

# ENGINE

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## Development of Geothermal in Australia

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# Development of Geothermal in Australia

## AGENDA

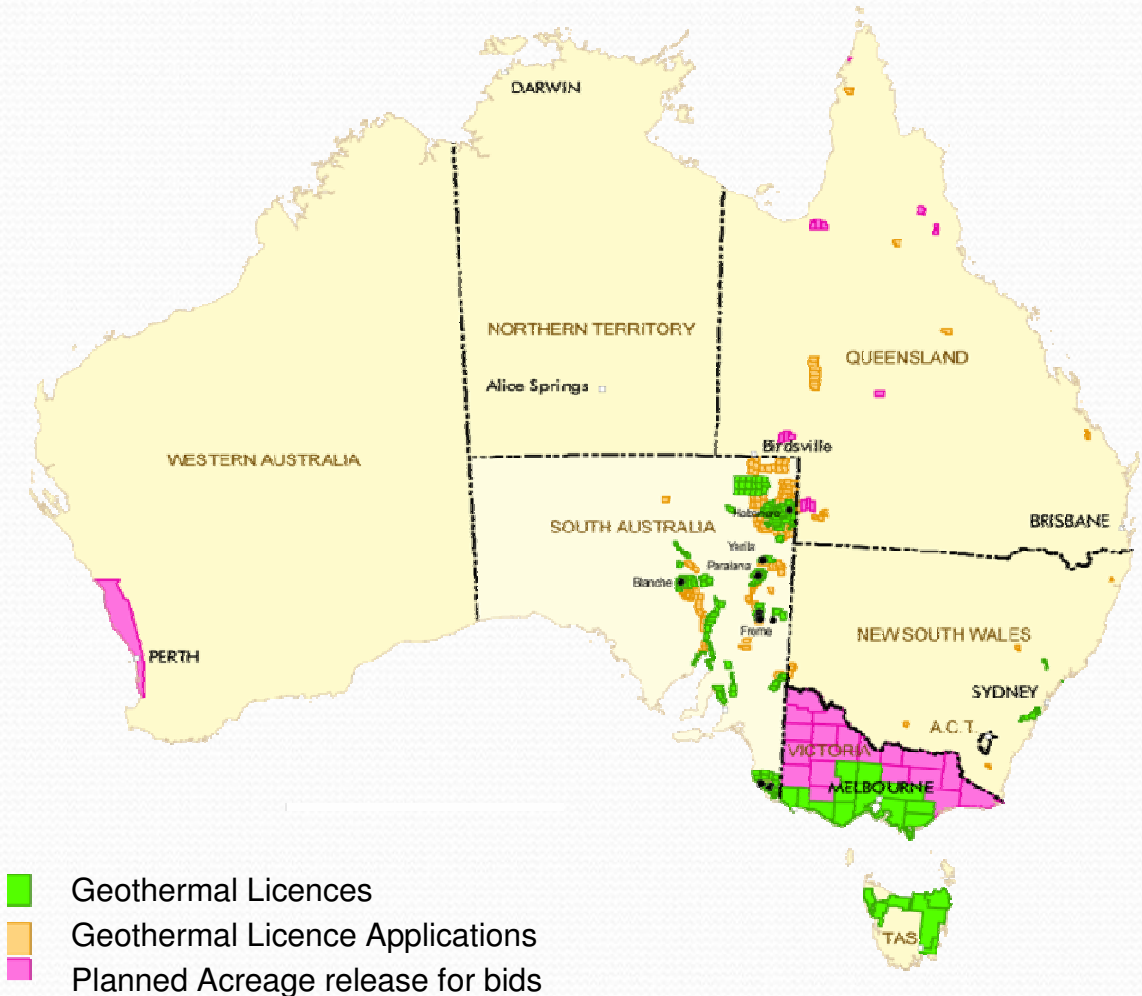
- Overview of activity
- Why the activity
- Government support
- Development Framework & Technology Roadmap
- Aussie activity in Europe
- Keeping up to date on Aussie activity

# Development of Geothermal in Australia

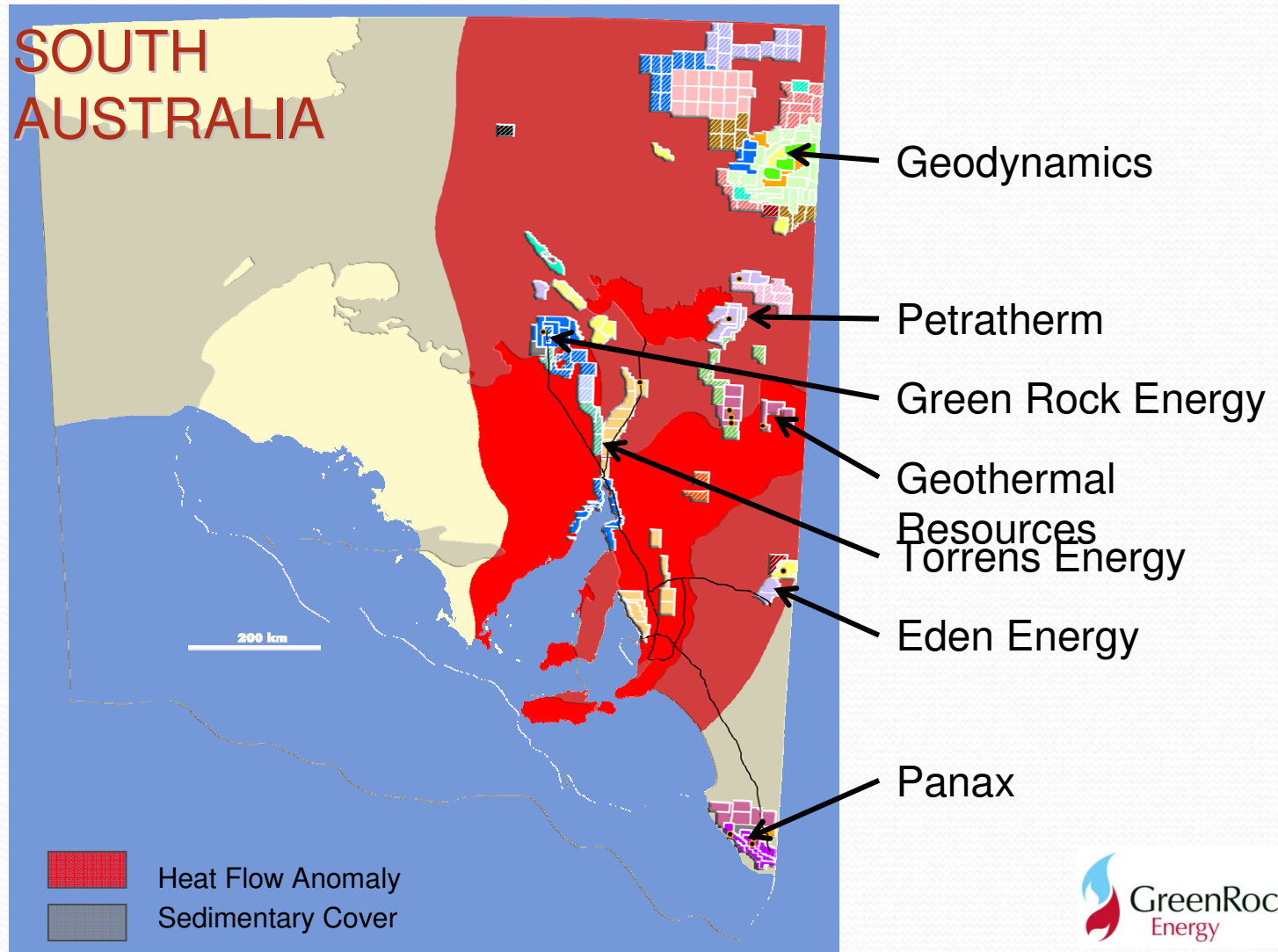
## OVERVIEW OF ACTIVITY

- 33 companies have applied for:
  - 277 geothermal exploration licences
  - covering 219,000 km<sup>2</sup>
- 10 listed on Australian Stock Exchange
- Minimum work program (to 2013) – A\$850m or €510 m
- Australian Govts have committed > A\$100 m or €60m
- Govt grants have paid for 25% of projects to date

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## OVERVIEW OF ACTIVITY

### Geodynamics

- Drilled Habanero 1 & 2
- Just completed Habanero 3 to 4.2km with flow tests to follow
- Next – Drill 2 additional wells approx 8-10km away

### Petratherm

- Drilled Paralana 1B DW1 to 1.8km – suggests 200°C at 3.6km
- Next – Drill production well to approx 4 km

### Green Rock Energy

- Drilled Blanche 1 to 1.9km – suggests 180 °C at 5.0km
- Next – Undertaking hydro fracture in Blanche 1

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## OVERVIEW OF ACTIVITY

### Geothermal Resources

- Drilled four shallow (500m) wells
- Next – Drill two additional shallow wells

### Torrens Energy

- Commenced nine shallow well program - heat flow  $> 100$  mW/m<sup>2</sup>

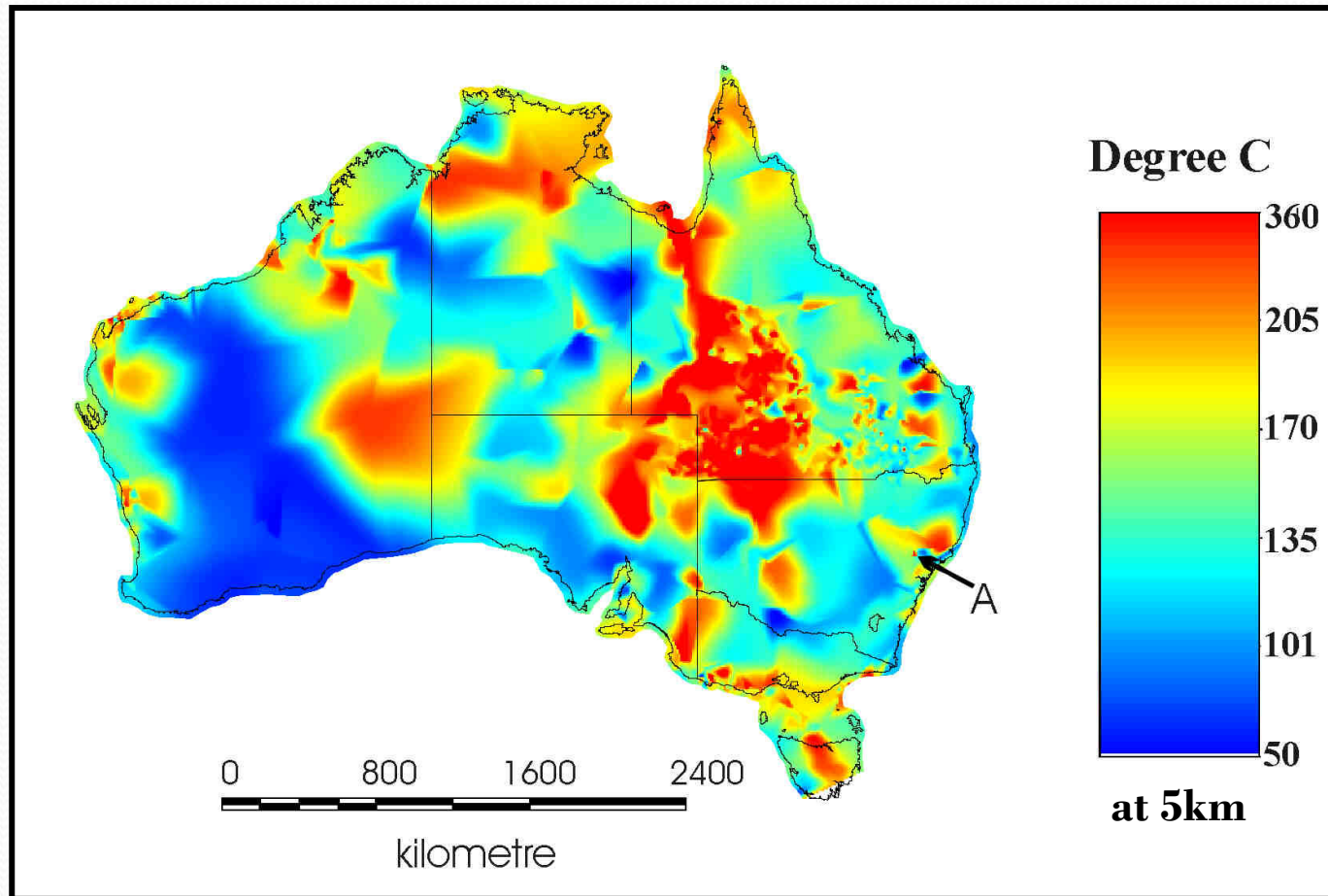
### Eden Energy

- Commenced shallow hole program

### Panax

- Completed three shallow wells
- Next – Drill deep test well in 2008

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*Temperature Resource Map of M. Somerville, D. Wyborn, P Chpora, S. Rahman, D. Estrella and T. Van der Meulen from Geotherm93 database.*



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## WHY THE ACTIVITY

### Below Ground Factors

- Extensive radiogenic heat - basement at modest depths. Heat Source:
  - Typical :  $2.65 \mu\text{Wm}^3$
  - Olympic Dam:  $9 \mu\text{Wm}^3$  ; Cooper Basin:  $11 \mu\text{Wm}^3$  ; Mt Painter:  $65 \mu\text{Wm}^3$
- Horizontal compression – Australia converging with Indonesia
- Sedimentary cover

### Above Ground Factors

- Land access / title to resource
- Government support
- Investors perception of risk:reward from green-field projects
- Australian Geothermal Energy Group / Association

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## GOVERNMENT SUPPORT

### Financial

#### State grants :

- Studies / modelling / shallow drilling / renewable energy development
  - A\$50k /\$150k or €30k / €90k (potential A\$10m or €6m)

#### Federal grants:

- Deep drilling / development
  - A\$5m or €3m (potential A\$100m or €60m)

### Regulatory

- State legislation
- Proposed federal emissions trading / targets
- Geothermal Industry Development Framework and Technology Roadmap

# Development of Geothermal in Australia

## GEOHERMAL INDUSTRY DEVELOPMENT FRAMEWORK AND TECHNOLOGY ROADMAP

- State and Federal Governments joint project
- Objectives:
  - Identify opportunities for, and impediments to, the industry's growth
  - Actions to develop a self-supporting, internationally competitive, industry
- Input from government, industry, universities
- Workshops covered:
  - R&D, training and skills development infrastructure
  - Legislative and regulatory framework
  - Private and Government sector financing structures
  - Technology and development issues
- Report due 1<sup>st</sup> Half 2008

[www.geothermalframework.net.au](http://www.geothermalframework.net.au)

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## AUSSIE ACTIVITY IN EUROPE


### Green Rock Energy Ltd

- Hungary
  - Joint Venture with MOL and Enx
  - Objective - development of hydrothermal systems for electricity generation

### Petratherm

- Spain / Canary Islands
  - Joint Company (Petratherm Espana) with Prehenita
  - Objective – development of hydrothermal (Canary Islands) and EGS systems

### Geodynamics

- Germany
  - Joint Company (Exorka International) with Geyser Green Energy 
  - Objective – develop a portfolio of assets – focusing on Molasses Basin

# Development of Geothermal in Australia

## AUSTRALIAN GEOTHERMAL ENERGY GROUP - Members

1. SA Government (Chair)
2. Australian Fed. Government
3. AGEA
4. AAA Energy
5. BurnVoor Corporate Finance
6. Callabonna Energy
7. Clean Energy Australasia
8. Curtin University
9. Deep Energy
10. Earth Heat
11. Earthinsite
12. E-Connect
13. Eden Energy (EDE)
14. Electranet
15. Energycore
16. Geodynamics (GDY)
17. Geogen
18. Geopower
19. Gradient Energy
20. Granite Power
21. Greenearth Energy (GER)
22. Greenrock Energy (GRK)
23. Geothermal Resources (GTH)
24. Hot Dry Rocks
25. Hot Rock Ltd (HRL)
26. Hot Rocks Tasmania
27. Hydro Aluminium
28. Inferus Resources
29. Intrepid Geophysical
30. KUTh Energy (KEN)
31. Monaro
32. Monash University
33. Near Surface Geothermal Energy
34. New World Energy
35. NSW Government
36. NT Government
37. Osiris Energy
38. Petrathem (PTR)
39. Pacific Hydro
40. Queensland Government
41. Red Hot Rocks
42. Panax (URO)
43. Sinclair, Knight, Merz
44. Snowy Mountain
45. Syncline Energy
46. Stuart Petroleum (STU)
47. Tasmanian Government
48. Teck Cominco
49. Torrens Energy (TEY)
50. Tri-Star Energy
51. University of Adelaide
52. University of Newcastle
53. University of NSW
54. University of Queensland
55. University of South Australia
56. Victorian Government
57. WA Government

# Development of Geothermal in Australia

KEEPING UP TO DATE ON AUSSIE ACTIVITY

MONTHLY GEOTHERMAL NEWSLETTER

Dr. Graeme Beardsmore  
Hot Dry Rocks Pty Ltd

Subscribe through:

[www.hotdryrocks.com](http://www.hotdryrocks.com)



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Acknowledgement: Barry Goldstein



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