

Earths Energy to Leverage Geothermal Innovation for Australia's Clean Energy Transition

Earths Energy (ASX:EE1) (Earths Energy or the **Company**) has positioned itself as an early mover in the development of Advanced Geothermal Systems (**AGS**) in Australia. The Company believes that the next-generation of Geothermal has a crucial role to play in supporting Australia's clean energy transition, through the provision of abundant base-load, dispatchable renewable power.

HIGHLIGHTS

- **Untapped geothermal potential – technology developments are forecast by Wood Mackenzie to catapult geothermal energy into a global “geothermal anywhere” industry**
 - *Geothermal has provided reliable electricity for multiple decades and is today used in 30 countries.*
 - *There is abundant heat to support geothermal growth. According to the Massachusetts Institute of Technology (MIT), “There’s enough heat flowing from inside the earth to meet total global energy demand twice over.”¹*
 - *As highlighted by independent consultant Wood Mackenzie, the ‘technological breakthrough that could catapult today’s tiny, exclusively hot-spot energy source into a global industry may now be near at hand’².*
 - *Wood Mackenzie has forecast the potential for geothermal electricity to grow from circa 20 GWe globally in 2024 to more than 1,000 GWe by 2050³, a CAGR of more than 16%.*
- **The founders of Earths Energy have been actively positioning for the global renaissance of geothermal through AGS for more than 2 years**
 - *AGS aim to create productive conditions for geothermal energy in areas where natural exploitation was previously impractical, unlocking the sector’s potential.*
 - *Technologies enabling the development of geothermal energy with heat from rocks at below 180°C have been proven, and AGS are now being progressed for commercial developments across the globe.*
 - *The founders of Earths Energy have been in discussions with the global geothermal technology companies for an extended period to ensure Earths Energy will be ready to ride the wave of geothermal growth through technological advancement.*

¹ <https://climate.mit.edu/posts/what-it-will-take-unleash-potential-geothermal-power>

² <https://www.woodmac.com/news/the-edge/geothermal-close-to-breakthrough/>

³ <https://www.woodmac.com/news/the-edge/future-energy--geothermal-power/>



- **Approximately US\$600 million has been invested over the past 3 years in start-up companies to advance the next generation of geothermal systems⁴. This step change has been supported by some of the world's leaders in energy**
 - Geothermal technology companies such as GreenFire Energy Inc, Fervo Energy, CeraPhi Energy, Eavor Technologies Inc. and others have progressed AGS over the past decade.
 - Major international energy companies continue to support the progression of geothermal technologies including BP, Chevron, Shell, Inpex, Baker Hughes, Schlumberger, Haliburton, Schlumberger and others.
- **Geothermal power can be a major contributor to the energy transition in Australia, and EE1 has been an early mover in assembling an attractive land position**
 - Australia has set a target of 82% renewable energy power by 2030, in 2023 we were only at 35%⁵. Geothermal energy can play a critical role to fill that gap.
 - In South Australia, EE1 has secured over 12,000 km² near significant mining operations and power networks including the NEM, with resource potential estimates^{6,7} ranging from 9,700 to 54,100 Mwe⁸ of decarbonised power,
 - In Queensland, the Company has a permit near Brisbane, close to power grids and is applying for additional blocks near major industrial areas.

Managing Director Matt Kay commented: "For the past two years we have been focused on the "Geothermal Renaissance" that is occurring globally due to technological breakthroughs including from Advanced Geothermal Systems. It is no surprise that the global leaders in energy and the associated leading technology companies, are driving the transition to Net Zero by fully engaging in the Geothermal Renaissance.

The founders of Earths Energy have deliberately positioned the Company over the past two years to be at the forefront of the growth in Advanced Geothermal Systems. Our plan has been to bring the global Geothermal Renaissance wave to Australia to support our country's advance to a Net Zero future. The technologies we plan to roll out in Australia, in partnership with industry and governments, aim to assist in unlocking this bountiful clean, renewable and reliable source of energy."

⁴ <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/011124-infographic-next-generation-technologies-set-the-scene-for-accelerated-geothermal-growth-energy-transition>

⁵ <https://opennem.org.au/energy>

⁶ Competent Person – these analyses have been performed by Dr. Arnout JW Everts who holds a PhD in Geology from VU University Amsterdam and has 33 years of industry experience

⁷ The estimates of Electric Power-Resource Potential are strictly indicative and should not be considered to be compliant with UNFC

⁸ Assuming a plant load-factor of 0.9 and a range (P90 to P10) of 1.9 – 7.9 MWe/km² (Megawatt electrical per square kilometer) for GEL 696 and a plant load-factor of 0.9 and a range (P90 to P10) of 1.1 – 6.9 MWe/km² for GELs 692/693/694/695/768.



Geothermal energy – huge untapped potential

The geothermal energy industry has been active globally for over 100 years and geothermal power plants have been installed in 30 countries⁹.

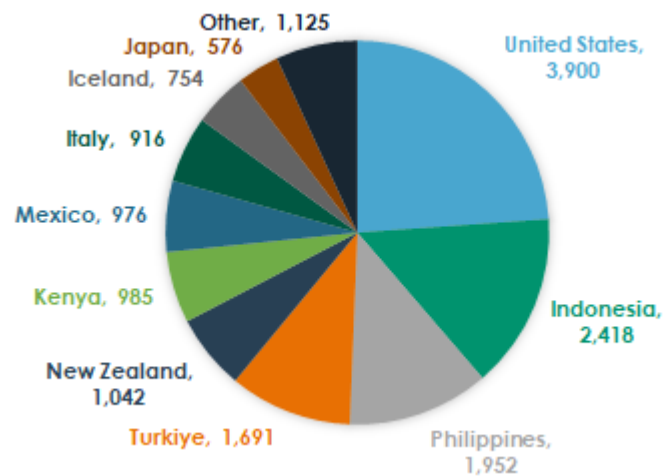


Figure 1 – Global installed geothermal capacity¹⁰

The largest geothermal producer, the US, has capacity of 3.9GW, a similar size as the entire WA electricity grid.

While well-developed in other countries, the Australian geothermal industry is in infancy, given Australia's historic abundance and acceptance of fossil fuels.

Historically the global industry focused on “hot rocks”, >200°C in tectonically and volcanically active areas, e.g. Pacific Ring of Fire and permeability of rocks has been required to transport hot fluids through the rocks to surface.

Independent research firms such as Wood Mackenzie have reported that geothermal growth will be significant given the advanced technologies that overcome a lack of permeability and allow geothermal energy to be developed at medium to low levels of heat from rocks.

⁹ <https://www.thinkgeoenergy.com/geothermal/geothermal-energy-production-utilisation/>

¹⁰ <https://www.thinkgeoenergy.com/thinkgeoenergys-top-10-geothermal-countries-2023-power-generation-capacity/>

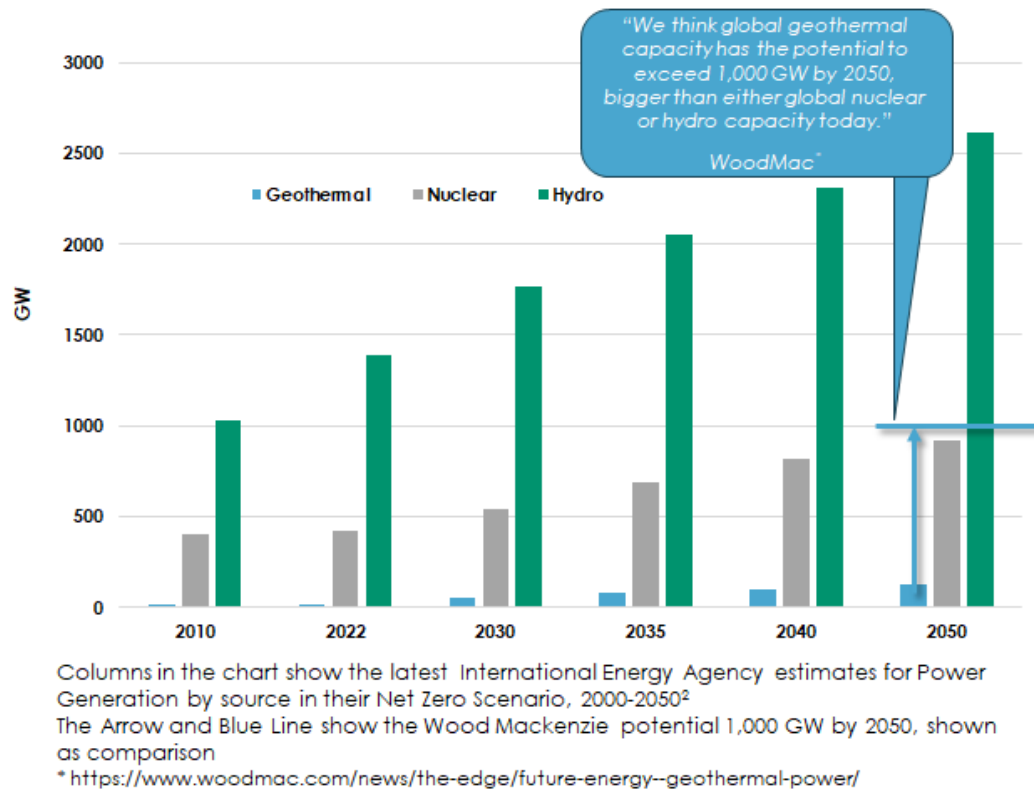


Figure 2 – Geothermal potential

Advanced Geothermal Systems provide the potential to unlock material geothermal resources in Australia

Earth's Energy's core strategy is to assist in unlocking Australia's vast geothermal potential through the application of recently developed next-generation geothermal technologies.

"The development of geothermal power has historically been confined to hydrothermal sites – shallower resources with high temperatures, naturally occurring water and sufficient rock permeability. However, these resources are highly constrained. Next-generation geothermal technologies aim to create conditions for geothermal energy in areas where natural exploitation was otherwise impossible. This has the potential to unlock geothermal energy for many countries." BloombergNEF¹¹

Technological advancements will enable the use of geothermal fluids at lower temperatures (80°C - 180°C) and shallower depths. Areas of the world not on the Ring of Fire, such as Australia, will be able to benefit from "Geothermal Anywhere" advancements.

An AGS, with 100% of fluid flows in a closed cycle, does not require permeability of hot rocks, requires no fluid injection and generates no emissions. This technology has been proven and is currently being scaled. Closed Loop Technology has been proven globally and is now being progressed for commercial developments across the globe.

¹¹ <https://about.bnef.com/blog/next-generation-geothermal-technologies-are-heating-up/>

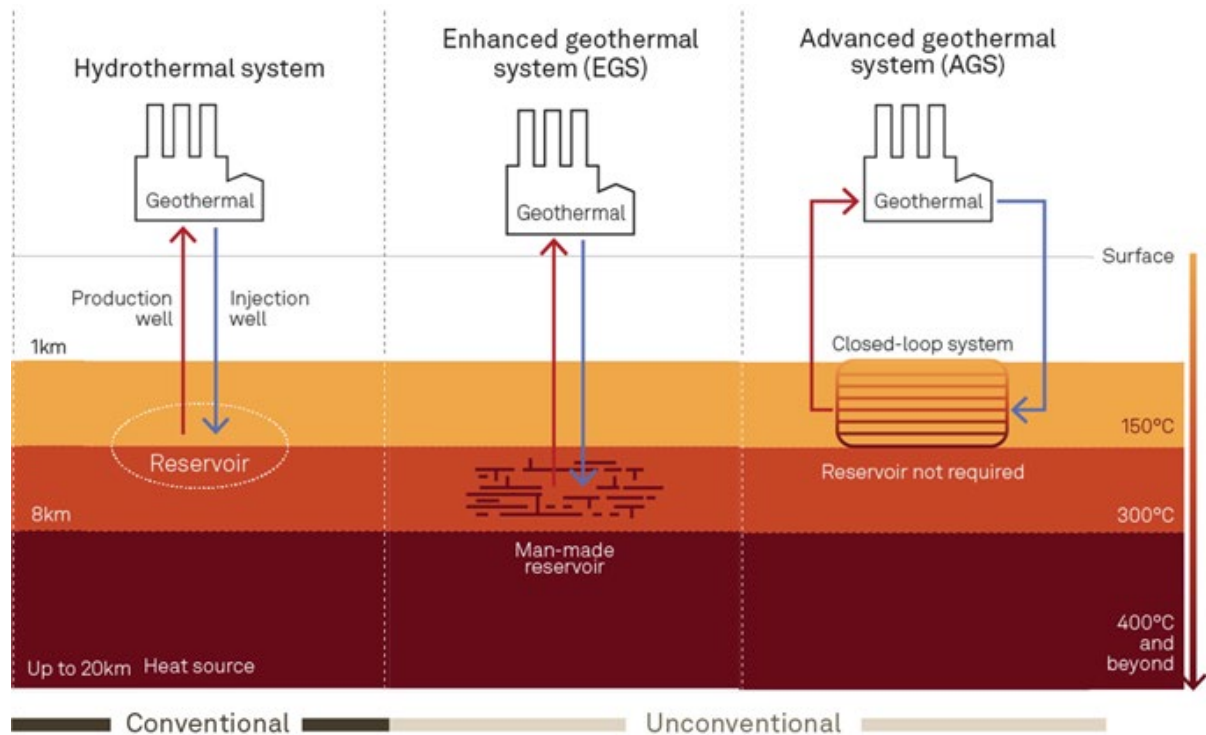


Figure 3 – Technological Advancements¹²

Investment is accelerating

Approximately US\$600 million has been invested in start-up companies for Next Generation Geothermal Systems over the past 3 years, supported by some of the world leaders in energy.

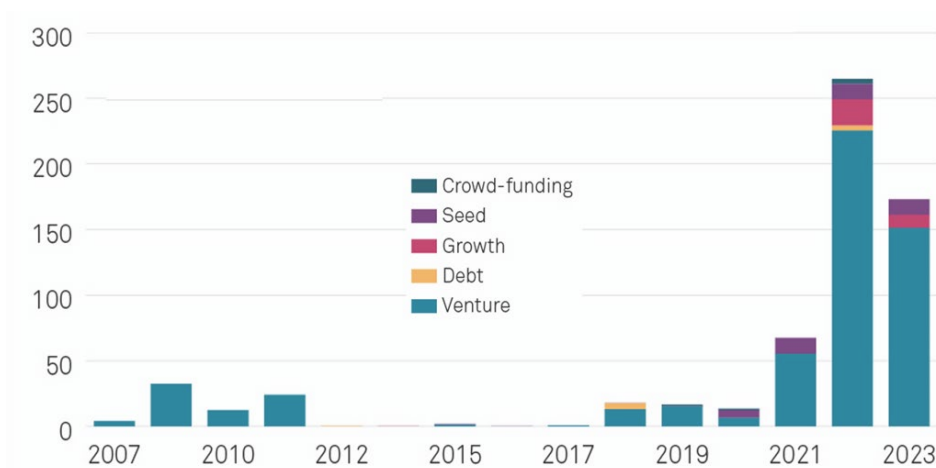


Figure 4 – Disclosed deal value (US\$m) for geothermal start-ups¹³

¹² <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/011124-infographic-next-generation-technologies-set-the-scene-for-accelerated-geothermal-growth-energy-transition>

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Geothermal technology companies such as GreenFire Energy Inc., CeraPhi Energy, Fervo Energy, Eavor Technologies Inc. and others have progressed AGS over the past decade.

Major international energy companies are supporting the progression of AGS, including BP, Chevron, Shell, Inpex, Baker Hughes, Schlumberger, Haliburton and others.

Next Steps for EE1, an early mover in assembling a geothermal land position

A key target for EE1 in 2024 is to align with a leading international technology partner. Figure 5 shows key milestones in the coming year.

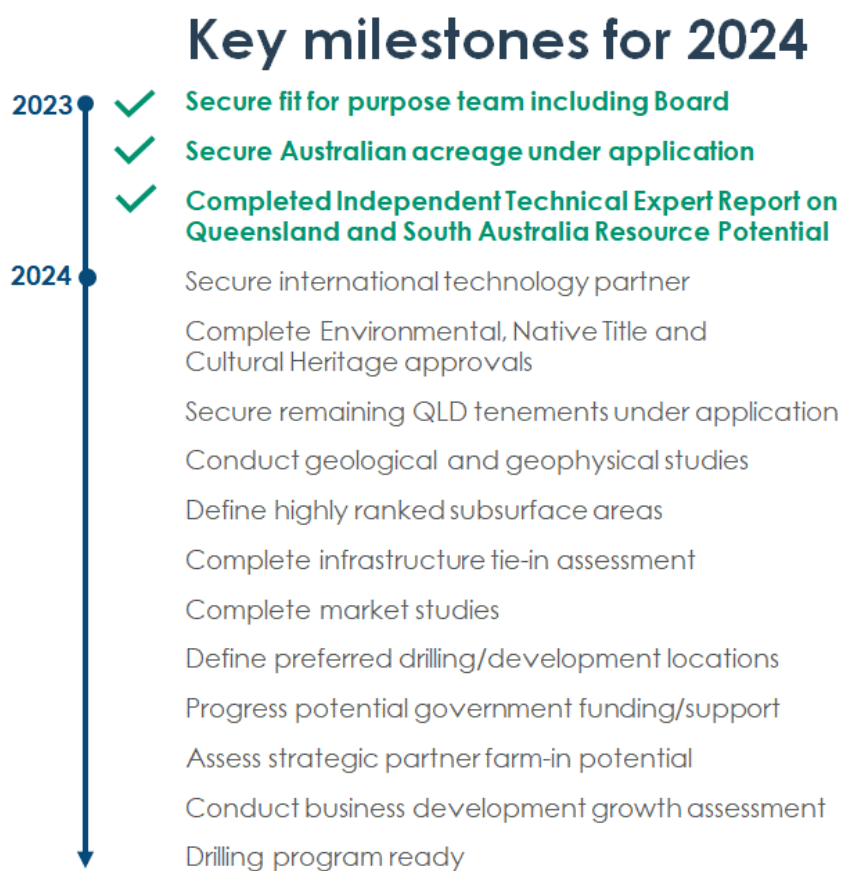


Figure 5 – Key Milestones

EE1 has also secured a large acreage position close to both markets and infrastructure and has several further tenements in Queensland under application.



South Australia: near Mines and Lines

Earth Energy's geothermal assets in South Australia span 12,035 km² in prime locations (See Figure 6). These blocks are strategically situated along major transmission lines and adjacent to large-scale mining operations such as Olympic Dam and Carrapateena and Four Mile / Beverley, all major consumers of energy in South Australia.

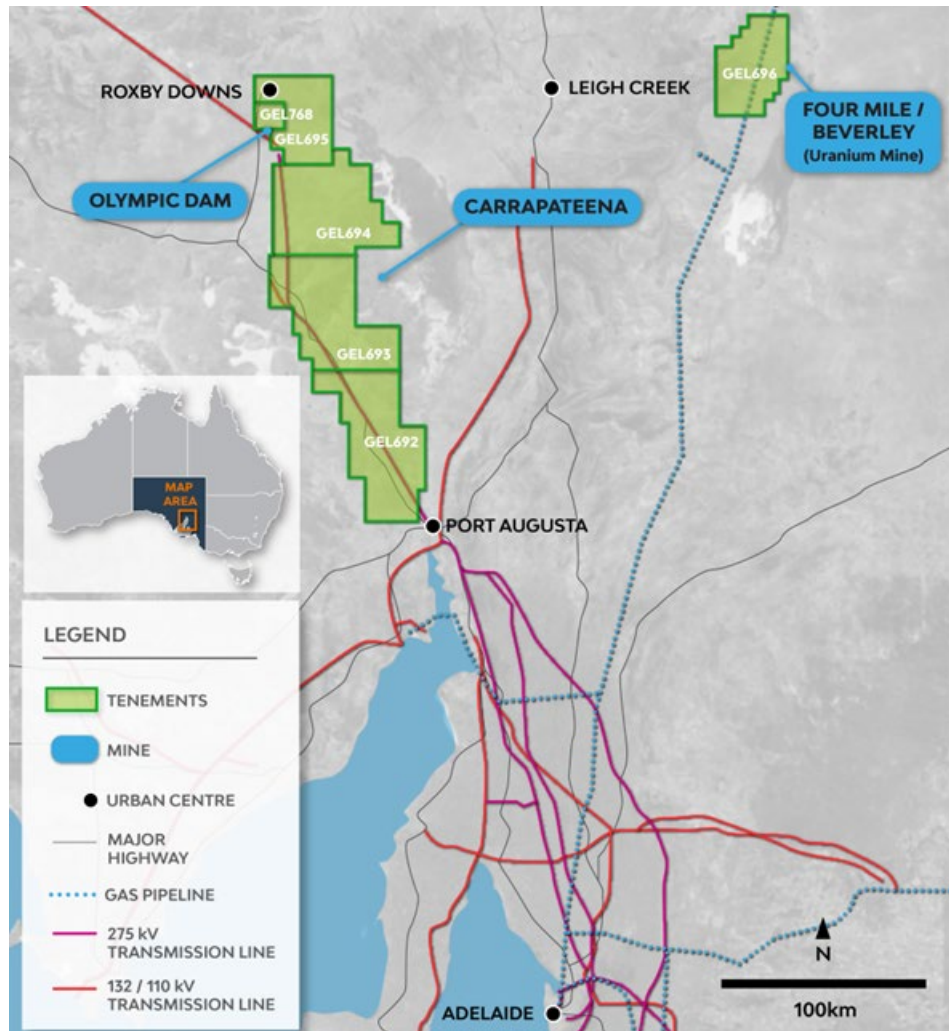


Figure 6 – South Australian geothermal exploration licences (EE1 attributable: 84%)

The Independent Technical Expert's indicative aggregate estimates¹⁴ of Electric Resource Potential¹⁵ for the granted South Australian acreage range from 9,700Mwe to 54,100Mwe¹⁶.

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Queensland: meeting East Coast Australia's growing power demand

In Queensland, Earths Energy has one granted geothermal exploration permit, EPG 2026, which is located near Brisbane and substations and regional power networks. Additionally, the Company has three blocks under application that are located near the Gold Coast and major industrial activity in the Bowen and Surat Basin mining and coal seam gas areas (see Figure 7).

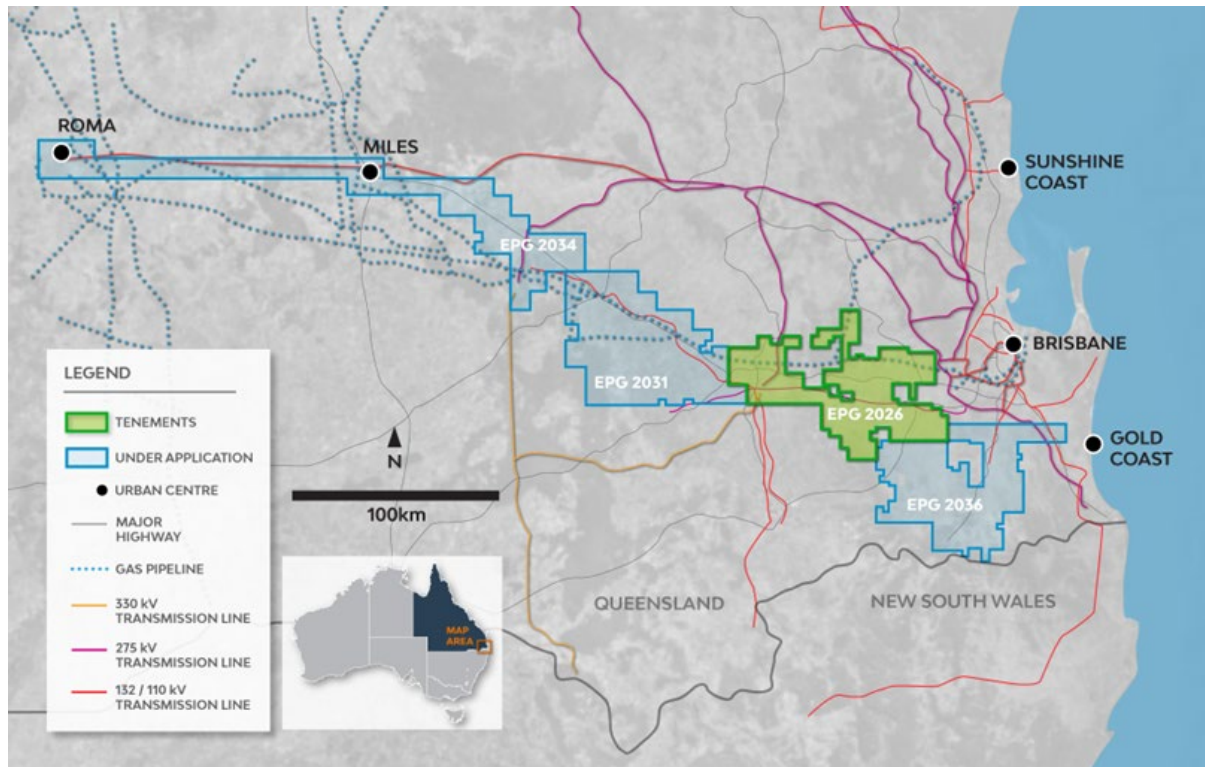


Figure 7 – Queensland geothermal exploration licences and applications

These tenements, particularly EPG2026 and EPG2031, exhibit considerable geothermal potential, with identified 'sweet spots' with a promising estimated electrical power capacity. The Independent Technical Expert's indicative aggregate estimates⁶ of Electric Resource Potential⁷ from EPG 2026 only range from 200 Mwe to 1,100 Mwe¹⁷.

Earths Energy will continue to work closely with International Technology developers, Australian regulators, Governments and industry to provide Australia with a new source of clean, reliable and renewable power.

¹⁷ Assuming a plant load-factor of 0.9 and a range (P90 to P10) of 1.1 – 3.7 MWe/km² (Megawatt electrical per square kilometer).



Authorised for release by Earths Energy's Board of Directors.

ENDS

To learn more about the Company, please visit www.ee1.com.au, or contact:

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About Earths Energy

Earths Energy has entered into binding Sale Agreements to acquire 84% interest in Volt Geothermal Pty Ltd ("Volt") and Within Energy Pty Ltd ("Within"), who hold geothermal projects in South Australia and Queensland, respectively (collectively the "Projects"). The Projects comprise of prospective geothermal exploration licences, surrounded by key existing infrastructure for electricity generation, including powerlines and sub power stations. The Company plans to focus on systematically exploring early-stage geothermal targets and developing geothermal resources at the Projects. This will involve a fit-for-purpose exploration programme analysing subsurface geology to identify thermal resource potential at different well depths, undertaking preliminary survey and resource assessments based on offset well data, exploration location definition and exploration drilling. This will determine priority targets for exploration drilling for geothermal resources.

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