

# ASX Release

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**PETRATHERM LIMITED**  
**ABN 17 106 806 884**

## Investor presentation and company update

The attached investor presentation provides a company overview and an update on Petratherm's Tenerife conventional volcanic geothermal energy project in Spain and its flagship Paralana geothermal energy project.

Particular focus is given to the company's activities over the next six months that include;

- The planned drilling of slim-line exploration well for conventional geothermal resources on the island of Tenerife in Spain in the first half of 2011.
- The two staged fracture stimulation program commencing this month and concluding in first quarter of 2011.

The presentation also outlines the key points that support why Petratherm considers itself to be a standout amongst companies in the Australian Geothermal sector, as follows:

- Unique approach to exploration to identify hot spots;
- Innovative approach to exploiting heat resources;
- Three major joint venture partners – Australia and Spain;
- Two major federal government grants totaling \$69.8 million;
- Successful drilling of the 4 kilometre Paralana deep well and the confirmation of economic temperatures;
- Nearby off-grid customer enabling economic supply of power at small scale and a staged approach to expansion;
- Portfolio of projects covering the spectrum of geothermal technologies.

Yours faithfully

**Terry Kallis**  
Managing Director

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# Petratherm

## Investor Presentation

### Corporate and Projects Update

Managing Director Terry Kallis

November 2010

# CLEAN ENERGY FOR FUTURE GENERATIONS

# Disclaimer and competent persons statement

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All amounts in Australian dollars (AUD) unless stated otherwise.

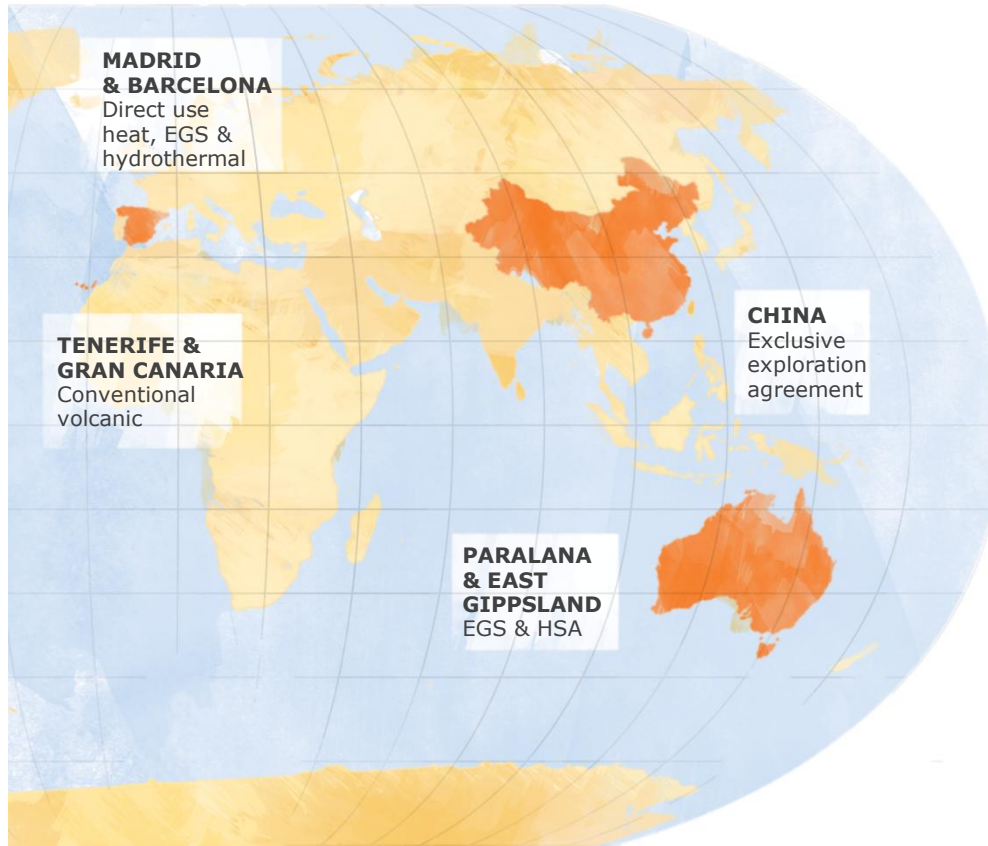
## Competent Persons Statement

The information in this report relating to geothermal exploration results and geothermal resources is based on information compiled by P.W. Reid, a full-time Petratherm employee. Mr Reid has sufficient experience in the style of geothermal play under consideration to qualify as a Competent Person under the Australian Code for Reporting of Exploration Results, Geothermal Resources and Geothermal Reserves (2008 edition). Mr Reid consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

# Presentation Overview

- > Company Overview
- > Tenerife conventional volcanic project
  - > conventional geothermal – no technology risk
  - > partnered with Enel, experienced incumbent utility
  - > exploration drilling to confirm resource – cost \$1.3m, Apr/May 2011
  - > Enel to 100% fund \$11m production well to earn their 50% equity
- > Paralana engineered geothermal system project
  - > de-risking project through fracture stimulation in Feb/Mar 2011
  - > fracc/stim costs largely covered under JV with Beach and TRUenergy
  - > excellent leverage in terms of JV and government grants
  - > “hot rock” geothermal firmly on radar of utilities and energy players

# Petratherm overview



## Our company

- > Leading Australian geothermal exploration and development company
- > Projects spanning Australia, Spain and China
- > Projects across the spectrum of geothermal technology
- > Flagship project – Paralana in SA's northern Flinders Ranges

# Petratherm - Corporate and financial

## Listed ASX:PTR

- > Shares on Issue: 111.7 m
- > Share Price: \$0.15
- > Market Cap: \$ 16.76 m
- > Cash Position: \$ 1.75m (31 Oct. 2010)
- > Shareholders: 3,655 shareholders
  - > Minotaur Exploration 18.4 %
  - > Australian Ethical Investments 5.1 %

## Paralana JV Funding and Grants

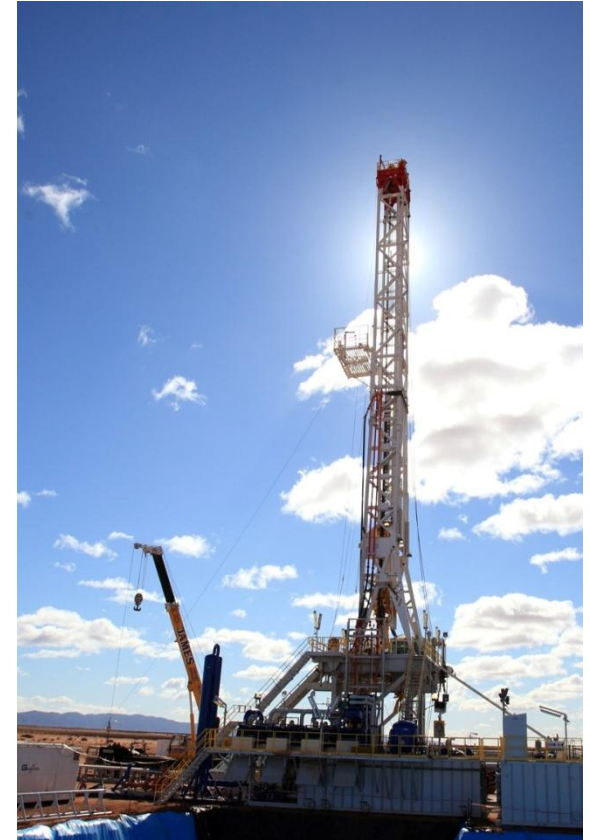
- > JV Funding: up to \$85 million plus equity share of project costs
- > Government grants of \$69.8 million toward drilling and commercial demonstration



# Sound business model

***"To explore for and develop emission free geothermal energy projects that are commercially sustainable"***

- > To develop a portfolio of quality geothermal energy projects
- > Explore both conventional and engineered geothermal systems – for power and heat
- > Find a favorable combination of geology and market conditions - *"shallow hot rocks close to market"*
- > Introduce joint venture partners with common interests, the right skills/knowledge, risk appetite & funding ability



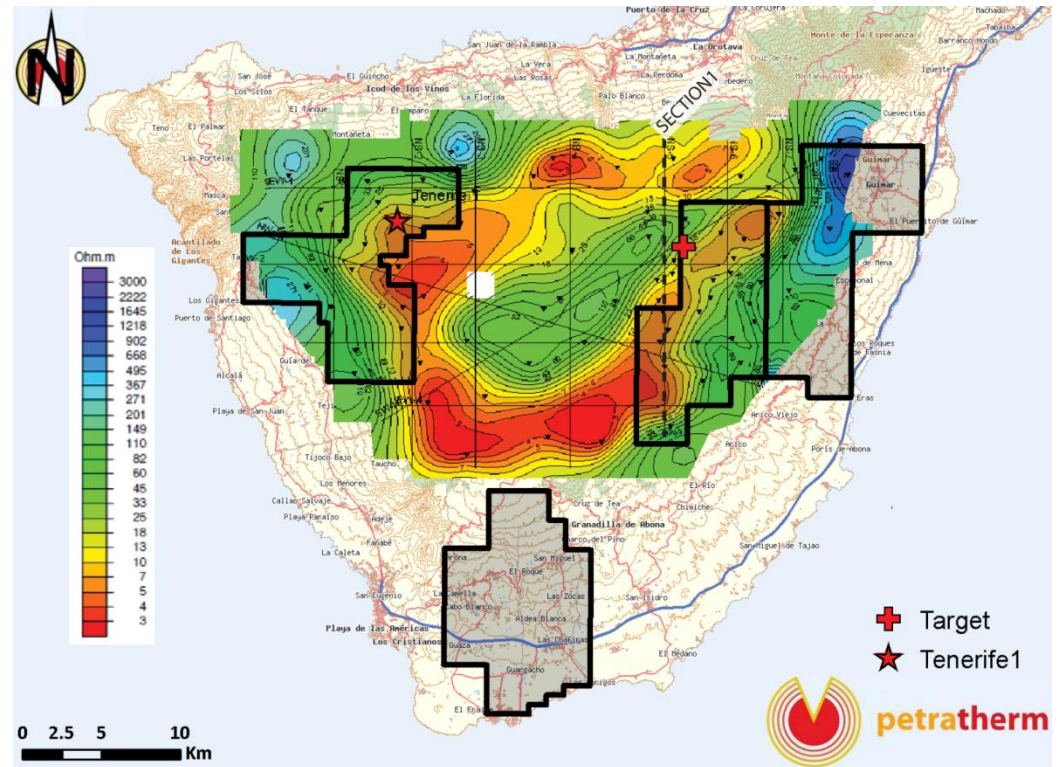
## Highly capable array of joint venture partners

- > Beach Energy
  - > Top four Australian ASX listed oil and gas company located in Adelaide and with interests in Australia, Europe and Africa
- > TRUenergy Geothermal
  - > Wholly owned subsidiary of CLP group – listed on the Hong Kong stock exchange – and the largest utility in the Asia Pacific region
- > Enel Green Power
  - > Wholly owned subsidiary of Enel Group – second largest listed electricity utility in Europe and a world leader in geothermal power production



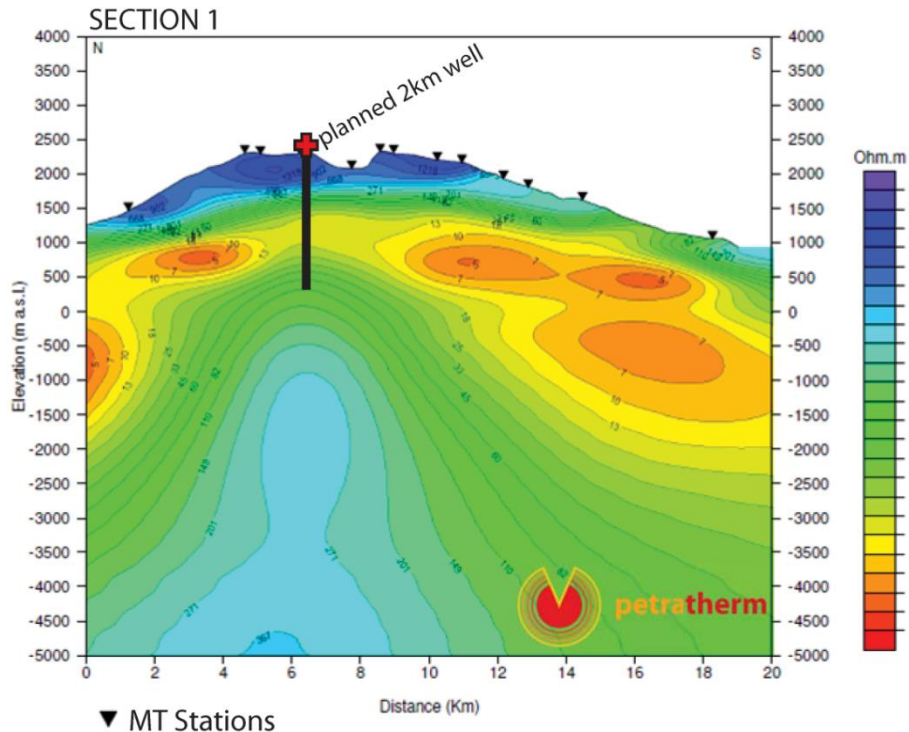
# Spain – Enel Green Power deal and Tenerife volcanic project

- Joint development of all electricity producing projects in Spain and Portugal
- Direct and external exploration costs shared 50:50
- Tenerife is an active volcanic island, MT indicates magma chamber 3 to 4 kms below surface
- Population approx. 1 million and power demand of > 800 MW (diesel and wind)
- Enel owns the incumbent utility on the island that services the power market



Tenerife MT results and target exploration well location

# Tenerife – conventional volcanic project



Tenerife cross section and slim line exploration well target

- > Slim line 2km well (refer map) to confirm resource 50% PTR cost \$1.3m
- > Geochemistry indicates presence of a hydrothermal system of at least 240 °C
- > 50 MW development– targeting between 7 MW and 15 MW per production well with high prices, over €90/MWh (AUD \$125/MWh) – more than double the price in Australia
- > Deep production well 100% funded by Enel for second half 2011, estimated cost of €8m (AUD \$11m)

# Paralana joint venture arrangements

- > Beach Energy Farm-in (Jan 2007) for up to \$28m for 36% plus equity share of project costs at every stage
  - > First \$5m for first well and \$2.7m for stimulation – earns 21%
  - > Contributes at 21% for second well and stimulation
  - > After demonstrated geothermal flows – Option to earn a further 15% for \$20M
  
- > TRUenergy Farm-in (Aug 2008) for up to \$57m for 30% plus equity share of project costs at every stage
  - > \$3m first well and stimulation
  - > \$3m second well and stimulation – earns 10%
  - > After demonstrated geothermal flows – Option to earn a further 5% for \$7m
  - > After 7.5 MW pilot plant – Option to earn a further 15% for \$44m



**Under the Paralana Joint Venture post demonstration of flows and with REDP grant of \$62.8m**, for a \$200m, 30 MW demonstration project with JV options taken up, Petratherm would require minimal investment and would retain 34% of resource

# Paralana joint venture and government grant arrangements

- > Beach Energy Farm-in (Jan 2007) for up to \$28m for 36%, plus equity share of project costs
- > TRUenergy Farm-in (Aug 2008) for up to \$57m for 30%, plus equity share of project costs
- > JV Projects stages
  - > Demonstration of flows – two wells and circulation
    - 1<sup>st</sup> well finished and temperature confirmed 190°C ✓
  - > Pilot plant – up to 7.5 MW
  - > Commercial demonstration – up to 30 MW
- > \$7m GDP grant is applied to demonstration of flows
  - \$4.2m used toward 1<sup>st</sup> well ✓
- > \$62.8m REDP grant is conditional on demonstration of flows and applied to pilot and commercial demonstration



# Project joint venture – cost estimates (assumes JV earn-in options exercised)

	<i>Project JV costs</i>	<i>PTR cost</i>
> Demonstrate flows (stages)		
> Fracture stimulate – Paralana 2	\$1 m	\$ 0.0m <sup>1</sup>
> Drill producer well – Paralana 3*	\$15m - \$20m	\$6.4m - \$9.9m <sup>2</sup>
> Fracture stimulate/circulate	\$2m	\$1.4m <sup>3</sup>
	<b>\$18m - \$23m</b>	<b>\$7.8m - \$11.3m</b>
Potential 45% R & D rebate*	<b>\$6.4m - \$8.6m</b>	<b>\$4.4m - \$5.9m</b>
Net Cost (after rebate)	<b>\$11.6m - \$14.4m</b>	<b>\$3.4m - \$5.5m</b>
> Produce power – up to 7.5 MW**	\$45 m	\$0.4m
> 3.75 MW plant		
> Substation & transmission line		
> 2 <sup>nd</sup> producer well & 3.75 MW plant		
> Upscale to 30 MW demonstration**	\$162m	\$0.0m
> additional wells and generation plant		

(\* \$2.8 million in funds available from GDP grant for Paralana 3 well)

(\*\* \$62.8 million REDP grant provides one third payment of capital costs)

(\* potential for 45% R & D rebate of expenditures in 2011/12, excludes grant)

(1 – Second half 2010)

(2 – Second half 2011)

(3 – Second half 2011)

# Fracture stimulation programme – next stage of work

## > **Injectivity test at base of well bore**

- > Inject small volume of water to confirm fracture initiation and propagation
- > Small volume, minimal induced seismic risk

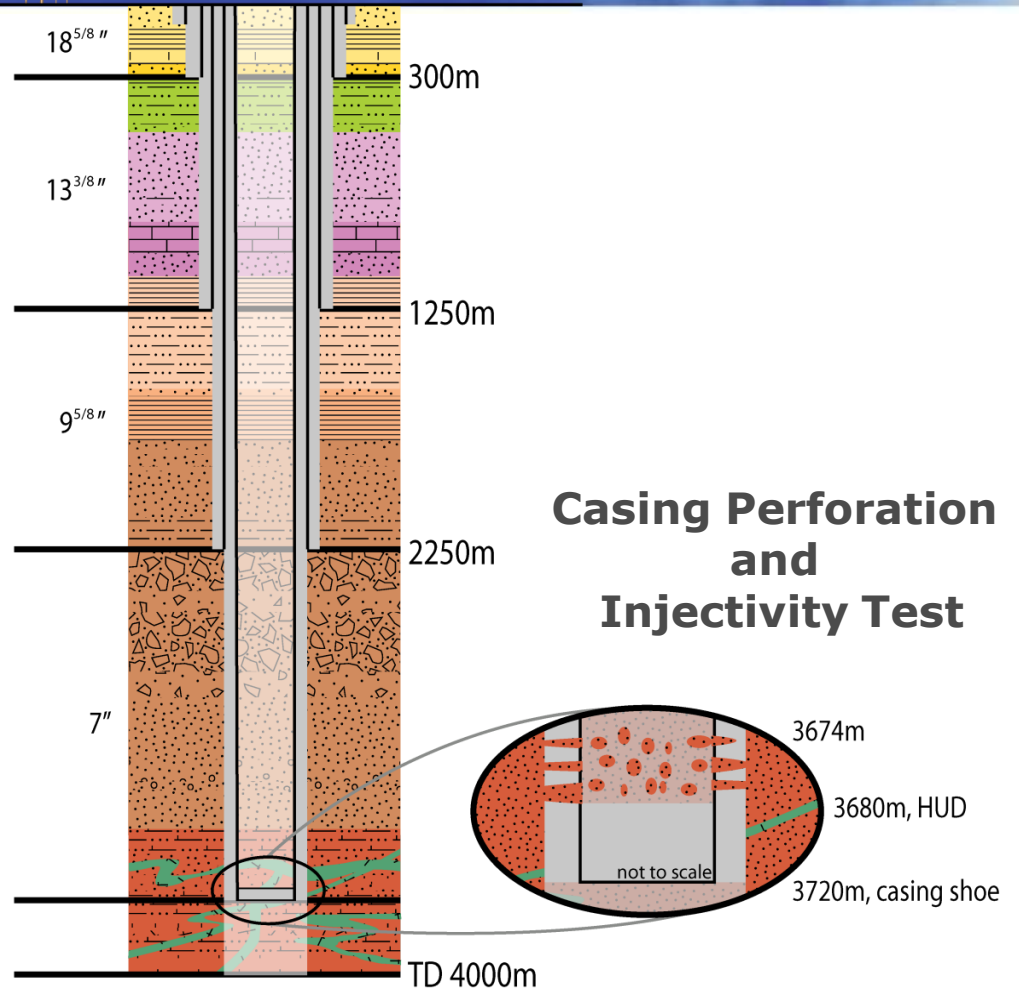
## > **Fracture stimulation**

- > Inject larger volume of water at higher rates
- > Volumes and rates dependent on micro-seismic response
- > Aim to activate natural fracture network

# Paralana 2 well summary

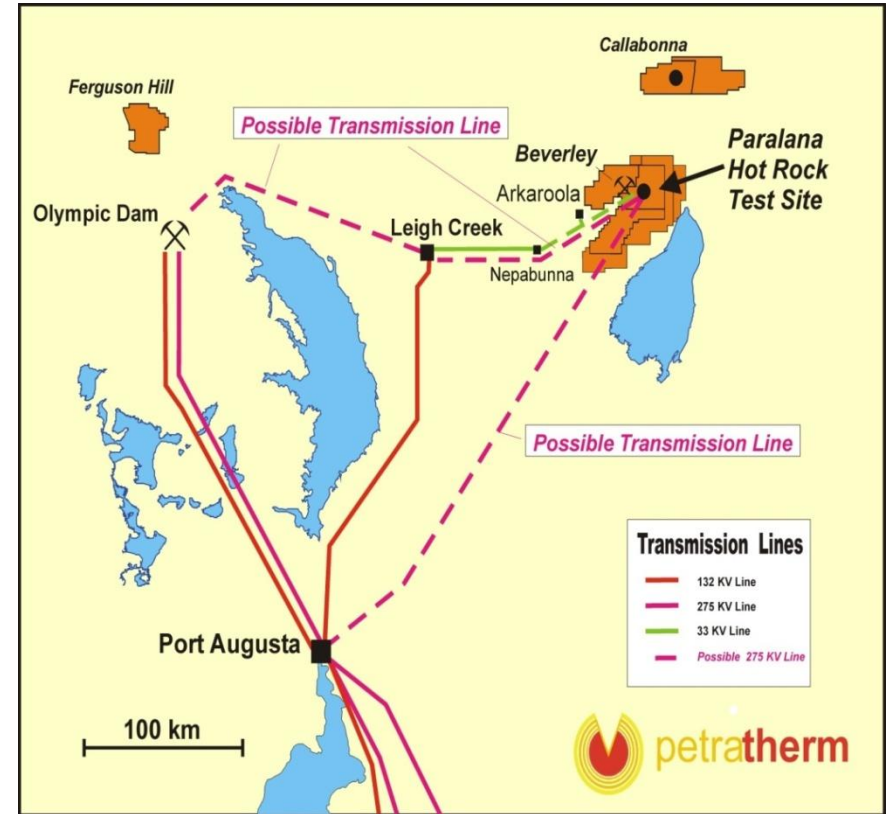


- > Depth 4012m
- > Well cased and cemented to 3725m
- > Extrapolated bottom hole temperature  $\sim 191^{\circ}\text{C}$
- > High pressure geothermal brines intersected from 3690m
- > Zircon dating confirms old 1590Ma Reservoir Sequence
- > Contains numerous fractures and faults
- > 2D Seismic suggests fractured reservoir sequence may be regionally extensive



# Paralana Project – commercial overview

- > Potentially commercially viable at all stages of development
- > Close (10kms) off grid local customer (5-30MWe) followed by large on grid development (260 MWe+)
- > Transmission rule changes to support low cost connection to market
- > Long term price to NEM of 260 MW lower cost than with wind – including transmission cost
- > MMA estimate power price at less than \$100/MWh delivered to Olympic Dam



# Petratherm - a standout in the Australian geothermal sector

***The Company is considered a standout amongst its peer companies in the ASX listed Australia geothermal sector because it has;***

- > a **unique exploration approach** for identifying shallow “hot spots” that does not rely on information from previously drilled wells
- > an **innovative approach for exploiting heat** from engineered geothermal systems (EGS) that seeks to lower cost and risk
- > **three major joint venture partners** involved in its projects in Australia and Spain
- > Been awarded **two major Federal government grants** \$7m GDP and \$62.8m REDP for its Paralana project
- > **successfully drilled/cased a 4 kilometre deep well** at the Paralana geothermal site
- > **confirmed economic temperatures** for geothermal energy power production to supply nearby off-grid customer
- > **a portfolio of projects covering the spectrum of geothermal technologies**, district heating (Madrid), conventional volcanic (Tenerife), hot sedimentary aquifer (East Gippsland) and EGS (Paralana)

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