

# Creating Australia's leading 24/7 renewable energy solution

Bringing Clean Geothermal Energy:  
Renewable, Reliable, Ready

Geothermal Energy Acquisition

July 2023

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## **ACKNOWLEDGEMENT OF COUNTRY**

Cradle Resources Limited acknowledges the traditional custodians throughout Australia and their continuing connection to the land, waters and community. We pay our respects to all members of the Aboriginal communities and their cultures; and to Elders both past and present.

# One of the most prospective and advanced geothermal portfolios in Australia

Cradle Resource has entered into a binding agreement to acquire Volt Geothermal Pty Ltd (“Volt”) and Within Energy Pty Ltd (“Within”), with the aim to become Australia’s leading geothermal company<sup>1</sup>

## Transformational transaction into the renewable energy industry

- **First Mover** - Assembled prospective and advanced geothermal opportunities in both South Australia and Queensland
- **Existing Infrastructure** - Portfolio of assets is near existing infrastructure and customers for early commercialisation
- **Proven Team** - Established a high calibre team of energy industry leaders

## Why Geothermal?

- Differentiated from other renewables by **24/7 renewable energy production**, and already used in over 30 countries
- **Proven technology** - Binary Cycle Power Plants have operated for +70yrs and represent >58% of global capacity<sup>2</sup>
  - *Able to utilise lower temperature geothermal reservoir water of between 80-180°C*
- **Major industry support** from both Federal and State Governments for a rapid energy transition
- **Geothermal markets** in the Asia Pacific are estimated grow to US\$3.2 billion by 2030<sup>3</sup>

1 - ASX Announcement – 11 July 2023

2 - IRENA, Global Geothermal Market and Technology Assessment, 2023

3 - Global Industry Analysts, Global Geothermal Power Generation Industry, May 2022

# Capital Structure and timetable<sup>1</sup>

	Number of shares	Ownership (%)
Existing securities on issue	229.9m	30.6%
Consideration shares to vendors	220.3m	29.4%
Issue of Shares at \$0.02 under the Capital Raising Offer <sup>1</sup>	300.0m	40.0%
<b>Total</b>	<b>750.3m</b>	<b>100%</b>
Market Capitalisation (post transaction at \$0.02 per share)	15.0m	
Cash Position	\$6.0m	
<b>Enterprise Valuation</b>	<b>\$9m</b>	

Event	Indicative Date
Dispatch Notice of Meeting to shareholders & Lodge Prospectus with ASIC and ASX	September 2023
Public Offer opens & General Meeting	October 2023
Completion of the Acquisition & Satisfaction of Chapters 1 and 2 of the Listing Rules	November 2023
Recommence trading on the ASX	November 2023

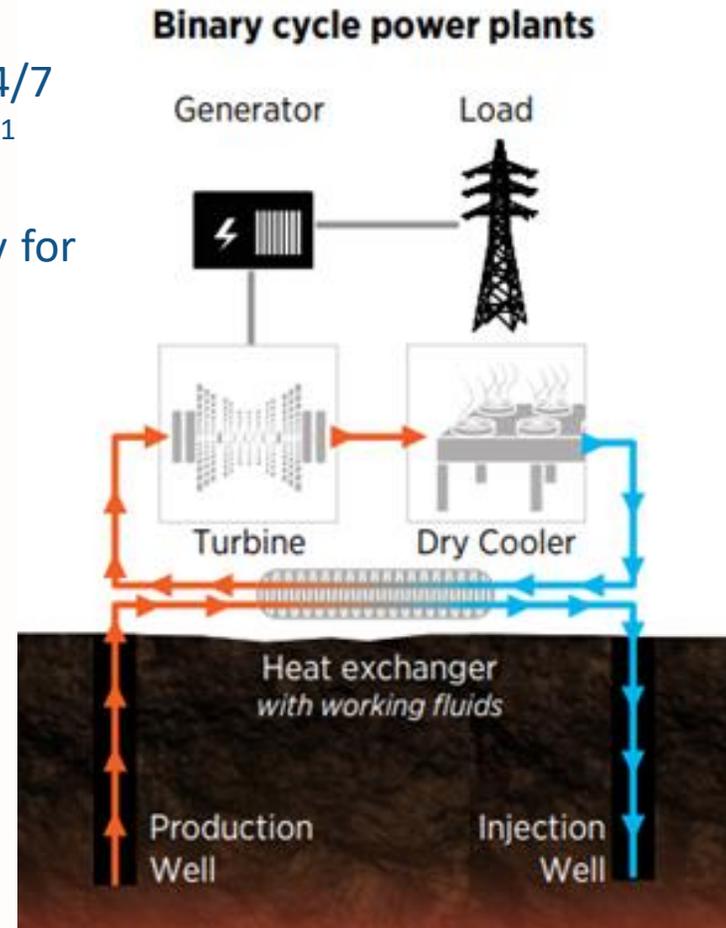
# Geothermal is essential for the global energy transition towards net zero carbon

## Why is Geothermal important?

- Geothermal energy is proven, reliable and one of few renewable solutions available 24/7
- Geothermal power generation is used in 30 countries with 16 GW of installed capacity<sup>1</sup>
  - USA is the largest geothermal producer with 93 plants in operation and 3.7 GW capacity
- Geothermal operates at >80% capacity and has the lowest levelised cost of electricity for dispatchable technologies in the USA at US\$37.30 per MWh<sup>2</sup>

## Technological Advancements - Binary Cycle Power Plants

- Historically the global industry (including Australia) focused on “hot dry rocks”
  - >200°C in tectonically and volcanically active areas, e.g. Pacific Ring of Fire
- Technological advancements have seen a global shift to Binary Cycle Power Plants using geothermal fluids at lower temperatures (80 °C - 180°C) and shallower depths
  - Binary plants have been in operation since 1967, with more than 150 operating worldwide
- In a closed cycle, 100% of fluid is returned to reservoir, an emission-free operation



# Australia needs geothermal to be a part of its renewable energy solution

## Why are there no geothermal projects currently in Australia?

- **Not required** - level of emissions was not a historical driver and fossil fuels were relatively low-cost i.e., coal
- **Not progressed** - historic focus on remote “deep hot rocks” rather than “warm rocks” around infrastructure
  - *Deep hot rocks = 4,000 to 5,000m depth with temperatures >200°C*
  - *Targeted remote locations lacking infrastructure and customers*

## Australia has the right building blocks in place for geothermal

- **Renewable target** of 82% renewable energy power by 2030 - in 2022 Australia was at 35% <sup>1</sup>
- **Financial Assistance** is available from Federal and State governments to support energy transition
  - *Regional Communities Reliability Fund, National Clean Energy Fund, Commonwealth Capacity Mechanism, etc.*
- **Geology** is well understood and generally supported by legacy Oil and Gas well and seismic data
- **Technology is proven** when focused on warm geothermal temperatures for Binary Cycle Power Plants to unlock opportunities close to infrastructure
- **Infrastructure** is in place with the East Coast having the world’s longest interconnected power system (NEM), allowing direct access to market
- **Capability** is readily available, with an overlap between geothermal and the existing resources sector; this can be supported by proven international geothermal expertise as required

# Geothermal provides a pathway for junior companies to participate in the renewable energy transition

Barrier to entry	Reasons for Barriers	Geothermal Benefit
<b>Access to existing Infrastructure</b>	<ul style="list-style-type: none"> <li>Without access to key and essential infrastructure (terminals &amp; lines) with sufficient capacity</li> </ul>	<ul style="list-style-type: none"> <li>Smaller transmission lines/sub stations throughout the NEM allow smaller operations</li> <li>Binary Cycle Power Plants are typically developed at smaller size between 5MW – 30MW</li> </ul>
<b>Land</b>	<ul style="list-style-type: none"> <li>Other renewable energy solutions (wind &amp; solar) require access to significant ground at surface</li> </ul>	<ul style="list-style-type: none"> <li>Geothermal has a smaller surface footprint than other renewable energy solutions</li> <li>Established tenement structure in place for geothermal energy through most Australian states</li> </ul>
<b>Capital intensive</b>	<ul style="list-style-type: none"> <li>Competing renewable energy developments require large scale to be economic and are capital intensive for direct energy production and/or infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>10MW project is expected to cost less than \$50m and less than 20% of capex is prior to FID, i.e., minimal spend during the riskier phase <sup>1</sup></li> </ul>
<b>Revenue Uncertainty due to Intermittent Energy production</b>	<ul style="list-style-type: none"> <li>Most renewable energy generation (wind, solar) is intermittent over a 24 hour cycle, and can vary significantly from season to season</li> <li>Excess energy supply from these sources typically occurs during lower energy demand period (eg: “solar duck curve”), putting downward pressure on energy price achievable by intermittent renewable generators</li> </ul>	<ul style="list-style-type: none"> <li>Geothermal is a proven 24/7 base load power solution</li> <li>Benefits from high peak energy prices irrespective of the time of the day and the month of the year</li> </ul>

# Australian geothermal portfolio

The Company has assembled a prospective portfolio of geothermal assets across South Australia and Queensland. The Company used several key selection criteria in determining these priority regions, including:

- **Geology** - regional geological analysis and historical drilling results indicates threshold geothermal temperatures are achievable
- **Jurisdiction** - States with advanced and progressive renewable energy strategies, including geothermal licences
- **Infrastructure and Markets** - Existing power infrastructure in place with power tie-in opportunities as well as large scale mining/industrial projects that are potential customers

## South Australia - Large scale energy hub

- Leading Australian state for renewable energy transition
- Cradle has secured blocks totalling over 12,300 km<sup>2</sup>
- Located on trend with major transmission lines and mines including Olympic Dam and Carrapateena
- Geothermal offset well data, available seismic and indicative, regional-scale geophysical mapping were applied by Competent Person
- G1 + G2 (P50) resources of 5.2PJ thermal and potential future in discovered area of G1 + G2 of 842 PJ thermal. For reference, a 10MW plant would require approximately 1.5 PJ thermal of geothermal resource per annum<sup>1</sup>

## Queensland – First mover in geothermal

- State Government announced a \$19bn budget to be spent over 4 years to support renewable energy, storage and transmission
- Warril Creek sub-basin interpreted depths to basement >1500m, interpreted temperature gradients >110°C for closed loop development
- Temperature gradients can be in naturally permeable units or impermeable units, as closed loop systems draw heat from thermal conduction, amplified by subsurface heat exchangers
- Potential to access ~400 substations and >90% of Queensland population via existing distribution (subject to regulatory approvals)

# Key targets for 2023 - 2024

- Secure fit for purpose team including Board
- Secure Australian acreage under application
- Complete Environmental, Native Title and Cultural Heritage approvals
- Conduct geological and geophysical studies
- Define highly ranked subsurface areas
- Complete infrastructure tie-in assessment
- Complete market studies
- Define preferred drilling/development locations
- Secure international technology partner
- Progress potential government funding/support
- Assess strategic partner farm-in potential
- Conduct Business Development growth assessment
- Drilling program ready



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