

# ASX Release

**27 November  
2007**

ASX Code: PTR

ABN 17 106 806 884

105 Greenhill Road  
Unley 5061  
South Australia

Tel: +61 8 8274 5000  
Fax: +61 8 8272 8141

W: [www.petratherm.com.au](http://www.petratherm.com.au)  
E: [admin@petratherm.com.au](mailto:admin@petratherm.com.au)



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

## **PETRATHERM SECURES GEOTHERMAL EXPLORATION LICENSE IN THE MADRID BASIN**

Petratherm is pleased to announce that it has been awarded an extensive Geothermal Exploration License (GEL), covering an area of 330 square kilometres, located approximately 40 kilometres NNE of Madrid (refer Attachment for background and technical detail).

The awarding of the GEL provides the Company with a major opportunity to quickly commercialize the Madrid Project, because;

- There is proven geothermal potential from information available from five deep wells ( three wells are around 3.5 kms deep) that demonstrate the presence of high temperature water in large aquifers suitable for geothermal energy exploitation
- Two reservoirs are known to exist, shallow reservoir at 1.5 kms and deep reservoir at 3.5 kms – enabling early exploitation for direct heating uses.
- Existing information provides the opportunity to avoid major drilling exploration costs and attendant risks.

The immediate work plan is centred on using existing seismic data and most likely magneto-telluric and gravity surveys as a low cost way of determining the best drilling targets. That work is expected to be completed in early 2008.

The results of that work will be used together with economic modeling of both direct use heat options and electricity production to drive the longer term work plan and to capitalize on the opportunity for early revenue generation form direct use heat applications.

The Madrid project is consistent with 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.

## **ATTACHMENT - MADRID PROJECT– Background and technical information**

### **Madrid GEL secures a high prospect geothermal energy project**

The Company has been granted an extensive geothermal exploration license (GEL) in the Madrid Basin, covering an area of approximately 330 square kilometres and located approximately 40 kilometres north/north-east of Madrid.

The GEL application was lodged in February 2007 and following extensive consultation with key stakeholders the GEL was recently awarded to Petratherm.

The Madrid Basin location was identified as a high prospect target because it covered an area that included, deeply buried high-heat producing granites, evidence of large hot aquifers and close proximity to infrastructure and to major markets (for both electricity and hot water).

### **Madrid Project offers both Geothermal Electricity and Direct Use Heat Opportunities**

The Madrid Project offers the opportunity for both an Engineered Geothermal System (EGS) to produce electricity from the heat from the deeply buried granites in the Madrid Basin and also the opportunity to supply hot water from known, large hot aquifers to meet the needs of commercial and industrial direct-use heat applications (Refer Figure 1).

High heat producing granites outcrop in the nearby range and are expected to underpin the Madrid Basin which is estimated to have a thickness of around 4,000 metres, deepening northward toward the range (Refer Figures 2 and 3).

The Madrid GEL has two main geothermal reservoirs defined by five deep geothermal exploration wells (ranging between 1,500 metres and 3,500 metres) previously drilled (during the period 1980 to 1990) by the Geological Survey of Spain. The two reservoirs include a shallow reservoir, potentially suitable for district direct use heating, and a deep high temperature reservoir with potential for both, power and direct heating production (Refer Figure 1).

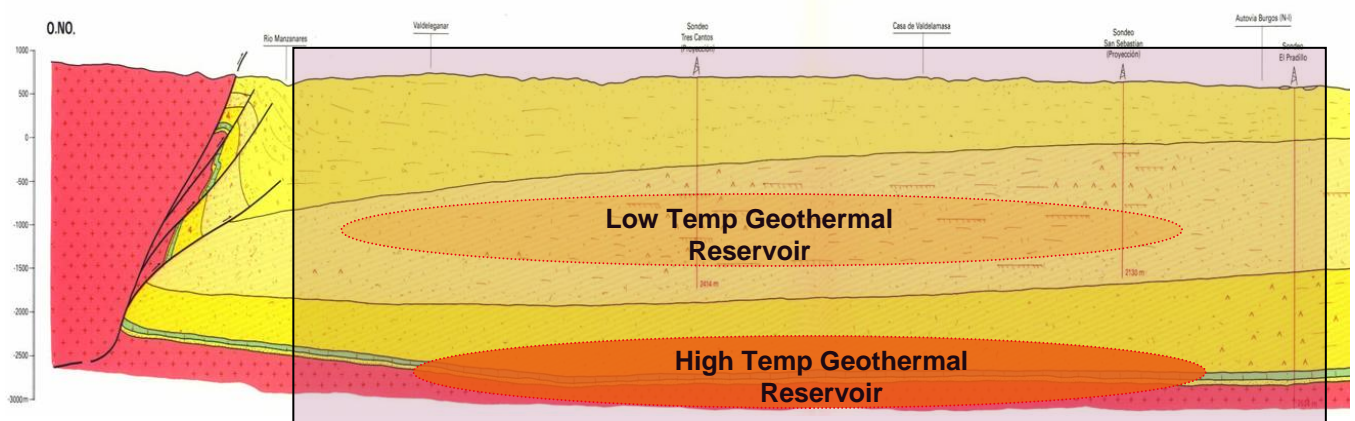


Figure 1 Geological cross-section of Madrid Basin showing the boundaries of GEL

The prospect of commercial EGS and/or Direct Use Heat projects is further enhanced by the following;

- A recorded bottom-hole temperature of 156°C at the existing 3.4 kilometre deep Pradillo Well (one of the wells on the GEL area)

- A known, hot aquifer of 85°C at a shallow depth of 1,500 metres that has very high flow rates (Refer Figure 4)
- Proximity to large electricity market and access to relatively low cost per MW connection
- High renewable energy prices – around double those available in Australia

### ***Strategically located close to large Market and existing Infrastructure***

The Madrid Project area is located adjacent to several, large capacity 220 kV and 400 kV power transmission lines and electricity substation that service Madrid – a city with a population of over 5.5 million. The capacity of the nearby infrastructure – one of the main power feeds to the city of Madrid - is in excess of 5,000 MW – equivalent to three times the average daily power consumption of the State of South Australia (Refer Figure 5).

### ***Three existing deep wells provide opportunity for low cost and early project development***

The GEL area includes within its boundaries three very deep exploration wells (previously drilled by the Geological Survey of Spain) at depths ranging between 3.1 kms. and 3.5 kms. Existing information from those wells together with other available geological information provide a quick and low cost opportunity to assess the economics of the geothermal projects –thus avoiding significant costs of exploratory drilling (Refer Figure 6).

Modelling of historical seismic data is underway in order to characterize potential target reservoirs at depth. This will likely be followed in early 2008, by magneto-telluric and gravity survey work to further constrain potential reservoir fluids. This work will locate target sites in preparation for test drilling. In order to assist in the scope and nature of subsequent drill testing the Company is developing economic models for both direct heat use options and electricity production in the Madrid Basin area.



Figure 2 Petratherm's Madrid GEL area – looking north toward the Ranges

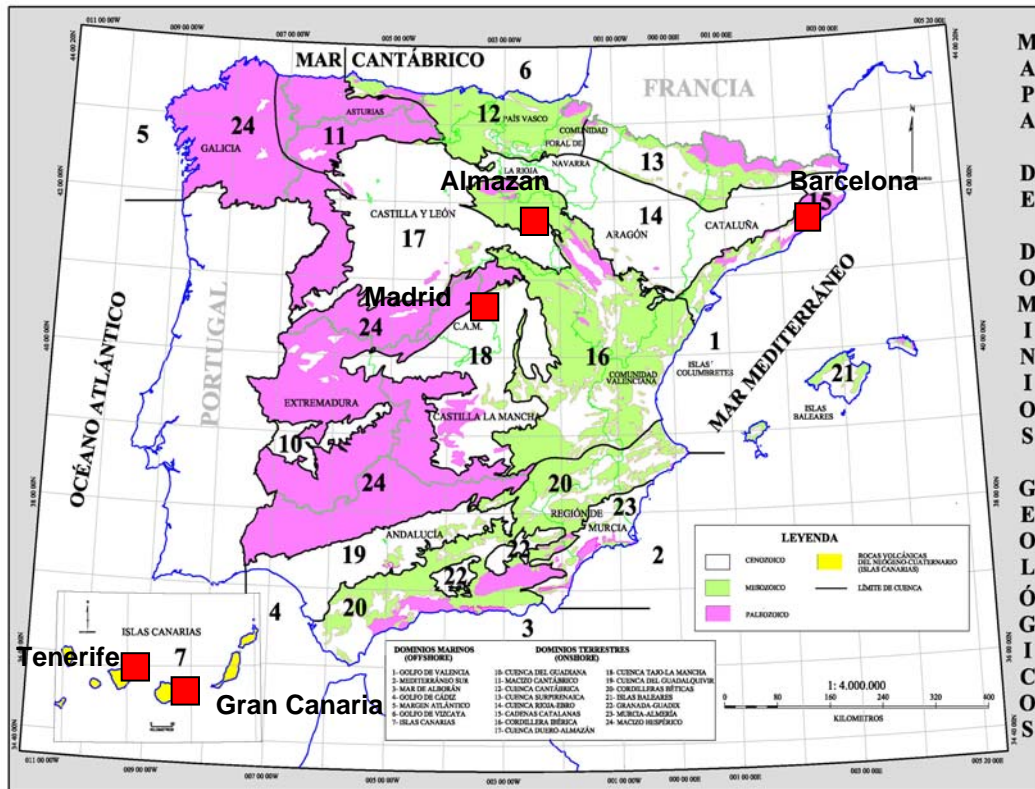


Figure 3 Petratherm's Five Spanish Geothermal Energy Projects

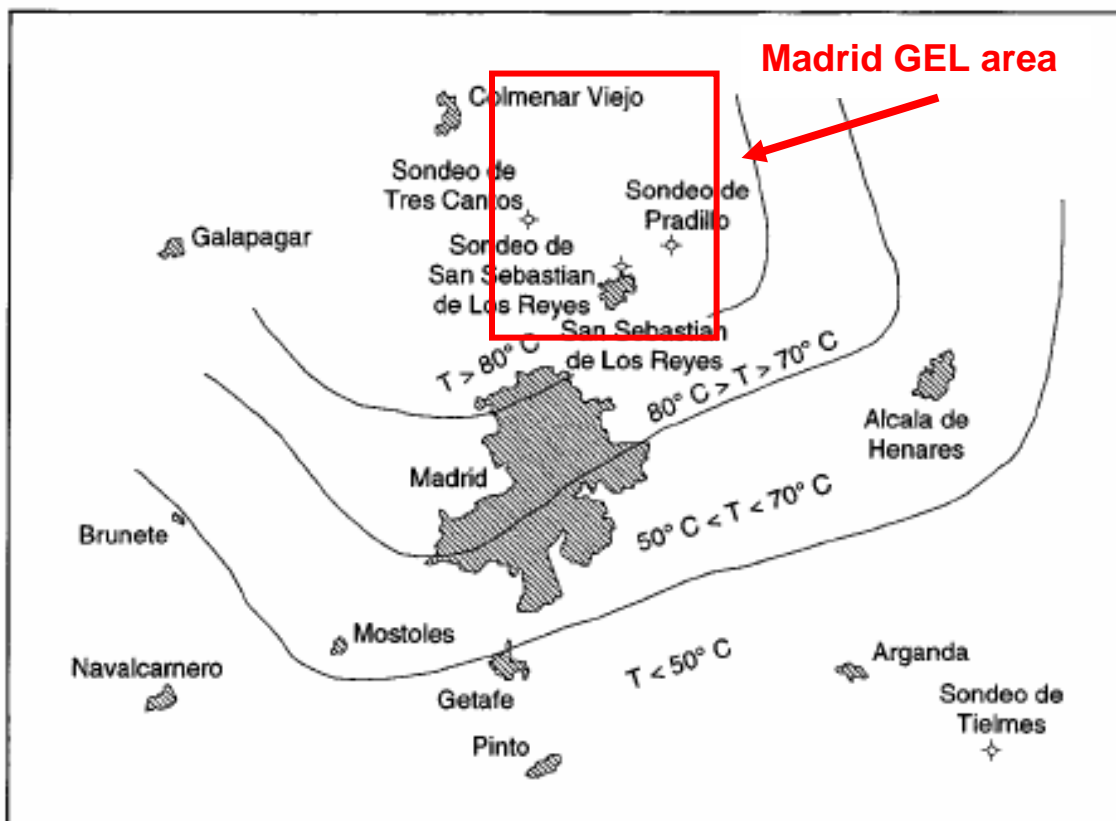


Figure 4 - Madrid GEL area - Temperature Contours at 100m (Cuchi et al., En.Geol. 2000)



Figure 5 Madrid's main power transmission grid with GEL area shown in green.



Figure 6 – Existing cased deep well (foreground) and high voltage transmission lines (background) on the Madrid GEL area – L/R - Jonathan Teubner (BD Manager), Raul Hidalgo (Manager Spain) and Terry Kallis (MD)

## **Two Conventional and Three EGS Projects – with more planned in Spain**

The Company has now secured two conventional geothermal projects in the Canary Islands – Tenerife and Gran Canaria - and three EGS projects areas on mainland Spain - Madrid, Barcelona (GELs pending approval) and Almazan (Refer Figure 3).

The Company's entry into the Spanish energy market 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 Company plans to secure around seven or eight geothermal energy projects across Spain covering both EGS and conventional geothermal technologies and is targeting both direct use hot water and electricity as the two key products for sale to local markets.

## **Spanish Project portfolio attracts interest from European energy industry**

The portfolio of opportunities is being built with a small initial financial exposure, utilizing the Company's intellectual property (IP) developed in Australia, plus its energy industry contacts in Europe. The opportunities secured to date have attracted inquiry and interest from a number of European energy industry participants. Once the Spanish geothermal portfolio is completely established, the company will seek to further leverage its IP in Europe via a number of options to spread risk and financial exposure in the project development stage, including consideration of expanded co-operative arrangements with industry participants.

## **Madrid Regional Government shows strong support for Geothermal Energy**

The Regional Government of Madrid has shown strong support for the potential for geothermal energy to contribute toward meeting its power and energy needs. The Madrid Government recently sponsored a Geothermal Energy Seminar that was attended by 120 individuals for a variety of Companies and Institutions. Petratherm's Spanish Manager, Raul Hidalgo provided a presentation outlining Petratherm's Spanish and Australian Projects. (Refer Seminar Brochure below)

**Organiza**  
Dirección General de Industria, Energía y Minas  
Comunidad de Madrid

**Colaboran**  
www.enercom.com  
APQA  
petratherr  
Energy Management Agency

**INFORMACIÓN e INSCRIPCIONES**  
Dirección General de Industria, Energía y Minas  
Tel: 91 580 21 78  
Fax: 91 420 64 92  
ddgindustria@madrid.org  
dgtecnico@madrid.org

**LUGAR y FECHA**  
Salón de Actos de Promomadrid  
C/ Suero de Quiñones, 34  
Madrid  
**7 noviembre 2007**

Madrid Ahorra con Energía

**Jornada sobre ENERGÍA GEOTÉRMICA**  
7 noviembre 2007

**EM**  
La Suma de Todos  
Comunidad de Madrid  
www.madrid.org

## ***Petratherm España (Spain) SL***

Petratherm España SL, formed late last year in Spain, holds title to the Spanish project GELs. Petratherm España is owned 93% by Petratherm Limited and 7% by Prehenita SL – a Spanish geological consultancy that maintains an extensive database and knowledge of Spain's geology covering both the energy and minerals sectors.

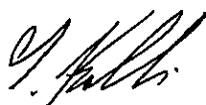
Petratherm España's office will open shortly in the central location of Madrid. In addition, Petratherm España has established close working relationships with the geology department of the University of Salamanca. Raul Hildago, a geologist with 20 years' experience who has been working closely with Petratherm for the past year, was appointed as the Manager of the subsidiary Spanish company in April 2007.

### ***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.

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 Euro €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).

Yours faithfully



**Terry Kallis**  
Managing Director

### **MEDIA CONTACT:**

Terry Kallis                      Petratherm Limited  
Kevin Skinner                    Field Public Relations

08 8274 5000  
08 8234 9555 / 0414 822 631