# CLEAN ENERGY FOR FUTURE GENERATIONS

Quarterly Report 31 December 2012



## Quarter two highlights

#### Corporate & Regulatory

- General Meeting on 23 November 2012 and a company and projects update was provided to shareholders.
- The Company raised a total of \$847,339 before costs, through a one for three non renounce able rights issue with a free attaching option, with both shares and options priced at \$0.03.
- Petratherm had the opportunity to present the Company and its projects for review by His Royal Highness, The Prince of Wales.

#### **Paralana**

The Company outlined in October 2012 the key areas of differentiation relevant to its flagship Paralana project including new information highlighting the Paralana extraction model's technical validity/optimal temperature for a pumped, deep engineered geothermal system.

#### Review of Operations

During the quarter the Company's primary activity continued to focus on the funding matters relating to the Paralana project in terms of both the Emerging Renewables Program and the one for three rights issue.

Quarterly exploration and evaluation expenditure amounted to \$65,000 and included costs associated with the Paralana and Tenerife projects.

The Company had ongoing administration costs of \$358,000 during the quarter.

The Company raised from the Rights Issue \$847,339 before costs during the period. At the end of the quarter, the Company held \$1,273,000 in cash.

#### Corporate & Regulatory

#### Rights Issue

In September 2012, shareholders were invited to participate in the non-renounceable Rights Issue offer of one new share for every three shares currently held at an issue price of \$0.03 for each new share issued together with one attaching option with an exercise price of \$0.03 at no additional cost for every one new share issued.

A total of \$847,339 was raised and included funds received from the Company's two largest shareholders - Minotaur Exploration Ltd and Australian Ethical. Minotaur Exploration and Australian Ethical invested \$218,778 and \$105,995 respectively



#### Corporate & Regulatory

#### Australian Geothermal Energy Conference

Petratherm participated in the annual Australian Geothermal Energy Conference held on 14-16 November 2012 in Sydney.

Petratherm's Managing Director, Terry Kallis, provided a company update and the Company's Exploration Manager, Peter Reid, provided technical results of the hydraulic fracture stimulation carried out at Paralana.

Terry Kallis was re-elected Chairman of the Australian Geothermal Energy Association (AGEA).

### HRH Prince of Wales visit to Adelaide

Petratherm was one of only four renewable energy companies selected by the State Government to showcase the State's renewable credentials to the Prince of Wales.

His Royal Highness was accompanied by the SA Governor, His Excellency Kevin Scarce and Premier, Jay Weatherill. They were briefed on the Company's Paralana project and took the opportunity to raise several questions of interest.

The event took place at the Adelaide Convention Centre on 7 November 2012.

#### **Projects**

#### **Paralana**

In the September quarter the Company lodged a \$13M grant application under the Australian Renewable Energy Agency (ARENA) Emerging Renewables Program.

During the December quarter the Company made several presentations providing the latest information on the Paralana Project Those presentations highlighted the project's key areas of differentiation and included new information on the technical validity and optimal parameters of the proposed extraction model to be applied (refer below):

#### 1. Business Model

- Project selection filtered by taking into account resource, market and permitting considerations.
- > JV partners with complementary skills/capabilities, funding capacity and risk appetite.
- Project viability is project specific and an optimization process of key parameters.

#### 2. Project Portfolio

- Several projects to manage risks of projects not proceeding.
- Projects across the geothermal spectrum - volcanic, district heating, HSA and EGS.

#### 3. Track Record of Success

Successfully drilled, cased, fracced and flowed 4km deep Paralana 2 EGS well - confirmed economic temperature and existence of natural fracture network.

#### 4. Extraction Model for EGS

- Optimization of key parameters for a pumped EGS geothermal well - drill depth/cost, temperature and target flow (HEWI) - technically valid/optimal approach.
- Focus on utilizing known and standard technologies and plant to mitigate risks - surface and subsurface (multi-zone fraccing, pumping, ORC/binary plant, pipework).

#### Commercialization Path unique in Australia

- Local off grid and willing customer at just 11 kms away, distant from built up areas and enabling viability at small scale (3.5 MW net initial power production).
- Long term path for large scale geothermal via unique Clean Energy Project (gas, wind and solar) that aims to secure large and growing market from mining projects.





#### Paralana cont'd

### **Extraction model for a pumped EGS well**

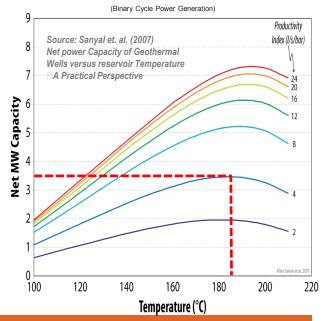
Sanyal (Geothermex) et. al. 2007\* independent expert paper reports :

- Standard industry pump operating temperature limit is ~ 190°C
- Max MW per well ~7.3MW (unless pumps improve on setting depth and pump rate)

#### **Paralana Extraction Model:**

- Targeting optimal temperature parameters to maximize output of a pumped EGS well
- > Temperatures of 190°C confirmed at 4,000m
- JV decision not to drill deeper than 4km based on cost/depth trade-off □validated
- Remaining uncertainty to test is flow rate which is measured to Productivity Index (PI)
- Paralana target flow is 75 litres/sec or PI of 4 achieving a net capacity of 3.5 MW

#### **Net MW Capacity of a Pumped Well vs Temperature**



\* Sanyal 2007 paper available for download at www.geothermal-energy.org/pdf/IGAstandard/SGW/2007/sanyal3.pdf



#### **Tenerife**

The Tenerife Project in the Canary Islands is testing for conventional geothermal sources associated with recent volcanism. Processing and interpretation of the 2012 magnetotelluric (MT) survey

highlighted a potential geothermal upwelling zone at approximately 1500m depth close to the town of Vilaflor on the southern side of Mt Tiede which forms the central volcanic cone of the island.

During the reporting period a second phase of MT work was designed to map the precise form of the upwelling zone to define a drill target. This survey is planned for the first quarter of 2013.



## Corporate information

#### Corporate Office

Level 1, 129 Greenhill Road Unley, South Australia 5061 t. +61 8 8274 5000 f. +61 8 8272 8141 e. admin@petratherm.com.au www.petratherm.com.au ABN 17 106 806 884

#### **Board of Directors**

#### Chair

Derek Carter

#### **Managing Director**

Terry Kallis

#### **Non Executive Directors**

Richard Bonython Richard Hillis Simon O'Loughlin Lewis Owens

#### **Company Secretary**

Donald Stephens HLB Mann Judd (SA) Pty Ltd

#### **Stock Exchange Listing**

Australian Securities Exchange (ASX code: PTR)

#### Share Registry

Computershare Investor Services Pty Ltd Level 5, 115 Grenfell Street Adelaide, South Australia 5000

#### **Legal Advisors**

O'Loughlin Lawyers Level 2, 99 Frome Street Adelaide, South Australia 5000

#### **Auditors**

Grant Thornton South Australian Partnership 67 Greenhill Road Wayville, South Australia 5034

### Inside the Petratherm team

#### **Managing Director**

Terry Kallis

#### **Exploration Manager**

Peter Reid

#### **Project Geologist**

Mathieu Messeiller

#### **Office Manager**

Elena McRae

#### Manager - Spain

Raul Hidalgo

### Upcoming events

#### **Industry** events

For further information on forth-coming events in the geothermal sector visit the Australian Geothermal Energy Association website at http://agea.org.au and the DMITRE website at http://geothermal.dmi-tre.sa.gov.au

#### Website

Petratherm's website delivers regular information updates to shareholders and stakeholders

Proudly supporting





#### **Competent Person Statements**

The information in this report that relates to Exploration Results is based on information compiled by Peter Reid, who appears on the Register of Practicing Geothermal Professionals maintained by the Australian Geothermal Energy Group Incorporated at the time of the publication of this report. Peter Reid is a full time employee of the Company. Peter Reid 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 (2010) of the Australian Code for Reporting Exploration Results, Geothermal Resources and Geothermal Reserves. Peter Reid has consented in writing to the inclusion in the report of the matters based on his information in the form and context in which it appears.