# Greenearth Energy Ltd.

Monash Business Breakfast Series

Sustainable Geothermal Energy in the Latrobe Valley.....
Bringing Victoria's Skills
Together to Meet the Challenge

22 March 2012

Energy Security in a Carbon Constrained World



### Important Notice



This presentation contains certain statements which may constitute "forward-looking statements". Such statements are only predictions and are subject to inherent risks and uncertainties which could cause actual values, results, performance or achievements to differ materially from those expressed, implied or projected in any forward-looking statements.

No representation or warranty, expressed or implied, is made by Greenearth Energy Limited ("Greenearth Energy" or the "Company") ABN 60 120 710 625 that the material contained in this presentation will be achieved or prove to be correct. Except for statutory liability which cannot be excluded, the Company disclaims responsibility for the accuracy or completeness of the material contained in this presentation and excludes all liability whatsoever (including in negligence) for any loss or damage which may be suffered by any person as a consequence of any information in this presentation or any error or omission.

The Company accepts no responsibility to update any inaccuracy, omission or change in information in this presentation.

### **Competent Persons**



#### **Geelong Geothermal Power Project (GGPP)**

The information in this presentation that relates to Geothermal Resource estimation for the GGPP is based upon a report compiled by James Vincent Lawless, an employee and Principal of Sinclair Knight Merz Limited (SKM). 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 consultants by Greenearth Energy but holds no financial interest in the project or in Greenearth Energy.

Mr Lawless qualifies as a Competent Person, as defined in the Australian Code for Reporting of Exploration Results, Geothermal Resources and Geothermal Reserves (2008 Edition). Mr Lawless consents to the public release of this presentation in the form and context in which it appears.

#### **Geelong (Anglesea-Waurn Ponds area)**

The information in this presentation that related to Geothermal Resources in the area of GEP 10 has been compiled by Dr Graeme Beardsmore, an employee of Hot Dry Rocks Pty Ltd. The resource estimate for the Geelong Geothermal Power Project, just north of Anglesea draws upon a series of reports for Greenearth Energy by Hot Dry Rocks Pty Ltd. Dr Beardsmore has over 15 years experience in the determination of crustal temperatures relevant to the style of geothermal play under consideration, is a member of the Australian Society of Exploration Geophysicists and abides by the Code of Ethics of that organisation.

Dr Beardsmore qualifies as a Competent Person, as defined in the Australian Code for Reporting of Exploration Results, Geothermal Resources and Geothermal Reserves (2008 Edition). Dr Beardsmore consents to the public release of this presentation in the form and context in which it appears.



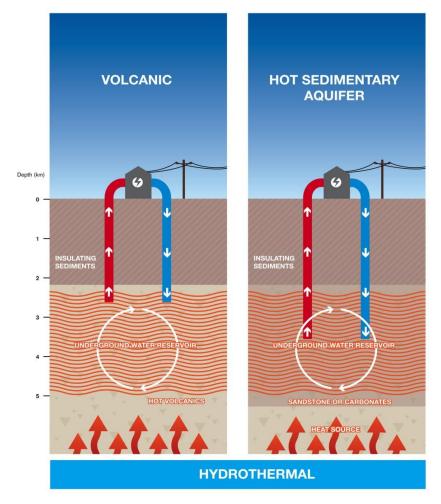
### Hot Sedimentary Aquifer (HSA) geothermal development ...... HSA geothermal systems are proven worldwide

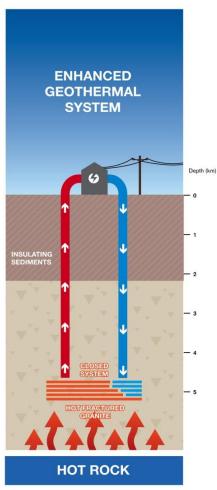


 HSA geothermal systems have been successfully developed internationally

(for details: GER ASX announcement 13 October 2009)

- HSA geothermal systems are naturally occurring, contain water in-situ and generally exist at shallower depths.
- The majority of Australian geothermal companies are developing EGS geothermal systems





### Our Domestic Permit Areas



Greenearth Energy was awarded three geothermal exploration permits (GEPs) in May 2007 by the Victorian Government:

- Geelong (GEP10) Victoria's 2nd Largest City
- Latrobe Valley (GEP12/13) Gen Hub of SEA
- Over 18,000 Sq km of prime permit area
- Crucial grid infrastructure and proximate heavy industry the most advantageous routes for commercialisation



### Onshore Gippsland & Latrobe Valley



#### **The Region**

The Latrobe Valley is south eastern Australia's brown coal fired generation hub with  $6,000 \mathrm{MW_e}$  of installed capacity and responsible for 22% of the nations greenhouse gas emissions.

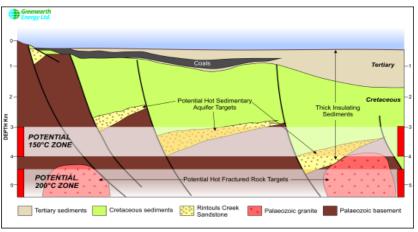
#### **Regional Geology and Geothermal Potential**

The Gippsland Basin Regional model suggests sandy units (HSA's) at the base of a sedimentary pile in the depth temperature window of 3-4 km and 150-180° C which have potential for Geothermal Energy.

#### **Progress and Future Plans**

LKO drilling in 2004 encountered 90° C water at 2,000m Temperature and heat flow mapping show high heat flows GER establishes inferred geothermal resource in late 2008 Further modeling predicts 150° C at 2,900m beneath Loy Yang LTV MT Survey completed in late 2010 leads to further work to identify HAS geothermal targets proximate to generators

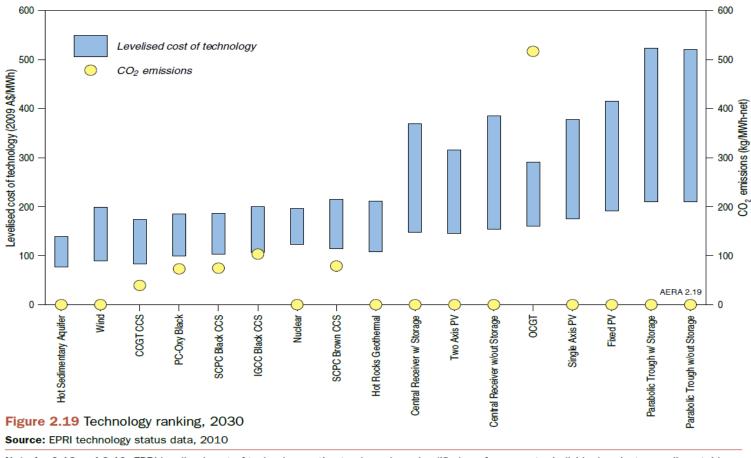




# Australian Energy Resource Assessment

GeoScience Australia (March 2010)





**Note for 2.18 and 2.19:** EPRI levelised cost of technology estimates based on simplified pro-forma costs, individual projects may lie outside this. Levelised cost of technologies: includes weighted cost of capital (8.4% real before tax); excludes financial support mechanisms; excludes grid connection, transmission, and firming (standing reserve requirements); and includes a notional allowance of 7.5% for site-specific costs.

### The Challenge



Temperature is no longer the imperative

Deep Geothermal Drilling to date has yet to demonstrate adequate productivity...

Until resource productivity can be proven for power generation, the market will remain unwilling to engage

### **Key Barriers**



Equity Markets have determined geothermal development high risk

Global financial uncertainty compounds assessment

Coupled with Technical challenge on understanding resource

The risk of Australian geothermal drilling is **unacceptably high** 

Equity funds diverted elsewhere (gold, minerals, oil & gas)

#### Solution:

Successful resource productivity which will bring funding back into the sector

### Achieved by:

Collaboration & Collective Effort:

- Industry
- Academia
- Government

## What's Required



