

Geothermal Resources Ltd

ABN 45 115 281 144

ANNUAL REPORT

**GEOHERMAL EXPLORATION LICENCE
280**

FOR THE PERIOD

29 June 2008 to 28 June 2009

September 2009

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1. Introduction

GEL 280 was granted to Geothermal Resources Limited ('Geothermal Resources') on the 29th June 2007. The licence is granted in the Arrowie Basin, South Australia. This report details the work conducted during Licence Year 2 of the licence (29th June 2008 – 28th June 2009 inclusive), in accordance with Regulation 33 of the Petroleum Act 2000.

Geothermal Resources work program commitment for the first year was a review of all open file geophysical and drilling data to obtain accurate cover depth and bedrock lithology information. This was to be supplemented by 3D modelling to determine the location of possible buried granite bodies and measurement of geothermal gradients in accessible wells. The proposed work was all completed.

Early in Year 2 of the Licence Geothermal Resources applied for changes to the work program for GEL 280 (and GEL 222). These changes were granted on 9th December 2008. Further, the Licence for GEL 222 was suspended from 19th March 2009 to 27th June 2009. The above changes enabled Geothermal Resources to Group GELs 280 and 222 via common anniversaries and work programs.

Near to GELs 280 and 222 Geothermal Resources also holds existing GELs 181, 208, 209, and 210. An overall or 'grouped' exploration approach to the entire Frome GEL block has been taken.

2. Work Completed

2.1 Drilling

No drilling was carried out.

2.2 Temperature logging

During the preceding year (Year 1 of GEL 280) downhole temperature logging of Ben 157 was carried out.

2.3 Thermal resource modelling

Temperature and geothermal gradients from GEL 280 were combined with data from adjacent GELs. These data sets were then modeled using the 3-D Vulcan software program.

2.4 Data interpretation to determine optimum drill site locations

The existing data was reinterpreted in order to locate optimum drill sites. These sites have not been finalized in view of the fact that Geoscience Australia had a Seismic Survey carried out in this part of the Curnamona area during 2008 and as yet this data has not been released to the public. This Seismic data is now due for release at the end of September 2009. Geothermal Resources has a standing order for this data. This data will provide accurate information on depth to basement / granite allowing future wells to be sited above granite at the most appropriate depth (3 to 4 km).

3. Reporting Against Requirements of the Petroleum Act 2000

(a) Summary of regulated activities conducted under the licence during the year

No regulated activities were conducted under the licence during the year. This is compliant with the approved work program.

(b) Report for the year on compliance with the Act, these regulations, the licence and any relevant statement of environmental objectives

Geothermal Resources carried out its field activities in accordance with the Cooper Basin Drilling SEO, dated November 2003. All relevant prevention and remediation measures, as listed in the SEO, were followed. Geothermal Resources is not aware of any SEO non-compliance issues.

The annual report was submitted one month late. This occurred as the writer was heavily involved in preparations for the drilling of Geothermal Resources' first deep well to 1800m. This, combined with no effective field internet connection, made all other duties near impossible.

(c) Actions to rectify non-compliance with obligations imposed by the Act, these regulations or the licence, and to minimise the likelihood of the recurrence of any such non-compliance

The writer is now fully aware of the timing requirements for Annual Reports. Further, a satellite dish has been installed combined with an Activ8 system enabling broadband internet connection. Additionally, a spreadsheet database is now employed.

(d) A summary of any management system audits undertaken during the relevant licence year, including information on any failure or deficiency identified by the audit and any corrective action that has, or will be, taken

Management closely monitored all activities and did not detect any reportable deficiencies or incidents.

(e) List all reports and data relevant to the operation of the Act during the relevant licence year

Report	Due date	Date submitted	Statement of compliance
2007-08 Annual Report	28/06/2008	September 2008	Non-compliant

(f) Report of incidents reportable to the Minister under the Act and regulations

No incidents occurred and therefore none were reported.

(g) Report on any reasonably foreseeable threats that reasonably present, or may present, a hazard to facilities or activities under the licence, and a report on any corrective action that has, or will be, taken.

No threats identified.

(h) Operations proposed for the ensuing year

Geoscience Australia's 2008 Seismic Survey data and / or interpretation of the north south line in the Curnamona region will be purchased as soon as it becomes available (release date end September). This data will be assessed in combination with all other test results and modelling and a decision on whether to drill shallow holes (up to 500m deep) will be made.

4. Expenditure for Year 2

Commercial in Confidence.

TABLE 1: 'Old' Work Program for GEL 280

Year of Term of Licence	EXPLORATION PROGRAM	WORK COMPLETED
One	<ul style="list-style-type: none"> • Review of all open file geophysical and drilling data to obtain accurate cover depth and bedrock lithology information. • 3D modelling to determine subsurface geology and location of possible buried granite bodies. • Measure detailed geothermal gradients in any accessible water wells and oil wells. <p>Estimated budget \$30,000</p>	<ul style="list-style-type: none"> • Acquisition of existing gravity, aeromag, seismic and drilling data. Database compilation established. • 3D modelling, using Vulcan software. • Ben 157 temperature logged and geothermal gradient calculated.
Two	<ul style="list-style-type: none"> • Thermal resource modelling and rock fracture studies. • Interpretation of all data to determine optimum drill site locations. <p>Estimated budget \$40,000</p>	<ul style="list-style-type: none"> • Temperature and geothermal gradients combined with data from adjacent GELs – then modelled. • Existing data interpreted to locate optimum drill sites; however, waiting on Seismic data from GA before being definitive.
Three	<ul style="list-style-type: none"> • 3-4 Shallow drill holes to an aggregate depth of at least 2000 metres to measure detailed geothermal gradients and obtain information regarding cover sequence. • Re-evaluation of theoretical thermal resources and fracture / permeability models based on drilling results. <p>Estimated budget \$150,000</p>	
Four	<ul style="list-style-type: none"> • 1 deep pilot drillhole to intersect top of hot dry rock source. • Measure detailed temperature gradient. • Measure reservoir temperature. • Analysis of reservoir properties. • Analysis of reservoir fracturing. • Evaluation of thermal data and fracture / permeability models. <p>Estimated budget \$500,000</p>	
Five	<ul style="list-style-type: none"> • Drilling 1 production and 1 injection well to set up a circulation cell • Measurement key parameters to determine viability of project. • If positive, detailed planning for full scale exploitation <p>Estimated budget > \$1,000,000</p>	

TABLE 2: 'New' Work Program for GEL 280

Year of Term of Licence	Minimum Work Requirements	Work Completed
One	<ul style="list-style-type: none"> • Review of existing geophysical data; • 3D Modelling to determine subsurface geology and location of possible granite bodies; and • Measure detailed geothermal gradients in any accessible water wells and oil wells. 	
Two	<ul style="list-style-type: none"> • Thermal resource modelling and rock fracture studies; and • Interpretation of all data to determine optimum drill site locations. 	<ul style="list-style-type: none"> • Temperature and geothermal gradients combined with data from adjacent GELs – then modelled. • Existing data interpreted to locate optimum drill sites; however, waiting on Seismic data from GA before being definitive.
Three	<ul style="list-style-type: none"> • Review of open file geophysical and drilling data to obtain depth of cover and bedrock lithology information; • 3D modelling to determine subsurface geology and location of possible buried granite bodies; • Temperature measurements in any accessible mineral drill holes; and • Completion of 1 shallow drill hole to a depth of 500m. <p><i>Year 3 work program to be conducted anywhere within the boundaries of GELs 222 and 280.</i></p>	
Four	<ul style="list-style-type: none"> • Assessment of test results and decision on whether to drill further shallow holes. <p><i>Year 4 work to be conducted anywhere within the boundaries of GELs 222 and 280.</i></p>	
Five	<ul style="list-style-type: none"> • Assessment of test results and decisions on whether to drill 1 deep pilot hole to 1800m depth; and • Temperature logging. <p><i>Year 5 work program to be conducted anywhere within the boundaries of GELs 222 and 280.</i></p>	

Figure 1. Location of GEL 280 (relative to GEL 222, and the surrendered GEL 279)

