen injection rate permitted by frictional losses in the wellbore configuration; however, this limitation was not considered to affect the validity of the derived PI and II. Estimated sustainable production rates remain indicative and subject to confirmation through longer-duration testing. • Insheim GTI-1 production and injection testing demonstrated production rates of approximately 50-60 l/s at a drawdown of approximately 30 barg, equivalent to an interpreted Productivity Index (PI) of approximately 1.7 to 2.0 l/s/barg. At a reference drawdown of 50 barg, this PI would correspond to an indicative production range of approximately 85 – 100 l/s, subject to well-completion and operating constraints. Insheim GTI-1 clean-up production test

Parameter	Consideration Description	Commentary
		occurred on 8th Oct 2008); two injection tests on 13-14th Oct 2008 – the reports of these tests are available to Vulcan. Injection testing was performed in two ways: a Step Rate Test (SRT) with duration of low sequence of one hour each, followed by a longer flow injection sequence of three hours. All tests were limited to a total volume of 1,550 m^3 due to the limited storage capacity of the storage basin at the well site. • Insheim production wells currently operate at average rates of approximately 65 l/s per well; however, these operating rates reflect field operating conditions rather than well capability. Based on historical well-test performance and analogous Lionheart results, the wells are considered capable of higher production rates. At a reference drawdown of approximately 50 barg, production potential is considered broadly consistent with rates in the order of 80-100 l/s, corresponding to an indicative PI range of approximately 1.6 - 2.0 l/s/barg. • Brühl GT-1 demonstrated artesian production rates of up to 70 l/s with an estimated reservoir pressure depletion of approximately 2.5 barg during testing, equivalent to an interpreted productivity of approximately 28 l/s/barg. At this productivity, a production rate of 100 l/s would correspond to an estimated drawdown of approximately 3.6 barg. Independent step-rate injection testing performed between 10 and 12 May 2013 indicated an Injectivity Index (II) of approximately 30 l/s/barg within the fault zone, demonstrating comparable injectivity and productivity behaviour and confirming excellent reservoir connectivity.
Pressure Data	• Nature, quality and appropriateness of techniques used to determine reservoir pressures including multi-well correlations, fluids and key assumptions made	• FIT & LOT pressure data are available from offset wells in the URG ○ FIT: Trebur GT1, Offenbach GT1, LSC-1, LSC-2 ○ LOT: Bellheim GT1, Brühl GT1, Offenbach GT1a, Trebur GT1, LSC-1, LSC-2 • The Formation pressures have been evaluated from offset wells • No downhole pressure data are available from the Landau and Insheim wells
Recharge	• What allowance (if any) has been made for heat and fluid recharge, and the basis thereof	• Heat recharge – Regionally different heat flows from the pre-Tertiary subsurface, especially the radiogenic heat production rate of the crystalline basement. • Fluid recharge takes place by infiltration of meteoric water to maintain the fluid budget in the reservoir and balances discharges and water consuming fluid/rock interactions. • Ludwig and Therese Geothermal Resource Estimations do not include effects of recharge of hot fluid to the system.

Parameter	Consideration Description	Commentary
Water saturation and enthalpy	• Nature and appropriateness of techniques used to determine in-situ water saturation • Nature and quality (e.g. accuracy) of measurements of well discharge enthalpy including consideration of how they relate to in situ saturation	• The assumption is that water saturation is 100%. All gases are dissolved in the brine.
Scaling, gas content (composition) and acidity	• Data on reservoir fluid chemistry and its impact on the reservoir, wells and surface facilities • Nature and appropriateness of tests carried out to determine surface and down hole scaling potential of fluids including the basis for interpretation of test results • Nature and appropriateness of tests run, models applied or analogies used as evidence for possible offset of scaling by methods of downhole or surface inhibition	• Vulcan group has access to PVT test reports. • According to Vulcan group technical experts all tests were performed in line with standards and are of good quality • The included table presents the forecast reservoir fluid properties and chemical composition for the Project Ludwig geothermal resource at reservoir heat exchanger inlet conditions of 163°C. The data, sourced from the MAN Geothermal assessment, represents the expected mean fluid composition and associated ranges used for project evaluation and design. The dataset characterizes the anticipated geothermal fluid conditions for the Project Ludwig reservoir and provides the basis for assessing fluid behaviour within the reservoir, wells and surface facilities. • The predicted fluid is a high-salinity geothermal brine dominated by dissolved sodium, with notable concentrations of magnesium, strontium, sulphate, silica and dissolved carbon dioxide. These parameters are particularly important for evaluating scaling, corrosion and gas management risks. The forecast gas composition indicates that non-condensable gases are expected to consist primarily of methane and trace gases, with no significant hydrogen sulphide anticipated. • Consequently, the fluid composition presented in Table has been used as the basis for geochemical modelling, scaling assessments and the evaluation of potential mitigation measures, including chemical inhibition and operational control strategies for Project Ludwig.

Parameter	Consideration Description	Commentary

Item	Parameter	Unit	Predicted Mean Value	Range
1. Reservor Brine/ to Inlet Heat Exchangers (163 °C)				
1.1 Physio-chemical parameters				
	Reservoir Formation	-	Basement aquifer	
	Temperature	°C	163	154 - 170
	pH (at 25 °C) (Degassed Brine)	-	5.1	4.9 - 5.3
	ORP (at 25°C) (Degassed Brine)	mV	-141	-207 - -76
	Eh (SHE) (at 25 °C) (Degassed Brine)	mV vs. SHE	28	-67 - 122
	Specific isobaric heat capacity	kJ/kg·K	3.85	3.81 - 3.89
	Density	kg/L	0.978	0.970 - 0.986
	Dynamic Viscosity	mPa·s	0.234	0.229 - 0.239
	Salinity	g/L	108.5	99 - 115
	Electrical Conductivity	mS/cm	128	114 - 143
	Bubble Point Pressure (Production Temperature)	bar(g)	22.4	
	Minimum Operating Pressure (Production Temperature)	bar(g)	25	
	Acid capacity (KS 4.3)	mmol/L	2.7	2.1 - 3.3
1.2 Hydrochemical Composition - Elemental Form Aqueous (measured at 23 °				
	Density at 23 oC	kg/L	1.077	
	Cations			
	Lithium Li	mg/L	181	155-205
	Sodium Na	mg/L	28729	26119 - 31338
	Potassium K	mg/L	4205	3830 - 4580
	Aluminum Al	mg/L	0.04	0.004 - 0.074
	Ammonium NH4	mg/L	42	38 - 45
	Arsenic As	mg/L	13	6 - 20
	Boron B	mg/L	44	35 - 54
	Barium Ba	mg/L	32	10 - 54
	Calcium Ca	mg/L	7995	7100 - 8890
	Cadmium Cd	mg/L	0.04	0.026 - 0.048
	Caesium Cs	mg/L	18	15 - 21
	Copper Cu	mg/L	0.03	b.d.l. - 0.22
	Iron Fe	mg/L	25	6 - 44
	Magnesium Mg	mg/L	109	86 - 131
	Manganese Mn	mg/L	28	23 - 32
	Molybdenum Mo	mg/L	0.04	0.043 - 0.046
	Nickel Ni	mg/L	0.05	b.d.l. - 0.28
	Lead Pb	mg/L	0.91	0.26 - 1.57
	Rubidium Rb	mg/L	27	19 - 35
	Antimony Sb	mg/L	0.23	0.098 - 0.353
	Silicon Si	mg/L	80	49 - 110
	Strontium Sr	mg/L	428	267 - 590
	Zinc Zn	mg/L	6.6	4.4 - 8.7
	Anions			
	Chlorides Cl	mg/L	64112	57841 - 70382
	Sulphate SO4	mg/L	157	110 - 203
	Bicarbonate HCO3	mg/L	166	127 - 205
	Fluoride F	mg/L	3.3	2.5 - 4.1
	Bromide Br	mg/L	187	162 - 211
	Iodine I	mg/L	1.7	1.3 - 2.1
	Phosphate PO4	mg/L	1.0	b.d.l. - 3.5
	Nitrate NO3	mg/L	b.d.l.	
	Dissolved gases equivalent (in pressurized brine)			
	Carbon Dioxide CO2	mg/L	1900	1630 - 2130
	Others			
	Silica SiO2	mg/L	171	106 - 236
	Total Dissolved Solids (TDS)	g/L	108.5	99 - 115
1.3 Gas Composition - Non Condensable Gases				
	Carbon Dioxide CO2	vol.% dry gas	90	84-94
	Argon Ar	vol.% dry gas	0,07	0,02-0,12
	Helium He	vol.% dry gas	0,4	0,2-0,6
	Methane CH4	vol.% dry gas	2,5	1,5-3,5
	Hydrogen H2	vol.% dry gas	0,4	0,0-0,8
	Hydrogen Sulfide H2S	vol.% dry gas	b.d.l.	
	Nitrogen N2	vol.% dry gas	10	6-12
	other trace gases	vol.% dry gas	0.08	0,04-0,12
	Oxygen O2	vol.% dry gas	b.d.l.	
	Sum gases	vol.% dry gas	100	
1.4 Gas to Liquid Ratio (GLR)			**1.7**	**1,5 - 2,1**

Parameter	Consideration Description	Commentary
Reservoir properties	• Nature, quality and appropriateness of methods used to determine reservoir properties (rock types, porosity, permeability, anisotropy, specific permeable structures etc.) • Basis for interpretation of temperature and pressure profile	• Appenhofen 1, Brühl GT1, Offenbach GT1, provide sufficient data to perform a quantitative petrophysical analysis on the zones of interest. • The interpretations were conducted using Lloyd's Interactive Petrophysics (IP) software in conjunction with local knowledge, available geological and drilling reports and core analysis. Log quality control, depth matching, de-spiking, correction for borehole effects were performed on the log data. • Core data are available from Appenhofen-1, five Römerberg oil wells A-E, EPS-1, Kraichgau 1002, Landau oil wells 207 & 211 – data were derived from publications, except for Appenhofen-1 where a core report is available to Vulcan.
Conceptual model: nature of the system	• Nature, quality and appropriateness of integrated geo-hydrological reservoir model including analogies used and key assumptions made • Whether the fluid is naturally convecting • If the project is based on a laterally extensive aquifer, what are its hydrological properties outside the concession area • Interpretation of physico-chemical reservoir process	• The geology has been described using all the available data including newly acquired and interpreted 2D and 3D seismic data over Lionheart and Mannheim and Project Ludwig. The static and dynamic modelling for Lionheart has built on educated and experienced assumptions using best practice methodologies for the evaluation of fluids in the subsurface. • Vulcan built a set of three scenarios for the Lionheart dynamic model, including low-base-high case 3D geological models to represent what could be expected in the subsurface reservoir and which have been selected following a dynamic sensitivity analysis • These static reservoir models are then used as a basis for dynamic reservoir flow models which aim at predicting the fluid flow rates from the various injection and production well strategies. They aim also at forecasting the pressure and the temperature of the fluid in the reservoir • Evaluation of pressure, temperature, flow and lithium saturation of injected water is carried out with the finite difference method which is a standard method to model flow in porous media. Both static and dynamic reservoir models are proprietary and are built respectively with the software Petrel and tNavigator. • The fluid is naturally convecting in the fault / fault damage zones • The project is not based on the lateral extensive aquifer and can thus be considered conservative.

Parameter	Consideration Description	Commentary
Numerical modelling	• Nature of numerical simulation modelling, including model structure, key parameters, boundaries and relationship to conceptual modelling • Results of natural state modelling • Results of history matching (if any) • Results of forecast runs including descriptions of scenarios modelled • Sensitivity analysis and the effects of alternative interpretation	• No numerical modelling was performed for Ludwig and Therese at this stage of the Project. A numerical model will be prepared in future when new geologic and reservoir data are available. A full field history-matched dynamic model created for Lionheart is available for reference.
Data extrapolation	• The extent of data interpolation/extrapolation including explanation and justification of techniques applied	• The Ludwig and Therese licenses are covered by 2D lines with an irregular line spacing in the range of 2 – 5 kms of varying quality. In addition, both licenses are covered by the regional GeOrg model for which additional seismic lines and well data were considered. • The directly adjacent Mannheim area is covered to a large degree by 3D seismic data that was acquired by Vulcan in 2022/2023. Interpreted thicknesses of the stratigraphic units from there together with regional well data allowed further refine the existing GeOrg model.

Reporting of Exploration Results

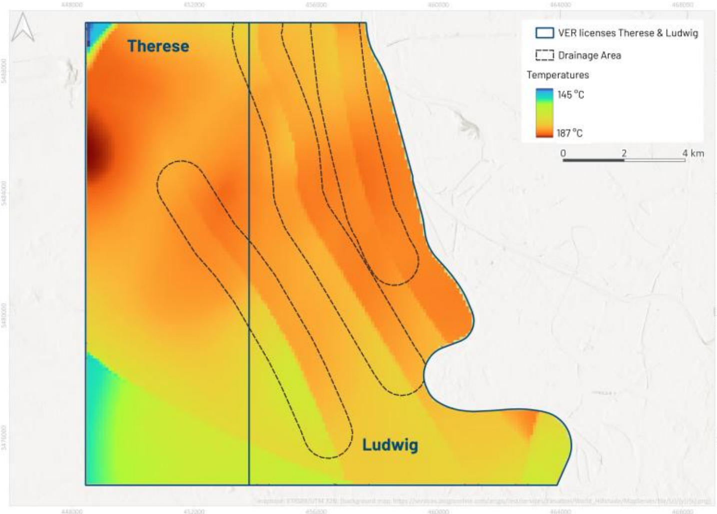
Parameter	Consideration Description	Commentary
Diagrams	• Where possible, maps and sections (with scales) and tabulations of intercepts should be included for any material discovery being reported if such diagrams significantly clarify the report • Diagrams and maps should be presented using recognised coordinate systems with datum, projection and all relevant parameters declared on the map face	• The current associated News Release and previous News Releases by Vulcan Group include explanatory figures that were used in reporting of Project information to support respective Geothermal Resource Estimation disclosures. • All map images include scale and direction information such that the reader can properly orientate the information being portrayed.

Parameter	Consideration Description	Commentary
Balanced reporting	• Where possible reporting should be comprehensive • Where comprehensive reporting of all Exploration Results is not practicable, representative reporting should be practiced to avoid misleading reporting of Exploration Results	• Comprehensive reporting of all exploration results is presented in the associated News Release and in the Technical Reports associated with Vulcan Group's URVBF Exploration Licenses.
Other substantive exploration data	• Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; groundwater; geotechnical and rock characteristics; potentially deleterious or contaminating substances	• A substantive amount of historical data was used to investigate and characterise the configuration and hydrogeological properties of the Permo-Triassic aquifers. These aquifers include the Buntsandstein Group, Rotliegend Group (where present) and Muschelkalk Group (where present). Hydrogeological properties include porosity and permeability. Historical temperature from the geothermal brine production and geochemical data were used to assess the Permo-Triassic aquifer brine. • Numerous geothermal, or oil and gas wells, were historically drilled by companies other than Vulcan Group within the boundaries of the URVBF licenses. • Intersected formation tops were reviewed for five historical wells in the Lionheart (i.e., Insheim, Landau, and Rift) development area. Two of these wells (Insheim GTI1 and GTI2) intersected formation tops of the Muschelkalk, Buntsandstein and Rotliegend groups as well as the basement rock. • For Project Ludwig, formation tops and log data from the following historical offset wells in the vicinity of and within the Project area have been reviewed and considered in the subsurface interpretation and modelling workflow: Brühl GT1, Eppstein 1, Waldsee 1, Schriesheim 1, Frankenthal 10, Weinheim GT1, Worms 4 and Hofheim 3
Audits or reviews	• The results of any audits or independent reviews of exploration data, models or interpretation	• A review and check of the Ludwig and Therese exploration results was completed by an external consultant independent (GLJ Ltd.) from Vulcan Group.

Further Work	• The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).	• The following next steps are planned as the Vulcan Group works towards an FDP and the execution of the Ludwig project:
		  ○ Acquisition of 3D seismic data in the Ludwig, Therese and adjacent licenses, implementing the learnings from the LWL 2D acquisition.
		  ○ Execution of an appraisal well in Project Ludwig, and completion of a Definitive Feasibility Study to support a Final Investment Decision.

Estimation and Reporting of Geothermal Resources

Parameter	Consideration Description	Commentary
Expected use	• Nature of the anticipated Geothermal Resource exploitation including any assumptions made	• Heat will be supplied to local industrial and municipal users.
Data integrity	• Source and reliability of all relevant Geothermal Resource data • Measures taken to ensure data described has not been corrupted between initial collection and use in models/calculations • Data validation process	• The Vulcan Group utilized data from their own wells, as well as publicly available data where applicable. • References from Geothermal Lexicon for Resources and Reserves Definition and Reporting, Edition 2, 2010, Australian Geothermal Energy Group • The Geothermal Reporting Code, Edition 2, 2010, Australian Code for Reporting of Exploration Results, Geothermal Resources and Geothermal Reserves
Data interpretation	• Confidence in (or conversely the uncertainty of) any interpretation of geological, geophysical or geochemical data to be used in the Geothermal Resource estimation • The effect, if any, of alternative interpretation/s upon Geothermal Resource estimation	• Due to the absence of in-field well data covering the reservoir interval, the uncertainty level for Geothermal Resource estimation is higher in Project Ludwig compared to Lionheart where such data is available. It is, however, of reasonable level of confidence that allows for estimation of Inferred and Indicated Geothermal Resources.
Well deliverability	• Must be demonstrated if Geothermal Resource/s to be regarded as Measured • Whether the project will rely on pumping or self-discharging wells • Information on expected parasitic power requirement for production or injection pumps	• For Ludwig and Therese, the offset well Brühl GT1 has shown sufficient well deliverability to be used for Indicated and Inferred Geothermal Resource classification. • Flow rates are derived from Brühl GT1, the Landau and Insheim existing wells as well as and the Bruchsal wells and the well design planned for the Lionheart wells. • For further details on well deliverability (PI/II) see "Subsurface and Well Discharge data – Injection tests" • Porosity and permeability data from core plug measurements are available from the LSC-1, Appenhofen-1 well and in published reports from the Landau and Römerberg oil fields, EPS-1 well and the Kraichgau 1002 well. All samples have been taken from the Buntsandstein Formation. Most of the data originate from the Upper and Middle Buntsandstein. The sample depths range from 1000-2625 m and show a correlation between sample depth and reservoir quality; the matrix permeability is often reduced with increased burial depth. • Since no infield wells are available, no measured resources can be estimated at the current status.

Parameter	Consideration Description	Commentary
		• The project relies on pumping from wells. • Parasitic power load for well pumps and other related production/injection equipment are taken into consideration for the project planning.
Estimation and modelling techniques	• The nature and appropriateness of the estimation technique(s) applied and key assumptions made • The availability of previous production records and whether such data is considered • Any assumptions regarding the correlation of variables • The process of validation, the checking process used and the reconciliation of model to measured data and the verification of significant results by application of alternative techniques and/or independent personnel	• For the Project area, a static geomodel forms the basis for the GRV calculation and resource estimation. It has been established in Petrel and builds on the 3rd party GeOrg model as well as regional thickness information from wells and Vulcan's 3D interpretation in the adjacent Mannheim license. The fault pattern has also been confirmed by a set of proprietary 2D seismic lines that Vulcan acquired in 2025 in the Project area. • No dynamic model is available for the Project area.  • Initial reservoir temperatures were estimated from the regional GeotIS temperature model at Top Buntsandstein and extrapolated to the midpoint of the primary target interval (Middle and Lower Buntsandstein) using the temperature gradient observed at Brühl (3.8 K/100 m). • The average reservoir temperature within the expected drainage radius was calculated at 171°C; for resource assessment and performance forecasting, a reservoir temperature of 170°C was adopted as a conservative approximation of the expected produced brine temperature.

Parameter	Consideration Description	Commentary
		• The southwestern corner of the Project Ludwig AOI shows lower temperatures of approximately 138°C; however, this area lies outside the expected drainage radius and is therefore not expected to affect production performance.
Cut-off parameters	• The basis for any adopted cut-off temperatures, flow rates or quality parameters (e.g. reservoir porosity, well deliverability etc.) applied, preferably related to a known technology pathway	• For the Project area, a reinjection temperature of 70° C has been used, which is based on the design of the planned surface facilities in Lionheart. • Flow rates for Project Ludwig used in Vulcan's economic analysis were estimated at 75 l/s due to the larger depth of the reservoirs in Ludwig compared to Lionheart and a field life of 30 years has been assumed.
Recovery factors	• Must be explicitly stated and justified	• Geothermal Resources based on a 50 yr productive lifetime assumption, which may not represent the economic or design project life. • The license wide recovery factor assumed for the FDZ is 6% and for the host rock matrix, it is 3%. Considering the drainage area only the RFs are expected to be higher by a factor of 2-3. • An assessment of reasonable recovery factors from analogue projects was conducted.
Conversion efficiency	• If used, expected conversion efficiency for converting heat into electricity • Methodology used for determination of conversion efficiency including an explanation of the technology pathway and justification of any assumptions made	• No conversion from heat into electricity was estimated for this report.

Dimensions	• The extent and variability of the estimated Geothermal Resource expressed as surface area and depth below surface including an explanation of the basis for any interpretations of reservoir geometry	• The reservoir geometry is based on the 3rd party GeOrg model and was refined by Vulcan using regional well correlation, regional seismic to well-ties and in-field 2D and 3D seismic interpretation.
		• GRVs are calculated for each of the different reservoir intervals and zones distinguishing between Geothermal Resource Classifications of Indicated and Inferred for the Ludwig (L) and the Therese (T) license area. Below is a list of depth ranges for the tops of the different reservoir units in TVDSS and the corresponding calculated GRVs for each segment:
		• Indicated:
		  o Middle and Lower Buntsandstein: 6.2(L)+2.1(T) km^3; 2100m – 3500m TVDSS (Top)
		  o Middle and Lower Buntsandstein (HRM – within drainage radius of wells): 6.0(L)+1.5(T) km^3; 2100m – 3500 m TVDSS (Top)
		• Inferred:
		  o Muschelkalk: 0(L)+0(T) km^3 (FDZ); 2700 m – 3000 m TVDSS (Top)
		  o Upper Buntsandstein (FDZ): 0.8(L)+0(T) km^3; 2900 m – 3000 m TVDSS (Top)
		  o Middle and Lower Buntsandstein (HRM – outside of drainage radius of wells): 15.3(L)+19.5(T) km^3; 2100m – 3500 m TVDSS (Top)

Parameter	Consideration Description	Commentary
		○ Rotliegend (FDZ): 0(L)+0.1(T) 2400 m – 3900 m TVDSS (Top) ○ Basement (FDZ): 2.3 (L)+0.8 km^3 (T); 2500 m – 4000 m TVDSS (Top)
Geothermal resource life	• The expected life of the Geothermal Resource based upon available modelling and anticipated development • Nature, quality and appropriateness of methods used for Geothermal Resource-life modelling including key assumptions • Estimation of deleterious elements (e.g. short circuiting, scaling etc.	• The expected life used in the estimation of geothermal resources is 50 years. This is considered as a reasonable development timeline but is not meant to represent the economic project life.
Classification	• The basis for the classification of the Geothermal Resource into varying confidence categories • Whether appropriate account has been taken of all factors • Whether the results appropriately reflect the views of the Competent Person	• For the Project Ludwig, Geothermal Resource estimation is limited to Indicated and Inferred classifications as no wells have been drilled to reservoir depth in-field. The volume associated with Buntsandstein fault damage zones and the Buntsandstein HRM within the defined drainage radius is classified as Indicated Resource. This is based on reservoir and temperature data from the closest offset well Brühl GT1 (5 km southeast of Ludwig license boundary), which intersected this zone and confirmed it to be productive. The volumes associated with the Buntsandstein host rock matrix outside of direct drainage radius of wells and FDZs of secondary reservoir units are classified as Inferred Resources • The Geothermal Resource Estimate has been prepared by a multi-disciplinary team that include geologists, reservoir engineers, hydrogeologists, geothermal specialists, and process engineers with relevant experience in Permo-Triassic and other geothermal brine geology. There is collective agreement that the Vulcan Group Project has reasonable prospects for economic extraction at current and forecast geothermal heat and power market pricing levels. Technical Report author Mike Livingstone, P.Geo., M.Sc., takes responsibility for this statement, as Geothermal Resources CP.
Third party involvement	• Acknowledgement of possibly conflicting developments by other parties	• No conflicting developments by other parties are anticipated at this time.
Audits or reviews	• The results of any audits or reviews of the Geothermal Resource estimate	• A review and check of the Project Ludwig Geothermal Resource Estimations was completed by an external consultant independent (GLJ Ltd.) from Vulcan Group. In addition, the CP (independent of Vulcan Group) conducted a review of all Vulcan Group activities that supported Geothermal Resource Estimation.

Parameter	Consideration Description	Commentary
Balanced and impartial reporting	• Where possible reporting should be comprehensive • Where comprehensive reporting of all Geothermal Resource estimation is not practicable, representative reporting should be practiced to avoid misleading reporting of Geothermal Resource estimation	• Following Mannheim, this is the second reporting of Geothermal Resources by the Vulcan Group for the licenses in the URVBF.
Discussion of relevant accuracy/confidence	• Where appropriate a statement of the relative accuracy and/or confidence in the Geothermal Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of sensitivity analysis, probabilistic analysis or use of scenario trees, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate • The statement should specify whether it relates to the whole or partial Geothermal Resource and, if partial, clearly state the extents along with assumptions made and procedures used • These statements of relative accuracy and confidence of the estimate should be compared with production data, where available	• In the opinion of the Geothermal Resources CP, the Ludwig and Therese Indicated and Inferred Geothermal Resource Estimations are reasonable for the Permo-Triassic aquifer within the Vulcan Group Future Phase area. • Risks and uncertainties as they pertain to the Geothermal Resource Estimates include: ○ Placement of deep wells in fault zones ○ High cost of deep well drilling ○ Brine temperatures ○ Brine flow rates ○ Recovery factors ○ Contribution of host rock matrix • As development continues, incorporation of associated results will reduce inherent Geothermal Resource uncertainty and Project risk. • The reader should be aware that the reality of any geothermal production project is that the extent of brine recovery from the Geothermal play will be a function of the design of the recovery/reinjection system and the connectivity of the subsurface brine zones. To some extent, it will not be feasible to capture all brine from the subsurface strata included in the Geothermal Resource estimate. • The planned brine production system will be based on doublets with a production well and reinjection well. It is noted that temperature depletion factors caused by injecting the spent

Parameter	Consideration Description	Commentary
		brine into the hydraulic system could influence the operational timeline of a given well doublet, beyond the extent to which already modelled. • Localised high permeabilities can lead to channelling effects such that the geothermal reservoir potentially becomes inefficient in terms of capturing brine from a broader zone. Thus, the exploitation of fault zones can constitute a trade-off between high permeability and reduced reservoir volumes.
Qualifications and accountability	• A statement of the qualifications, experience and accountability of the Competent Person making the assessment	• The Competent Person for Geothermal Resources is Mr. Mike Livingstone, P.Geo., who is a full-time employee of GLJ Ltd., of Calgary, Alberta, Canada. Mr. Livingstone is a member as a Professional Geoscientist of the Association of Professional Engineers and Geoscientists of Alberta (APEGA), a 'Recognised Professional Organisation' included in a list that is posted on the ASX website from time to time. Mr. Livingstone has sufficient experience which is relevant to the style and type of geothermal play under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the Second Edition (2009) of the 'Australian Code for Reporting Exploration Results, Geothermal Resources and Geothermal Reserves'. Mr. Livingstone consents to the disclosure of the technical information as it relates to the Geothermal Resource Estimation in this document in the form and context in which it appears.