



## ASX ANNOUNCEMENT AND MEDIA RELEASE, 13 October 2009

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### HOT SEDIMENTARY AQUIFER GEOTHERMAL SYSTEMS PROVEN WORLDWIDE

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- **Hydrothermal geothermal systems including Hot Sedimentary Aquifer (HSA) systems proven and established worldwide**
- **HSA plants operating commercially in USA for over 20 years, and Europe for 9 years**
- **HSA geothermal plants operating between 120 kW<sub>e</sub> and 72.0 MW<sub>e</sub> capacity**
- **HSA systems operating successfully at depths from 1 km to 3.4 km and at fluid temperatures from 97°C to 160°C**

Greenearth Energy Limited (Greenearth Energy) (ASX:GER) is pleased to announce the results of comparative study completed by consultants Sinclair Knight Merz (SKM) in relation to the Company's flagship Geelong Geothermal Power Project (GGPP) and established Hydrothermal geothermal systems developed around the world.

Greenearth Energy's GGPP aims to develop a targeted Hot Sedimentary Aquifer (HSA) (one type of hydrothermal geothermal system) with a reservoir depth of 4,000m and a predicted surface fluid temperature of 170°C. Greenearth Energy has previously declared an inferred geothermal resource of 17,000PJ (ASX release of 17/8/2009) and proposes the development of a 140MW<sub>e</sub> geothermal power plant on this prospect.

Sinclair Knight Merz has undertaken a study of existing Hydrothermal Geothermal Power Plants which have developed either Hot Sedimentary Aquifer (HSA) or Basin and Range (B&R) geothermal systems worldwide. A summary of this comparative study have been included in Table 1, along with the modelled estimated values that may be achieved by the successful development of Greenearth Energy's GGPP.

The most publicized geothermal exploration in Australia to date has largely focussed on deeper Enhanced Geothermal Systems (EGS) or Hot Dry Rock (HDR) or Hot Fractured Rocks or Hot Rocks, where the technology required to create and produce circulating reservoirs is experimental and yet to be proven on a commercial scale.

Greenearth Energy is focussed on shallower HSA systems from which electricity has been commercially generated for over 20 years. Electricity is being generated from an increasing number of HSA hydrothermal resources worldwide utilizing binary Organic Rankine Cycle (ORC) and Kalina Cycle (KC) technology, including a small plant in Birdsville, Queensland which has been operational since 1992.

Although B&R systems differ to HSA systems in the geological mechanisms they exhibit, there are similarities in the generation technology and power outputs which make comparisons between their development meaningful. The hydrothermal B&R systems in Nevada, USA, result from high heat flows heating deeply circulating groundwater, which is utilised where it wells up along faults.

Hot Sedimentary Aquifers are found in areas such as Australia and Germany where within sedimentary basins, favourable temperatures are found at depths of 3 km plus with warm fluids generally trapped within aquifers at depth beneath overlying and insulating sedimentary cover.

Greenearth Energy's prospects in the Gippsland and Otway Basins are typical of Australian HSA settings. Both basins contain deep sedimentary sequences with elevated temperatures at depth due to a combination of the insulating effect of the overlying sediments with a possible heat contribution from underlying granitic rocks. In the Gippsland Basin, very thick coal measures provide an added insulating barrier above the aquifers at depth resulting in higher temperatures at shallower depths.

Mark Miller, Managing Director of Greenerth Energy, said "This study demonstrates the proven ability of Hot Sedimentary Aquifer geothermal systems for long term, sustainable generation of electricity, akin to that being targeted by Greenerth Energy at its Geelong Geothermal Power Project. Our target depth and temperature ranges compare with a number of systems in Europe and the United States where geothermal resources have been successfully exploited over a sustained period using well proven Organic Rankine Cycle (ORC) power plants.

"In the Geelong Geothermal Power Project we have a unique opportunity to harness a significant geothermal resource and by means of deploying proven ORC plant technology, deliver to the surrounding communities and industries alike, renewable base load power for decades from the one small footprint geothermal plant."

For more information, please contact Mark Miller on (03) 9620 7299 or 0407 035 800



**Mark Miller**  
Managing Director  
Greenerth Energy Limited

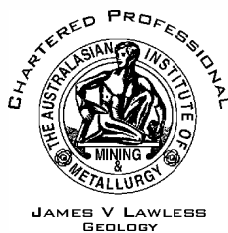
**Statement of competent person preparing this report**

This announcement has been prepared under the direction of James Vincent Lawless, an employee and Principal of Sinclair Knight Merz Limited (SKM) who has been assisted by other employees within SKM but who takes responsibility and is accountable for the report as Competent Person in terms of the Code. He is a Fellow of the Australasian Institute of Mining and Metallurgy and holds Chartered Geologist status with that body. SKM has been engaged as Consultant by Greenerth Energy but holds no financial interest in the project or in Greenerth Energy.

(Signed)



James Vincent Lawless



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**Figure 1: Worldwide Operational Hydrothermal Geothermal Systems**

Name	Location	Size (MW)	Date Commenced	Operator	Reservoir Type	Depth (metres)	Fluid Temp (°C)	Ambient Temp (°C)	Comments
Altheim	Austria	0.85	2000	Marktgemeinde Altheim	HSA	2,500	105	8	Electricity & District Heating
Birdsville	Australia	0.12	1992	Ergon Energy	HSA	1,028	98	31	Australia's only operational plant
Landau	Germany	3.80	2007	Geox GmbH	HSA	3,400	160	10	Electricity & District Heating
Neustadt-Glewe	Germany	0.23	2003	Erdwärme Neustadt-Glewe GmbH	HSA	2,250	97	10	Germany's First Geothermal Plant
Unterhaching*	Germany	3.36	2009	GeoT	B&R	3,300	125	10	Uses Kalina Cycle Plant – High flows ~152L/s
Brady Complex	Neveda, USA	35.20	1985	Ormat	B&R	2,300	215	13	
Chena Hot Springs	Alaska, USA	0.25	2006	CHSR/UTC	B&R	300	121	5	On the edge of a hot granite body
East Mesa	California, USA	72.00	1986	FPL Group	HSA	2,400	160	18	Funded by a \$50M loan from US Dept of Energy – paid back within first year of operation
Mammoth	California, USA	40.00	1991	Mammoth Pacific Geothermal	B&R	200	175	7	
Steamboat Complex	Neveda, USA	87.50	1991	Steamboat Geothermal LLC and Ormat	B&R	<1,000	220	4	Modular approach – 7 Individual Power Stations
Geelong Geothermal Power Project <sup>#</sup>	Geelong, Victoria, Australia	12.00	2010 (subject to funding availability)	Greenearth Energy Ltd	HSA	4,000	180	14	Initial Plant Size to be expanded over time to 140MW (subject to funding availability)

\*all plants indicated are Organic Rankine Cycle (ORC) except Unterhaching which utilises a Kalina Cycle (KC) plant

# Geelong Geothermal Power Project Modelled Estimated Values included for ease of Comparison – not yet operational

Source: Data was derived from Report, Low Temperature Geothermal Developments Worldwide – Overview of Low Temperature Geothermal Projects, SKM, September 2009