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ASX code SAU

Tuesday 2nd June 2009

260,000 PJ Inferred Geothermal Resource on newly named Roxby Geothermal Project, South Australia

Highlights

- **260,000 PJ Inferred Geothermal Resource estimated on GEL 302**
- **GEL 302 represents 5% of the 10,000 km^2 Roxby Geothermal Project (RGP)**
- **RGP is strategically located to overlap 275Kv high voltage power lines linking Olympic Dam and Prominent Hill mines to SA's power hub at Port Augusta**
- **Southern Gold ready to apply for share of $50 million Geothermal Drilling Program**

Summary

Southern Gold Limited (ASX:SAU) has successfully established a large Geothermal Resource within GEL 302 in South Australia. GEL 302 forms part of the newly-named Roxby Geothermal Project, which comprises 4 granted GEL and 18 GEL applications and covers an area of 10,000km^2 over one of Australia's largest geothermal hotspots.

The estimated Inferred Geothermal Resource of 260,000PJ is summarised in the table below.

Reservoir Unit	Stored heat	Volume	Inferred Resource
	(PJ)	(km3)	(PJ)
Hutchison Group	125,722	450	130,000
Basement	129,823	408	130,000
TOTAL	**255,545**	**858**	**260,000**

The large Geothermal Resource confirms that the heat flows measured by Southern Gold on the Roxby Geothermal Project (previously named "Torrens") provides a strong basis to progress investigations towards the commercial development of an Engineered Geothermal System (EGS).

Southern Gold has one of the largest strategic geothermal land holdings in an area that hosts growing energy markets including the world-class Olympic Dam and Prominent Hill mines. The proposed Olympic Dam expansion is forecast to consume close to half of the State's power supply.

The Roxby Geothermal Project is also strategically located to straddle the existing 275Kv and 132Kv power lines that connect Olympic Dam and Prominent Hill mines to the national power grid at Port Augusta.

The potential economics of the Roxby Geothermal Project are built around the proximity of commercially viable insulated hot rocks to high voltage power distribution infrastructure and nearby market demand. The excellent infrastructure in the region combined with reliable energy supplies contributes to the sustained project development and production economics in the region.

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Roxby Geothermal Project: GEL 302 Resource Estimate

Geothermal Exploration Licence (GEL) 302 lies at the southern end of Lake Torrens, approximately 40 kilometres north of Port Augusta in South Australia within the Southern Gold Limited Roxby Geothermal Project (Figure 3).

Geothermal data from precision temperature logs and thermal conductivity data were collected from two deep drill holes, each drilled by Southern Gold to a total depth of approximately one kilometre. Also, recently acquired seismic data by Geoscience Australia has aided the interpretation of localised geological structures and major formation boundaries. In addition, historical mineral exploration activities in and around the Roxby Geothermal Project Area have produced gravity and magnetic data and other deep drillholes to reference.

Engineered Geothermal System (EGS) within sedimentary target reservoirs

The Roxby Geothermal Project aims to develop an underground heat exchanger within sedimentary rock above a heat source. That is, an Engineered Geothermal System (EGS) within sedimentary target reservoirs, from which SAU plans to produce geothermal fluids for the purpose of electrical power generation.

GEL 302 is located on the eastern margin of the Gawler Craton, unconformably overlain by the Adelaidean-Cambrian age flat-lying sedimentary rocks of the Stuart Shelf. A seismic interpretation of the local area at depth suggests the Adelaidean succession thickens towards the east, controlled by a major west-dipping extensional fault. A deeper rift succession is interpreted to represent the Palaeoproterozoic Hutchison Group – interbedded metasediments, basalts and volcanics and below this package, crystalline basement. At this stage of exploration, all stratigraphic layers within the target temperature window are regarded as potential reservoir units (Figure 1).

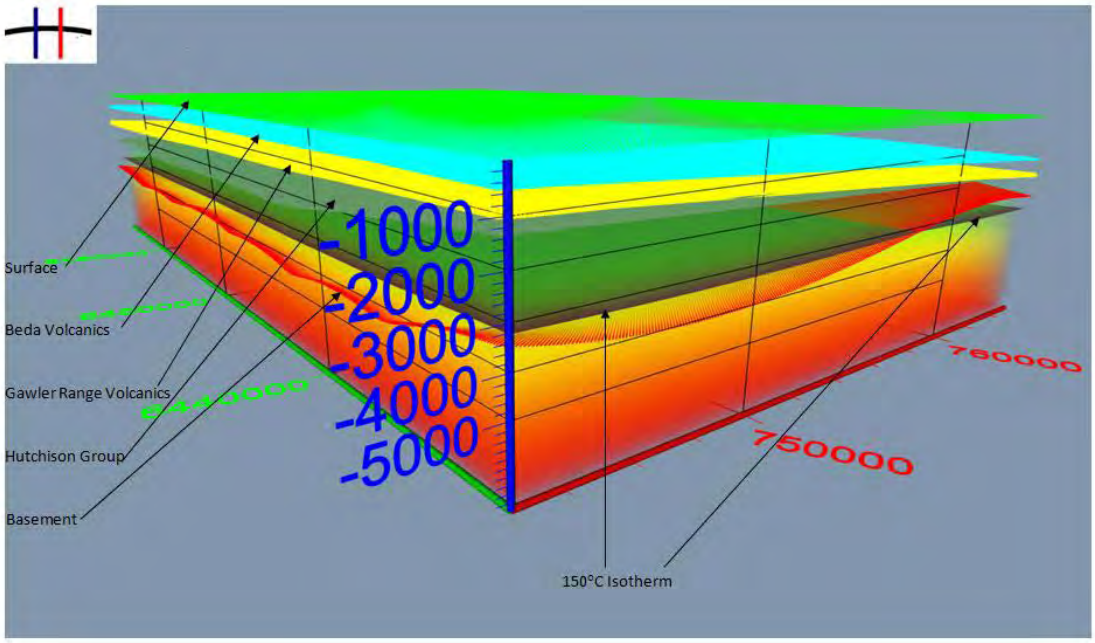

Figure 1. Predicted 150ºC isotherm within Hutchison Group and Basement units in 3D view looking NE. Isotherm is shown as relatively flat lying, brown layer.

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Reservoir volume, density and specific heat capacity

For the purpose of reservoir volume estimates the Hutchison Group and Basement are both included. The top of the reservoir is the 150°C cut-off isotherm (at approximately 3000 m depth) and the base of the reservoir is 5000 m. The estimated reservoir volume is 858 km^3 (Figure 1). Density was assumed to be 2820 kg/m^3 in the Hutchison Group, and 2770 kg/m^3 in the basement. Specific heat capacity was assumed to average 950 J/kgK in both units.

Stored heat assessment

Hot Dry Rocks Pty Ltd (HDRPL) used a 'stored heat' method to estimate the Geothermal Resource in the target reservoir. The method required the estimation of the volume, density, specific heat capacity and temperature of the target reservoir formations, a consideration of the realistic lowest economically extractable temperature ('cut-off temperature') and the amount of thermal energy that might be extracted from the resource fluids (related to the 'base temperature').

HDRPL built a numerical 'earth model' (Figure 1) to estimate the stored heat within the target reservoir, based on depth converted seismic data (as interpreted by HDRPL), interpretation of gravity data along five profile lines, and well intersections where available.

The earth model divided the stratigraphy of the Geothermal Play into five (5) units: Adelaidean Sediments, Beda Volcanics, Gawler Range Volcanics, Hutchison Group, Basement. Note that although the earth model extended beyond the boundaries of SAU licences, the Resource was estimated only within the GEL 302 tenement boundary.

Cut-off and base temperature

For the purposes of this stored heat assessment, HDRPL defines the cut-off temperature as "the minimum economic reservoir fluid temperature for commercial energy extraction", and the base temperature as "the temperature of the geothermal fluid once it has passed through a power conversion process, prior to re-injection". HDRPL assumed a cut-off temperature of 150°C and a base temperature of 70°C. These are appropriate for low-temperature organic rankine cycle (ORC) technology that SAU may propose to use for power generation. Should technological advances decrease the base temperature, the estimated Resource may increase over time.

Reservoir temperature

HDRPL used the 'inversion' principle to estimate reservoir temperature in three dimensions. Surface temperature (25.5°C) and heat flow was fed into a numerical algorithm that computed in three dimensions the distribution of temperature that best matched the observed surface conditions, while respecting the laws of conductive heat transfer and the thermal properties of the geological strata. Surface heat flow was constrained by one-dimensional models of two mineral exploration wells (Figure 2), for which borehole temperature data were considered reliable.

Well Name	Depth (m)	Easting (m)	Northing (m)	Heat flow (mW/m2)
LTDD002A	997	752839	6446014	94.1 ± 12.3
LTDD003	1118.7	755013	6439984	94.7 ± 9.2

Table 1. Heat flow figures used in the 3D temperature modelling

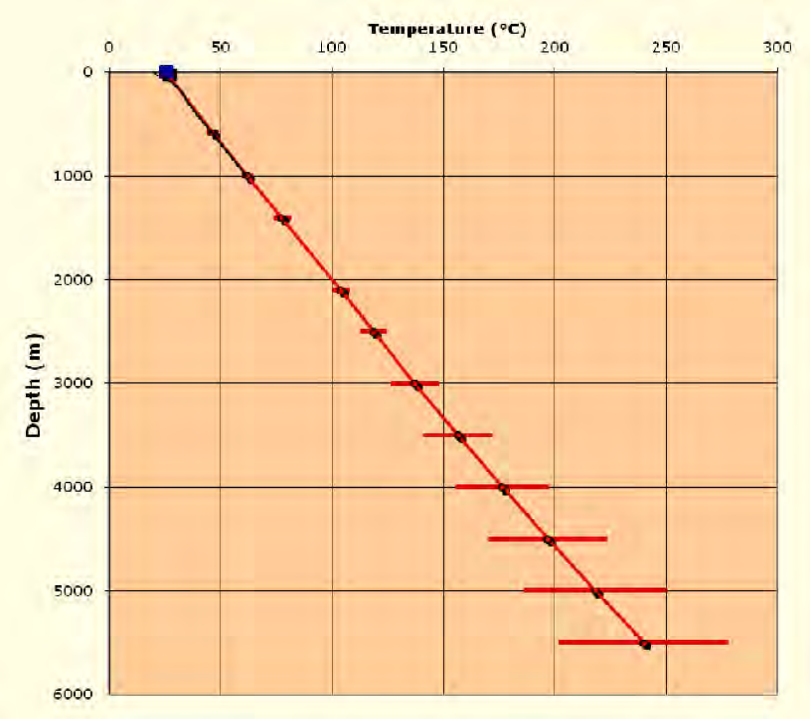

Figure 2 . Modelled temperatures at depth for drillhole LTDD002A

Classification of Resource

HDRPL judged that the Geothermal Resource in GEL 302 is best classified as Inferred Geothermal Resource. In judging how to classify the estimated Geothermal Resources, HDRPL took into account the following points:

- Units below the Beda Volcanics have not yet been penetrated in GEL 302 or the broader Roxby Geothermal Project Area.
- The lithological explanation of seismic reflections deeper than one kilometre is currently unproven by drilling.
- Gravity, 2D reflection seismic and well stratigraphic data provided the basis of an interpretation of the 3D geology of GEL 302 which defined the extent and thickness of the Hutchison Group and Basement units.

Total Resource

The total stored heat estimated within the target reservoir units is 255,500 PJ, occupying a volume of 858 km^3.

Reservoir Unit	Stored heat	Volume	Inferred Resource
	(PJ)	(km3)	(PJ)
Hutchison Group	125,722	450	130,000
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Table 2. Stored heat and estimated Geothermal Resource (rounded to 2 significant figures) within the Hutchison Group and Basement for GEL 302.

Future Development Objectives

With much greater certainty on the Roxby Geothermal Project fundamentals, Southern Gold will now pursue a number of development objectives to confirm the commercial potential of this renewable energy project.

Geothermal Drill Program funding

Southern Gold is now well positioned to commence preparation of its application for the anticipated 2nd round of the $50 million Federal Government Geothermal Drill Program.

Geothermal Systems Assessment

Southern Gold is developing a systematic plan to assess the geothermal potential of the Roxby Geothermal Project that covers 10,000 km^2 of hot-rocks between Olympic Dam and Port Augusta.

The planned Geothermal Systems Assessment (GSA) will focus future development on key geological and engineering factors in the context of the projects key transmission infrastructure and commercial advantages.

Downhole logging of existing deep drillholes wells.

Southern Gold has recently reached agreement with Monax Mining Ltd (ASX:MOX) to enable Southern Gold to measure downhole temperatures in the numerous deep drillholes recently drilled by Monax at its Punt Hill minerals project. The Punt Hill project is coincident with GEL 300 (Figure 3).

It is anticipated that this work will enable continued expansion of the Geothermal Resources on the Roxby Geothermal Project and also provide important heat flow targeting information at a relatively low cost.

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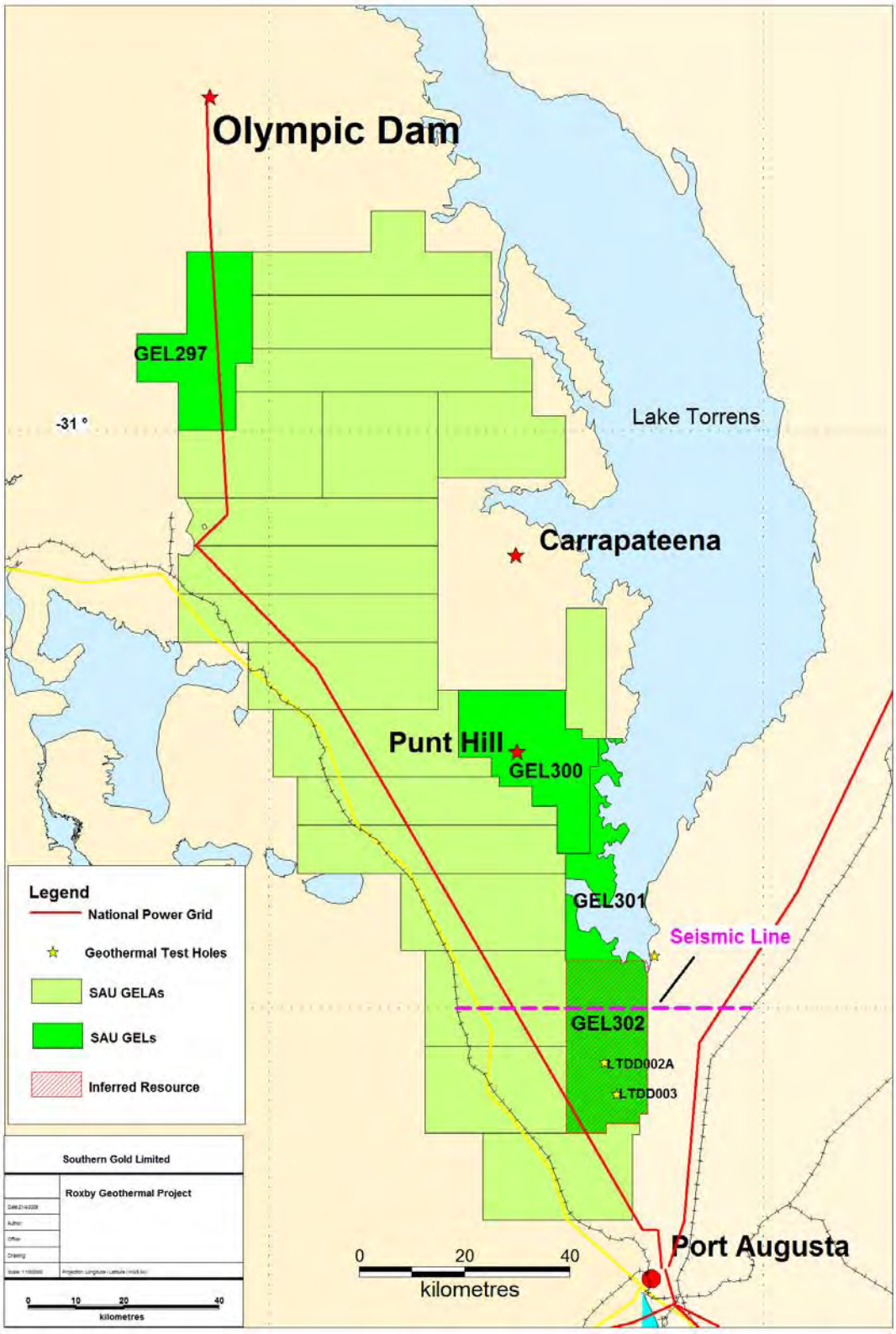

Figure 3.Location of Inferred Geothermal Resource of 260,000PJ on GEL 302 . The Roxby Geotherrnal Project coves 10,000km2 of hot rocks and high voltage power lines linking Olympic Dam and Prominent Hill to South Australia's power infrastructure hub at Port Augusta.

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Key Assumptions and Geological Constraints

The following key assumptions underpin this Geothermal Resource estimate:

• The proposed product to be generated from the Geothermal Resource is electricity most likely via an air-cooled Organic Rankine Cycle binary plant.

• The Geothermal Resource does not include any additional heat that might conduct into the reservoir volume during production.

• The Geothermal Resource assumes that no significant heat is transferred by advective or convective processes within the Geothermal Play. The probability of such processes is almost impossible to quantify prior to drilling, but represents a risk because such processes tend to suppress geothermal gradients and lower the stored heat resource.

• The heat is contained entirely within the matrix of the reservoir rock and there is little expectation for significant in situ water.

• This work is based on a numerical model of a section of the Earth's crust. A model necessarily simplifies the true complexity of the Earth and as such is inherently prone to error. The results of modelling stated within this report have been generated using the best available estimates of critical parameters, but future work may yield new information that modifies or falsifies some of these assumptions. All modelling results should be treated as provisional.

This report has been prepared under the direction of Dr Graeme Beardsmore, an employee of HDRPL. Dr Beardsmore was assisted by other employees within Hot Dry Rocks Pty Ltd but takes sole responsibility and is accountable for the report as a Competent Person as defined by the Australian Code for Reporting of Exploration Results, Geothermal Resources and Geothermal Reserves (2008 Edition). Dr Beardsmore is a member of the Australian Society of Exploration Geophysicists and abides by the Code of Ethics of that organization. Dr Beardsmore consents to the public release of this Statement in the form and context in which it appears.