

# PETRATHERM LIMITED



**A.C.N. 106 806 884**

105 - 106 Greenhill Road, Unley

5061, South Australia

Phone: (08) 8274 5000 Fax: (08) 8272 8141

**REPORT FOR THE QUARTER  
ENDING 30 MARCH 2007**

Email: [admin@petratherm.com.au](mailto:admin@petratherm.com.au)

Website: [www.petratherm.com.au](http://www.petratherm.com.au)

## HIGHLIGHTS

- A \$30 million Joint Venture with Beach Petroleum earning equity of up to 36% in the Paralana Geothermal Energy Project was announced in late January 2007.
- A \$5 million Renewable Energy Development Initiative (REDI) Grant was awarded in mid February 2007 by the Federal Government to assist in the establishment of Petratherm's unique Heat Exchanger within Insulator (HEWI) Model at the Paralana Geothermal Project.
- Petratherm established Petratherm España SL and made, in late February 2007, two applications for highly prospective tenement holdings close to Spain's two largest cities, Madrid and Barcelona thus securing "first mover" advantage in the geothermal renewable energy sector in Spain.
- Two new geothermal exploration licences (GELs) were awarded in late February 2007 near Renmark, South Australia, being in close proximity to two major transmission lines capable of carrying in excess of 220 MW of power.
- Petratherm addressed the first Australian Geothermal Energy Roundtable hosted by the Federal Government, in Canberra with Ministers Ian Macfarlane (Industry, Tourism & Resources) and Malcolm Turnbull (Environment & Water) in attendance.
- On 30 March 2007, SA Resources Minister, Hon Paul Holloway MLC, officiated the formal Opening of Petratherm's new offices at 105-106 Greenhill Road, Unley, Adelaide SA.
- At the end of the quarter the Company held \$2,587,000 in cash.

## REVIEW OF OPERATIONS

At the end of the quarter, the Company held \$2,587,000 in cash. The expenditure during the quarter included exploration costs of \$167,000 for projects in Australia and Spain, ongoing administration costs of \$ 325,000, and the purchase of fixed assets (\$33,000) reflecting the expanding nature of the business.

The activities during the quarter focused on securing the necessary funds to undertake trial circulation testing, which will determine the commercial viability of the large thermal resource at Paralana.

The total cost of undertaking this program is budgeted at approximately \$20 million . To this end the Company successfully obtained a Joint Venture

Agreement with Beach Petroleum involving up to \$30 million expenditure by Beach, and a further \$5 million Grant from the Australian Federal Government. This places the Company in a very strong position to move the Paralana Project forward.

## **Paralana Project**

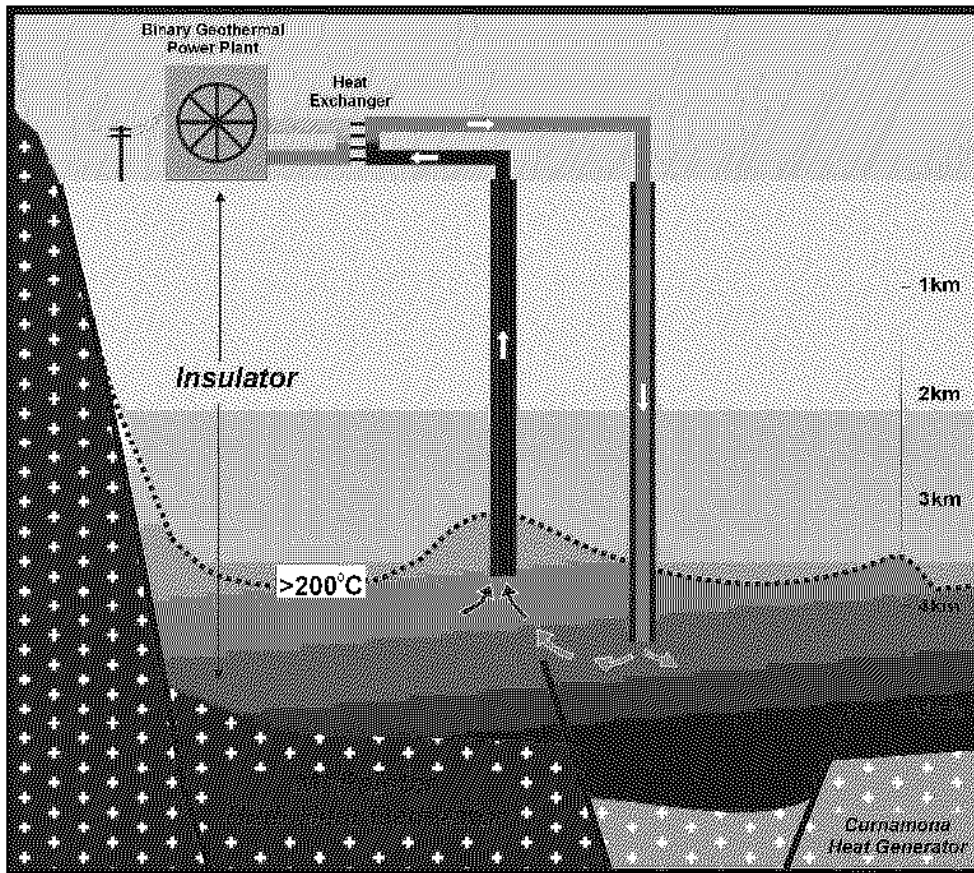
The next phase of major works at Paralana involves the drilling of an injector and a producer well and the subsequent development of a fluid circulation cell (the sub-surface heat exchanger) between the two wells. The drilling and circulation work will be a precursor to constructing an electricity generation plant (of around 7.5 MW) to meet local power needs at the neighbouring Beverley Uranium Mine.

Petratherm's strategy is to lower risks and costs of both the drilling and circulation operations by engineering the underground heat exchanger within the insulating rocks (the HEWI model) above the high heat producing granites (Figure 1).

The first (injector) well will be drilled to at least 3.6 kilometres depth where bottom hole temperatures are expected to exceed 200°C. The program will then move to characterising fluid circulation systems within the underground heat exchanger.

Depending on these findings mechanical or chemical enhancement of the sub-surface fluid circulation cell may need to be undertaken prior to drilling of the second (producer) well and completion of the circulation system.

Procurement and set up of a suitable drilling rig is the time limiting factor for a well of this magnitude and the Company is developing work contracts for design and management of the drilling operations. Drilling of the first well is expected to begin late 2007 or early in the New Year.



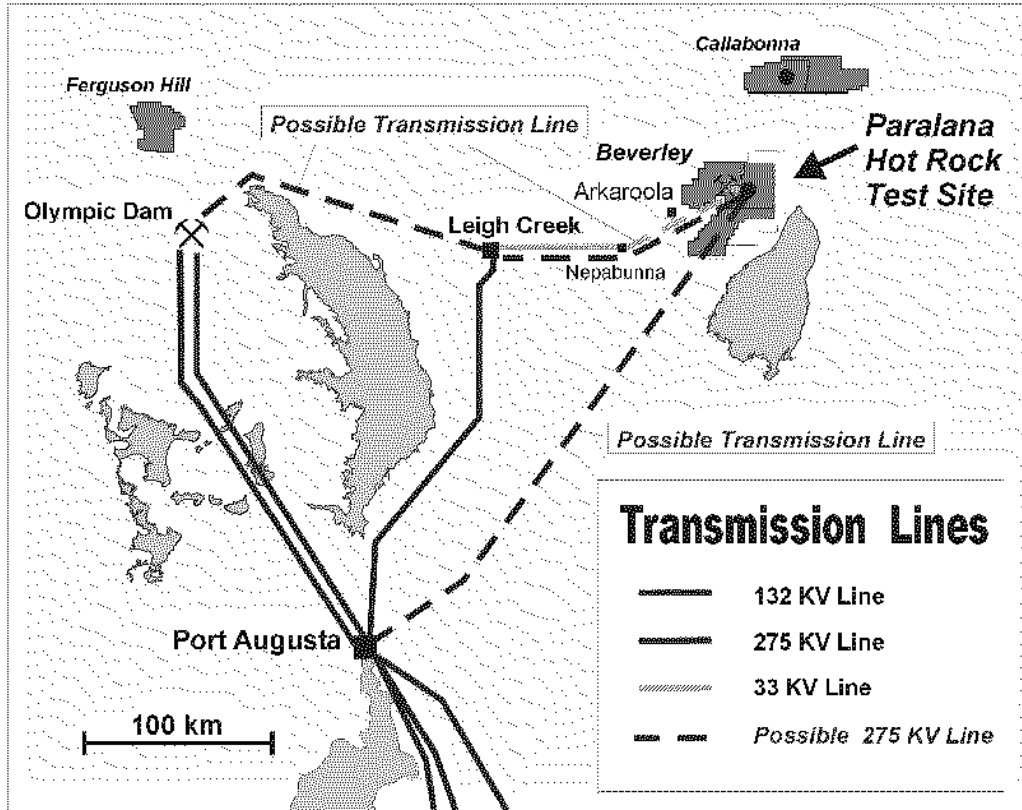
**Figure 1.** The Heat Exchanger within Insulator (HEWI) Model.

## Paralana Energy Joint Venture

In late January 2007 the Company announced a \$30 million Joint Venture agreement with Beach Petroleum on the Paralana geothermal project. The terms of the Joint Venture are:

- Beach may earn a 21% equity for a contribution of \$10,000,000 by
  - contributing the initial \$5,000,000 in drilling and stimulating the first well, and;
  - contributing the initial \$5,000,000 in drilling and stimulating the second well and circulation tests between the wells;
- Beach may withdraw without equity after the completion of the first well;
- Beach may earn an additional 15% equity by contributing a further \$20,000,000 following completion of drilling and stimulation of the second well and circulation tests between the wells.

Beach Petroleum brings to the Paralana Project a wealth of experience and expertise in drilling operations and fracture stimulation. This will be invaluable to the success of the next stage of work on the Paralana Project and is consistent with Petratherm's continuous drive to reduce cost and risk wherever possible.



**Figure 2** Petratherm's geothermal licence areas and possible transmission connection routes for the Paralana Hot Rock site.

### **\$5 million Federal Government REDI Grant**

In mid February 2007 Petratherm Ltd was delighted to announce that it has been offered a \$5 million Renewable Energy Development Initiative (REDI) Grant by the Commonwealth Government. The \$5 million REDI grant offer was made to Petratherm in a joint announcement by the Hon Ian Macfarlane, Minister for Industry, Tourism and Resources and the Hon Malcolm Turnbull, Minister for the Environment and Water Resources.

The grant funds have been offered to contribute to the development and testing of Petratherm's Heat Exchanger within Insulator (HEWI) Model - the next key milestone of the Paralana Geothermal Energy Project. The HEWI model which has been recognized by the Commonwealth Government as a new technique that represents a creative departure from existing approaches.

In addition, the Government has noted that, if proven, Petratherm's HEWI approach could become best practice and could greatly reduce cost and risk,

and thereby accelerate the uptake of sustainable, large-scale, geothermal electricity generation. In the announcement the Government also noted the potential for around 10% of Australia's total electricity consumption realistically being provided by 2050 from geothermal energy.

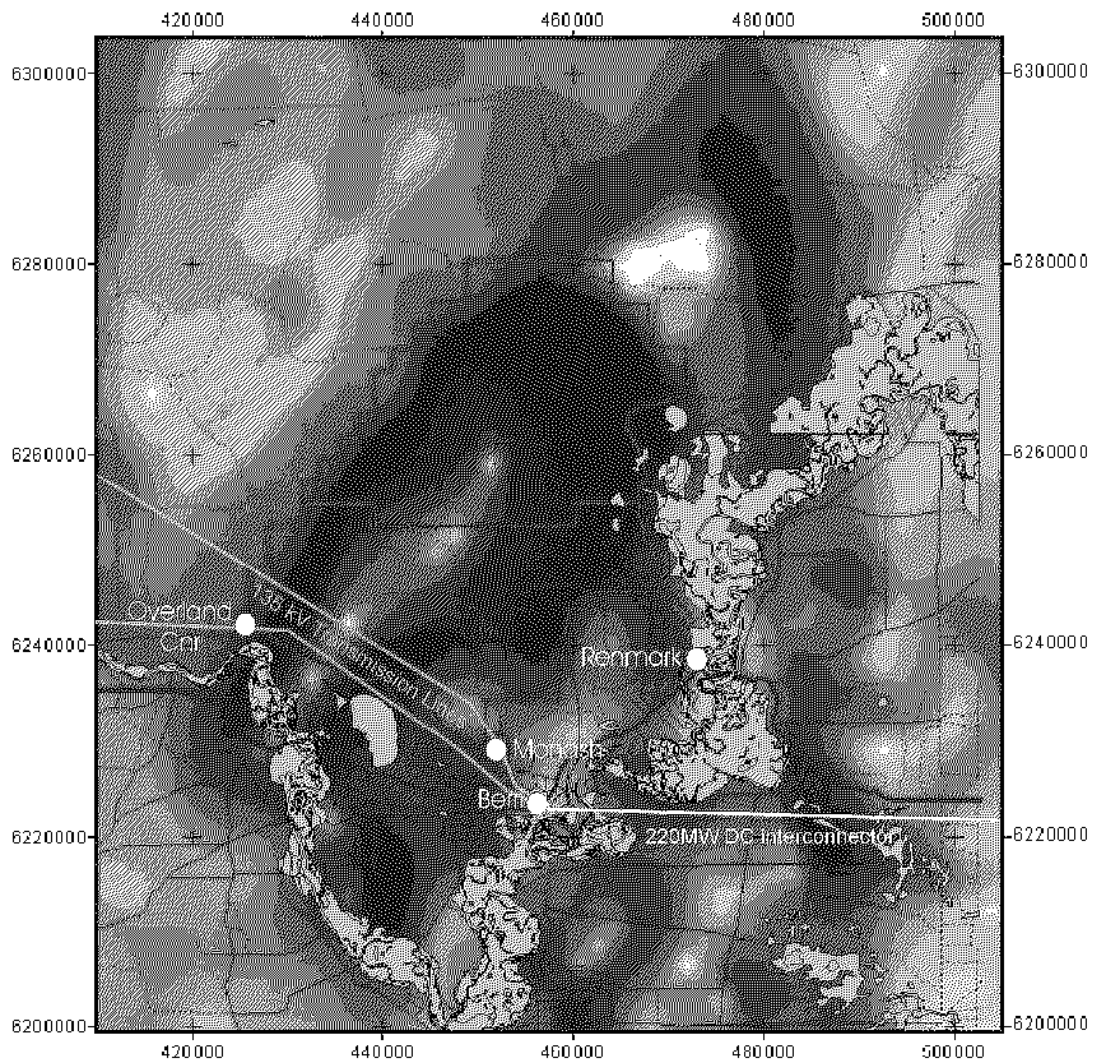
The Government has acknowledged that Petratherm's Paralana Project would bring forward and improve the likely viability of geothermal projects across the country, notably in South Australia where a number of geothermal systems are planned. Moreover, the Government has indicated that large-scale, geothermal power plants have the potential to substantially reduce Australia's carbon dioxide emissions, while providing secure and reliable energy.

## **Renmark Project**

Petratherm announced in February that it has acquired two new Geothermal Exploration Licenses (GELs), located 26 kilometres northwest of Renmark, in South Australia's Riverland Region. The tenements cover the highly prospective Renmark Trough and are ideally situated in very close proximity to two major transmission lines capable of carrying in excess of 220 MW of power (Figure 3).

The two new contiguous GELs cover the township of Renmark North and adjacent districts, and capture the deepest portion of the Renmark Trough, a fault bounded sub-basin of the Murray Basin System (Figure 3). The estimated depth to basement, based on seismic data, is about 3.5 kilometres. Measured thermal gradients in the area are elevated and potentially around 40 degrees per kilometre. The current exploration initiative is looking to test a conventional geothermal model of directly circulating hot brine waters from aquifers near the base of the trough.

Two high voltage 132KV transmission lines run through the tenement holding. Network analysis of the transmission system has confirmed that this is a strong portion of the National Electricity Grid and could easily support a large scale geothermal development. Whilst the region is not expected to yield as high a geothermal gradient as Petratherm's flagship Paralana Project, improved efficiencies can be afforded by its proximity to this transmission infrastructure and the potential for natural hot geothermal waters requiring minimal engineering costs to develop.



**Figure 3** A gravity image of the Renmark area indicating the location of the new GELs and their relationship to transmission infrastructure and townships. The dark blue shadings on the gravity image represent the deepest, and thus the most prospective portions of the Renmark Trough. The boundaries of the GELs are outlined in red and clearly bracket the deepest parts of the sub-basin.

## **Petratherm España SL**

In February, the Company announced that it had commenced securing geothermal energy sites in Spain. The entry into Spain is a strategic move that is consistent with the Company's stated objective of pursuing opportunities in areas where the geology, energy market and regulatory environment are conducive to commercially viable geothermal energy projects.

The Spanish entry has secured first mover advantage for Petratherm in the renewable energy sector.

A new company, Petratherm España SL has been formed in Spain to hold the new project GELs. Petratherm España is owned 93% by Petratherm Limited and 7% by Prehenita SL – a Spanish geological consulting company which has extensive knowledge of Spain's geology.

### **Geology of Spain (and Europe)**

The European continent in an overall sense is highly prospective for geothermal energy – both conventional and “hot rock”. Considerable work is now under way in Europe to explore for, and develop new geothermal energy projects.

Petratherm's examination of Europe's geology identified Spain as an excellent target for exploration because it has geological features capable of supporting geothermal energy from both “hot rock” and traditional volcanic sources.

### **Spanish Regulatory Environment**

The European Union (EU) member countries have enabling legislation that underpins a very favourable commercial framework for renewable energy, including geothermal energy. Spain is a signatory to the Kyoto Protocol, a member of the European Union (EU) and has demonstrated a strong commitment to the growth of renewable energy.

Spain is second only to Germany in terms of installed wind generation capacity. The Spanish Renewable Energy regulatory arrangements provide for long term (i.e. 20 years) “in feed” electricity tariffs for renewable projects with prices typically in excess of €85 /MWh or AUD \$140/MWh. This compares very favourably to the market in Australia where prices for renewable energy projects are typically in the range of \$75/MWh to \$85/MWh (inclusive of renewable energy certificates).

Spain has recently been identified by an independent study by Ernst & Young, a leading international consulting firm, as the country with the highest attractiveness for developing renewable energy projects (Figure 4). The study ranked several countries and reviewed such factors as tariffs (pricing), resource potential, growth and grid capacity.

Ranking	Country	All Renewables Index	Renewables Infrastructure Index
1	Spain	69	80
2	USA	67	70
3	Germany	62	56
4	India	61	66
5	UK	60	61
6	Italy	58	63
7	France	57	55
8	Portugal	56	63
9	China	56	59
10	Canada	55	63
11	Netherlands	54	56
12	Ireland	54	61
13	Greece	53	56
14	Sweden	52	53
15	Australia	50	51
16	Denmark	49	58
17	Norway	49	56
18	Belgium	48	53
19	Finland	38	39
20	Austria	33	49

**Figure 4** Ranking of Renewable Energy Country Attractiveness  
(Source: Ernst and Young 2006)

### Spain Project Sites

A process of securing key project sites is under way. Petrathern has applied its innovative approach to “exploring for shallow hot rocks, close to market” and during the March quarter secured two project areas that meet the Company’s commercial criteria, adjacent to Spain’s two largest cities, Madrid and Barcelona.

### The Madrid Project

An application for a Geothermal Exploration Licence (GEL) has been made for an area approximately 40 kilometres northeast of Madrid (Figure 5) and in close proximity to several major high voltage transmission lines capable of carrying in excess of 3500 MW (i.e. equivalent to around twice South Australia’s average daily electricity needs).

The licence area represents a ‘hot rock’ play and covers the deepest known section of the Madrid Basin, in the vicinity of the townships of Tres Cantos, Alcobendas and San Sebastian de los Reyes, a rapidly growing service area to Madrid itself. Mountain ranges to the north of the tenement are composed

of high heat producing granites, which continue south under the basin sediments. The sediments overlying the granite are on the order of 4000 metres deep and have been previously explored for petroleum resources. Information from petroleum exploration activity in the basin not only provides valuable data on the local geology, but has also identified a low enthalpy aquifer resource with potential to be developed for direct heating applications.

### **The Barcelona Project**

Petratherm has applied for two new adjacent Geothermal Investigation Licences (GILs) situated approximately 25 kilometres north of Barcelona, Spain, through its Spanish subsidiary company Petratherm España (Figure 5).

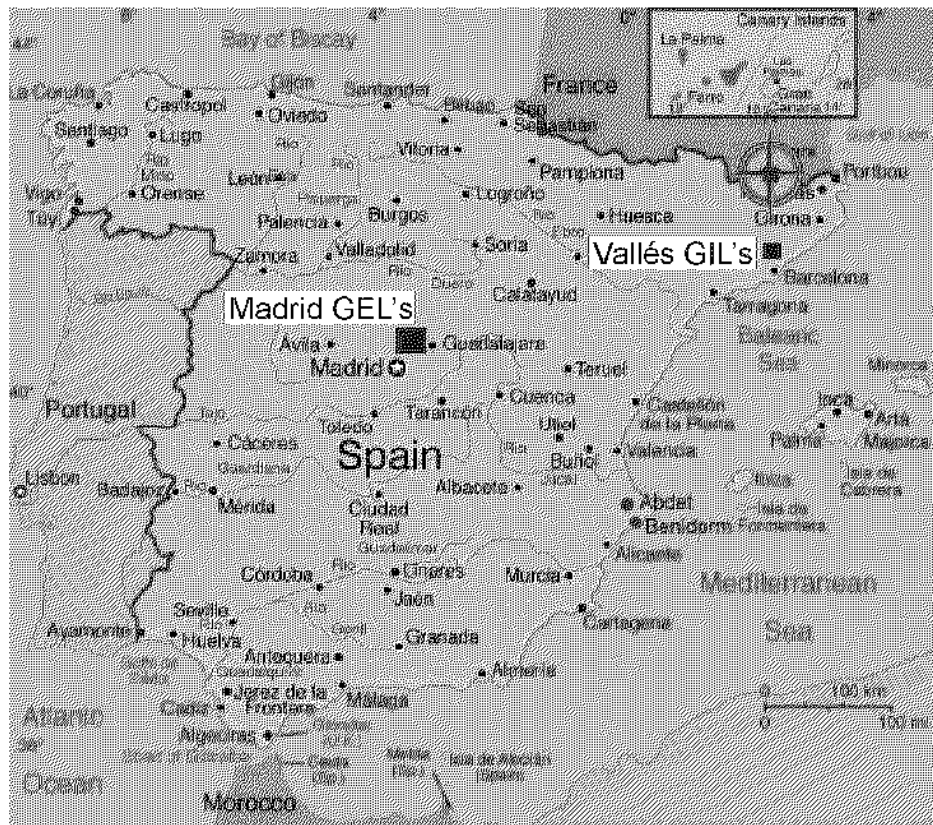
The licence areas are located in the Vallés Region of Catalonia, an area of high heat flow well known for its naturally occurring hot springs, which are currently used for therapeutic bathing and the direct heating of local communities, and thus highly prospective for both conventional and “hot rock” geothermal resources.

The two new tenements are contiguous and cover the area in and around the townships of Granollers, Sabadell and La Garriga, capturing the deepest portion of the fault bounded Vallés Basin. High heat production granites are exposed on the eastern and western sides of the basin, with an estimated depth to basement in the basin of about 3.5 kilometres. Measured shallow thermal gradients in the area are elevated and above 60 degrees per kilometre.

Petratherm’s current exploration initiative is looking to test a conventional geothermal model of directly circulating hot brine waters from aquifers near the edge of the fault zone, in addition to a ‘hot rock’ project.

The Vallés Region is densely populated with a well developed transmission infrastructure to support its strong industrial, agricultural and tourist based economy. The tenements are ideally situated adjacent to a major transmission hub which connects five major transmission lines capable of carrying a total of around 2000 MW throughout the region and to the nearby city of Barcelona (Figure 5).

The tenements’ proximity to a robust market and strong transmission infrastructure, as well as the potential for natural hot geothermal waters, is expected to yield commercial advantages through improved efficiencies and minimal development engineering costs.



**Figure 5.** Locations of Petratherm's existing geothermal project areas in Spain. Site 1 (Madrid) is approximately 40 kilometres north-east of Madrid, and Site 2 (Valles) is approximately 25 kilometres north of Barcelona.

## China – Geothermal Exploration Program

Petratherm has been successful in obtaining project endorsement from the Asia Pacific Partnership on Climate and Clean Development (AP6) to undertake a study to identify high prospect geothermal energy projects in China. The six members of the Asia Pacific Partnership are USA, China, India, Japan, South Korea and Australia. The Partnership aims to facilitate the implementation of practical projects that can contribute tangible improvements to Climate and Clean Development.

The AP6 Project is consistent with the Company's strategy of seeking to identify opportunities where both the local geology and renewable energy policy framework is conducive for commercial geothermal energy projects.

The Project proposal involves Petratherm undertaking a study of the geothermal prospectivity of China over the next nine months, utilising Petratherm's innovative Exploration Model to identify high quality, commercial geothermal projects. This work will be undertaken in cooperation with Chinese Geological Institutions, Provincial Governments and Utilities. Petratherm plans to take an equity position in those projects which offer the best potential for developing commercially viable power generation from geothermal energy.

**APPENDIX 5B**  
**Mining exploration entity quarterly report**

**PETRATHERM LTD**

**ABN 17 106 806 884**

Quarter ended

31-Mar-07

**Consolidated statement of cash flows**

	Current quarter	Year to date (9 months)
	\$A'000	\$A'000
<b>Cash flows related to operating activities</b>		
1.1 Receipts from product sales and related debtors	-	-
1.2 Payments for (a) exploration and evaluation	(167)	(1,022)
(b) development		
(c) production		
(d) administration	(325)	(956)
1.3 Dividends received		
1.4 Interest and other items of a similar nature received	41	90
1.5 Interest and other costs of finance paid		
1.6 Income taxes paid		
1.7 Other - PACE Funds Received	-	-
1.7 Other - Rebates		
<b>Net Operating Cash Flows</b>	<b>(451)</b>	<b>(1,888)</b>
<b>Cash flows related to investing activities</b>		
1.8 Payment for purchases of: (a) prospects	-	-
(b) equity investments	-	-
(c) other fixed assets	(33)	(57)
1.9 Proceeds from sale of: (a) prospects	-	-
(b) equity investments	-	-
(c) other fixed assets	-	2
1.10 Loans to other entities	-	-
1.11 Loans repaid by other entities	-	-
1.12 Other (provide details if material)	-	-
<b>Net Investing cash flows</b>	<b>(33)</b>	<b>(55)</b>
1.13 Total operating and investing cash flows (carried forward)	<b>(484)</b>	<b>(1,943)</b>

1.13 Total operating and investing cash flows (brought forward)	(484)	(1,943)
<b>Cash flows related to financing activities</b>		
1.14 Proceeds from issues of shares, options, etc	-	2,080
1.15 Proceeds from sale of forfeited shares	-	-
1.16 Proceeds from borrowings	-	-
1.17 Repayment of borrowings	-	-
1.18 Dividends paid	-	-
1.19 Other (Share issue costs)	-	(104)
<b>Net financing cash flows</b>	0	1,976
<b>Net increase (decrease) in cash held</b>	(484)	33
1.20 Cash at beginning of quarter / year to date	3,071	2,554
1.21 Exchange rate adjustments to item 1.20	-	-
1.22 <b>Cash at end of quarter</b>	2,587	2,587
<b>Payments to directors of the entity and associates of the directors</b>		
<b>Payments to related entities of the entity and associates of the related entities</b>		Current quarter \$A'000
1.23 Aggregate amount of payments to the parties included in item 1.2		85
1.24 Aggregate amount of loans to the parties included in item 1.10		-
1.25 Explanation necessary for an understanding of the transactions		
Directors' fees, superannuation for the Quarter		
<b>Non-cash financing and investing activities</b>		
2.1 Details of financing and investing transactions which have had a material effect on consolidated assets and liabilities but did not involve cash flows		
Nil		

2.2 Details of outlays made by other entities to establish or increase their share in projects in which the reporting entity has an interest

Nil
-----

**Financing facilities available**

	Amount available \$A'000	Amount used \$A'000
3.1 Loan facilities	-	-
3.2 Credit standby arrangements	-	-

**Estimated cash outflows for next quarter**

	\$A'000
4.1 Exploration and evaluation	192
4.2 Development	-
<b>Total</b>	<b>192</b>

**Reconciliation of cash**

	Current quarter \$A'000	Previous quarter \$A'000
Reconciliation of cash at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts is as follows.		
5.1 Cash on hand and at bank	97	50
5.2 Deposits at call	2,490	3,023
5.3 Bank overdraft	-	-
5.4 Other (provide details) - 30 and 60 day term deposits	-	-
<b>Total: cash at end of quarter (item 1.22)</b>	<b>2,587</b>	<b>3,073</b>

**Changes in interests in mining tenements**

Tenement reference	Nature of interest (note 2)	Interest at beginning of quarter	Interest at end of quarter
6.1 Interests in mining tenements relinquished, reduced or lapsed			
6.2 Interests in mining tenements acquired or increased			

## Issued and quoted securities at end of current quarter

	Total number	Number quoted	Issue price per security (cents)	Amount paid up per security (cents)
7.1 <b>Preference securities</b> <i>(description)</i>				
7.2 Changes during quarter (a) Increases through issues (b) Decreases through returns of capital, buy-backs, redemptions				
7.3 <b>Ordinary securities</b>	49,875,001	49,875,001	Fully Paid	Fully Paid
7.4 Changes during quarter (a) Increases through issues (b) Decreases through returns of capital, buy-backs				
7.5 <b>Convertible debt securities</b> <i>(description)</i>				
7.6 Changes during quarter (a) Increases through issues (b) Decreases through securities matured, converted				
7.7 <b>Options</b> <i>(description and conversion factor)</i>			<u>Excise Price</u>	<u>Expiry Date</u>
	5,000,000		20 cents each	24/03/2009
	2,600,000		20 cents each	4/04/2009
	2,000,000		20 cents each	26/07/2009
	650,000		20 cents each	27/07/2009
	40,000		32 cents each	23/09/2009
	50,000		32 cents each	15/12/2009
	30,000		40 cents each	31/12/2010
	200,000		32 cents each	21/05/2011
	200,000		37 cents each	21/05/2011
	30,000		32 cents each	29/05/2011
	200,000		53 cents each	1/01/2012
	40,000		91 cents each	4/03/2012
	20,000		91 cents each	21/03/2012
	750,000		32 cents each	30/04/2012
	750,000		37 cents each	30/04/2013
7.8 Issued during quarter	200,000	200,000	53 cents each	1/01/2012
	40,000	40,000	91 cents each	4/03/2012
	20,000	20,000	91 cents each	21/03/2012

7.9	Exercised during quarter				
7.10	Cancelled during quarter				
7.11	<b>Debentures</b> <i>(totals only)</i>				
7.12	<b>Unsecured notes</b> <i>(totals only)</i>				

### Compliance statement

- 1.0 This statement has been prepared under accounting policies which comply with accounting standards as defined in the Corporations Act or other standards acceptable to ASX (see note 4).
- 2.0 This statement does give a true and fair view of the matters disclosed.



Sign here: ..... Date: 27/04/2007  
Company Secretary

Print name: DONALD STEPHENS  
.....

### Notes

- 1.0 The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity wanting to disclose additional information is encouraged to do so, in a note or notes attached to this report.
- 2.0 The "Nature of interest" (items 6.1 and 6.2) includes options in respect of interests in mining tenements acquired, exercised or lapsed during the reporting period. If the entity is involved in a joint venture agreement and there are conditions precedent which will change its percentage interest in a mining tenement, it should disclose the change of percentage interest and conditions precedent in the list required for items 6.1 and 6.2.
- 3.0 **Issued and quoted securities** The issue price and amount paid up is not required in items 7.1 and 7.3 for fully paid securities.
- 4.0 The definitions in, and provisions of, *AASB 1022: Accounting for Extractive Industries* and *AASB 1026: Statement of Cash Flows* apply to this report.
- 5.0 **Accounting Standards** ASX will accept, for example, the use of International Accounting Standards for foreign entities. If the standards used do not address a topic, the Australian standard on that topic (if any) must be complied with.