

## **INDEX OF DOCUMENTS HELD ON THE PUBLIC REGISTER FOR GEOTHERMAL EXPLORATION LICENCE GEL 249**

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|----|------------------|---|
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| 2. | 1 November 2006  | Geothermal Exploration Licence GEL 249<br><br>Interests:      Geothermal Resources Limited      100%  |
| 3. | 1 November 2006  | Notation of receipt of security.  |
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| 8. | 20 November 2009 | Memorandum entering consolidation and revocation of licence on the public register.                   |

**Petroleum and Geothermal Energy Act 2000**  
**S.115**

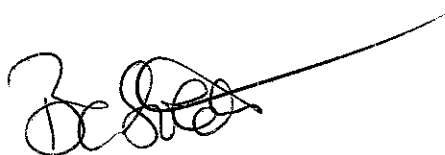
**MEMORANDUM**

**GEOHERMAL EXPLORATION LICENCES**  
**GELs 214, 215, 216, 217, 249 AND 250**

1. Consolidation of the adjacent licence areas of GELs 214, 215, 216, 217, 249 and 250, whereby the consolidated licence area is now designated as GEL 214 is hereby entered on the public register.

The total area of GEL 214 is now 2,956 square kilometres approximately.

2. Revocation of GELs 215, 216, 217, 249 and 250 is hereby entered on the public register.



**BARRY A. GOLDSTEIN**  
**Director Petroleum and Geothermal**  
**Minerals and Energy Resources**  
**Primary Industries and Resources SA**  
**Delegate of the Minister for Mineral Resources**  
**Development**

Date: 20 November 2009

Ref: 27/2/363 27/2/366  
27/2/364 27/2/408  
27/2/365 27/2/409

# **Petroleum and Geothermal Energy Act 2000**

## **Consolidation of licence areas Geothermal Exploration Licences GELs 214, 215, 216, 217, 249 and 250**

## **Revocation of licences Geothermal Exploration Licences GELs 215, 216, 217, 249 and 250**

I, BARRY ALAN GOLDSTEIN, Director Petroleum and Geothermal, Minerals and Energy Resources, Department of Primary Industries and Resources, in the State of South Australia, pursuant to section 82 of the *Petroleum and Geothermal Energy Act 2000* and all other enabling powers, for and on behalf of Paul Holloway, Minister for Mineral Resources Development (Minister), pursuant to delegated powers dated 1 October 2009, hereby;

1. consolidate the adjacent areas of Geothermal Exploration Licences GELs 214, 215, 216, 217, 249 and 250 held by –

**Geothermal Resources Limited ACN 115 281 144**

The consolidated licence area shall hereafter be designated as:

### **Geothermal Exploration Licence GEL 214**

#### **DESCRIPTION OF CONSOLIDATED AREA**

All that part of the State of South Australia, bounded as follows:-

Commencing at a point being the intersection of latitude 37°02'00"S GDA94 and longitude 140°10'00"E GDA94, thence east to longitude 140°28'00"E GDA94, south to latitude 37°07'00"S GDA94, east to longitude 140°40'00"E GDA94, south to latitude 37°10'00"S GDA94, east to longitude 140°54'00"E GDA94, south to latitude 37°23'00"S GDA94, west to longitude 140°40'00"E GDA94, north to latitude 37°22'00"S GDA94, west to longitude 140°12'00"E GDA94, north to latitude 37°21'00"S GDA94, west to longitude 140°02'00"E GDA94, south to latitude 37°26'00"S GDA94, west to longitude 139°57'00"E GDA94, north to latitude 37°23'00"S GDA94, west to longitude 139°54'00"E GDA94, north to latitude 37°13'00"S GDA94, west to longitude 139°46'00"E GDA94, north to latitude 37°10'00"S GDA94, east to longitude 139°47'00"E GDA94, north to latitude 37°04'00"S GDA94, east to longitude 140°10'00"E GDA94 and north to the point of commencement, but excluding Glen Roy Conservation Park, Penola Conservation Park, Guichen Bay Conservation Park, Little Dip Conservation Park, Lake Robe Game Reserve, Big Heath Conservation Park, Mary Seymour Conservation Park, Furner Conservation Park, Beachport Conservation Park and Bool Lagoon Game Reserve

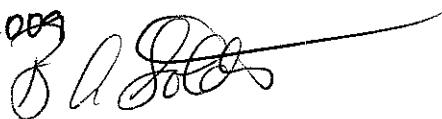
AREA: **2,956** square kilometres approximately.

2. consequently revoke Geothermal Exploration Licences GELs 215, 216, 217, 249 and 250

As a consequence of the consolidation, the work program forming 'condition 1' of the consolidated GEL 214 comprises:

Year of Term of Licence	Minimum Work Requirements
One	<ul style="list-style-type: none"><li>• Review of existing geophysical and drilling data to obtain accurate cover depth and bedrock lithology information; and</li><li>• 3D modelling to determine subsurface geology and location of possible granite bodies.</li></ul>
Two	<ul style="list-style-type: none"><li>• Thermal resource modelling and rock fracture studies; and</li><li>• Interpretation of all data to determine optimum drill site locations.</li></ul>
Three	<ul style="list-style-type: none"><li>• 5 shallow drill holes to an aggregate depth of at least 1500m (subject to ground conditions) to obtain accurate bottom of hole temperature measurements; and</li><li>• 3D modelling of variations in regional temperature gradients based on drilling results.</li></ul>
Four	<ul style="list-style-type: none"><li>• Assessment of year 3 shallow drilling results and decision on whether to drill further shallow holes or a deeper pilot hole to 1500m depth.</li></ul>
Five	<ul style="list-style-type: none"><li>• Review of pilot hole results (if drilled) and decision on drilling production wells.</li></ul>

Dated: 20 November 2009



**BARRY A. GOLDSTEIN**  
**Director Petroleum and Geothermal**  
**Minerals and Energy Resources**  
**Primary Industries and Resources SA**  
**Delegate of the Minister for Mineral Resources**  
**Development**

The following signature evidences the consent of the licensee to the consolidation of GELs 214, 215, 216, 217, 249 and 250 as set out in this document and made pursuant to Section 82 of the *Petroleum and Geothermal Energy Act 2000*.

Signed for and on behalf of **Geothermal Resources Limited** by its authorised representative:

Date: 9 / 11 / 2009

  
Authorised Representative

Dr Geoff STOLZ  
Name

Project Manager  
Position

**Petroleum Act 2000  
S.115**

**MEMORANDUM**

**GEOHERMAL EXPLORATION LICENCES  
GELs 214, 215, 216, 217, 249 and 250**

1. Variation of licence conditions is hereby entered on the public register.



**BARRY A. GOLDSTEIN  
Director Petroleum and Geothermal  
Minerals and Energy Resources  
Primary Industries and Resources SA  
Delegate of the Minister for Mineral Resources Development**

Date: 9 December 2008

Ref: 27/2/363  
27/2/364  
27/2/365  
27/2/366  
27/2/408  
27/2/409

# Petroleum Act 2000

## VARIATION OF GEOTHERMAL EXPLORATION LICENCES GELs 249 and 250

I, BARRY ALAN GOLDSTEIN, Director Petroleum and Geothermal, Minerals and Energy Resources, Department of Primary Industries and Resources in the State of South Australia, pursuant to section 25 of the *Petroleum Act 2000* and all other enabling powers, for and on behalf of Paul Holloway, Minister for Mineral Resources Development (Minister), pursuant to delegated powers dated 28 March 2002, Gazetted 11 April 2002, page 1573 hereby vary the conditions of Geothermal Exploration Licences GELs 249 and 250 held by -

**Geothermal Resources Limited**  
ACN 115 281 144

Condition 1 of the licence is omitted and the following substituted:

- " 1. During the term of the licence, the Licensee shall carry out or cause to be carried out, exploratory operations on the area comprised in the licence in accordance with such work programs as are approved by the Minister from time to time. Year one exploratory operations are guaranteed, and any subsequent licence year work program becomes guaranteed upon entry into any such licence year. These exploratory operations shall include but not necessarily be limited to:-

Year of Term of Licence	Minimum Work Requirements
One	<ul style="list-style-type: none"><li>• Review of existing geophysical and drilling data; and</li><li>• 3D modelling to determine subsurface geology and location of possible granite bodies.</li></ul> <p><i>Year 1 work program to be conducted anywhere within the boundaries of GELs 249 and 250.</i></p>
Two	<ul style="list-style-type: none"><li>• Thermal resource modelling and rock fracture studies; and</li><li>• Interpretation of all data to determine optimum drill site locations.</li></ul> <p><i>Year 2 work program to be conducted anywhere within the boundaries of GELs 249 and 250.</i></p>
Three	<ul style="list-style-type: none"><li>• 5 Shallow drill holes to an aggregate depth of at least 1500m (subject to ground conditions) to obtain accurate bottom of hole temperature measurements; and</li><li>• 3D modelling of variations in regional temperature gradients based on drilling results.</li></ul> <p><i>Year 3 work program to be conducted anywhere within the boundaries of GELs 214, 215, 216, 217, 249 and 250.</i></p>

Four	<ul style="list-style-type: none"> <li>Assessment of year 3 shallow drilling results and decision on whether to drill further shallow holes or a deeper pilot hole to 1500m depth.</li> </ul> <p><i>Year 4 work program to be conducted anywhere within the boundaries of GELs 214, 215, 216, 217, 249 and 250.</i></p>
Five	<ul style="list-style-type: none"> <li>Review of pilot hole results (if drilled) and decision on drilling production wells.</li> </ul> <p><i>Year 5 work program to be conducted anywhere within the boundaries of GELs 214, 215, 216, 217, 249 and 250</i></p>

”

Dated: 9 December 2008



**BARRY A. GOLDSTEIN**  
**Director Petroleum and Geothermal**  
**Minerals and Energy Resources**  
**Primary Industries and Resources SA**  
**Delegate of the Minister for Mineral Resources Development**



## PETROLEUM ACT 2000

*Grant of Geothermal Exploration Licences—GEL 249 and GEL 250*

NOTICE is hereby given that the undermentioned Geothermal Exploration Licences have been granted under the provisions of the Petroleum Act 2000, pursuant to delegated powers dated 28 March 2002, *Gazetted* 11 April 2002, page 1573.

No. of Licence	Licensee	Locality	Expiry
GEL 249	Geothermal Resources Limited	Otway Basin	31/10/2011
GEL 250	Geothermal Resources Limited	Otway Basin	31/10/2011

*Description of Area—GEL 249*

All that part of the State of South Australia, bounded as follows:

Commencing at a point being the intersection of latitude 37°12'00"S GDA94 and longitude 140°10'00"E GDA94, thence east to longitude 140°28'00"E GDA94, south to latitude 37°22'00"S GDA94, west to longitude 140°12'00"E GDA94, north to latitude 37°21'00"S GDA94, west to longitude 140°09'00"E GDA94, north to latitude 37°17'00"S GDA94, east to longitude 140°10'00"E GDA94 and north to the point of commencement but excluding Reedy Creek Conservation Park and Furner Conservation Park.

Area: 497 km<sup>2</sup> approximately.

*Description of Area—GEL 250*

All that part of the State of South Australia, bounded as follows:

Commencing at a point being the intersection of latitude 37°04'00"S GDA94 and longitude 140°07'00"E GDA94, thence east to longitude 140°10'00"E GDA94, south to latitude 37°17'00"S GDA94, west to longitude 140°09'00"E GDA94, south to latitude 37°21'00"S GDA94, west to longitude 140°02'00"E GDA94, south to latitude 37°26'00"S GDA94, west to longitude 139°57'00"E GDA94, north to latitude 37°23'00"S GDA94, west to longitude 139°54'00"E GDA94, north to latitude 37°13'00"S GDA94, east to longitude 140°07'00"E GDA94 and north to the point of commencement.

Area: 497 km<sup>2</sup> approximately.

Dated 1 November 2006.

B. A. GOLDSTEIN, Director Petroleum and Geothermal  
Minerals and Energy Resources  
Primary Industries and Resources SA  
Delegate of the Minister for Mineral Resources Development

**Petroleum Act 2000  
S.115**

**MEMORANDUM**

**GEOHERMAL EXPLORATION LICENCES  
GELs 181, 208, 209, 210, 214, 215, 216,  
217, 222, 249 AND 250**

1. Notation of receipt of security in the form of a Bank Guarantee dated 26 September 2006 is hereby entered on the public register.
2. Security is held to cover any single event occurring in any licence held and operated by Geothermal Resources Ltd in South Australia.
3. Bank guarantee dated 5 June 2006 that was held as security to cover geothermal exploration licences 181, 208, 209, 210, 214, 215, 216 and 217 is hereby discharged to Geothermal Resources Limited.



**BARRY A. GOLDSTEIN  
Director Petroleum and Geothermal  
Minerals and Energy Resources  
Primary Industries and Resources SA  
Delegate of the Minister for Mineral  
Resources Development**

Date: 1 November 2006

File: 27/2/306  
27/2/341  
27/2/342  
27/2/343  
27/2/363  
27/2/364  
27/2/365  
27/2/366  
27/2/372  
27/2/408  
27/2/409

**Petroleum Act 2000  
S.115**

**MEMORANDUM**

**GEOHERMAL EXPLORATION LICENCES  
GEL 249 AND GEL 250**

1. These Licences granted on 1 November 2006 are hereby entered on the public register.
2. Interests in the licence are:-

Geothermal Resources Limited	100%
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**BARRY A. GOLDSTEIN  
Director Petroleum and Geothermal  
Minerals and Energy Resources  
Primary Industries and Resources SA  
Delegate of the Minister for Mineral Resources  
Development**

Date: 1 November 2006

Ref: 27/2/408  
27/2/409

# **PETROLEUM ACT 2000**

## **GEOHERMAL EXPLORATION LICENCE**

### **GEL 249**

I, BARRY ALAN GOLDSTEIN, Director Petroleum and Geothermal, Minerals and Energy Resources, Primary Industries and Resources, in the State of South Australia pursuant to the provisions of the *Petroleum Act 2000* and all other enabling powers, for and on behalf of Paul Holloway, Minister for Mineral Resources Development (Minister), pursuant to delegation dated 28 March 2002, (refer Government Gazette dated 11 April 2002 page 1573), HEREBY GRANT to:

**Geothermal Resources Limited**  
ACN 115 281 144

(hereinafter referred to as the Licensee) an Exploration Licence in relation to a source of geothermal energy in respect of the area set out below, to have effect for a period of five years and to expire on 31 October 2011 but carrying the right of renewal under the *Petroleum Act 2000*.

### **DESCRIPTION OF AREA**

The land comprised in this licence is that part of the State of South Australia described in the Schedule hereto:

### **CONDITIONS**

1. During the term of the licence, the Licensee shall carry out or cause to be carried out, exploratory operations on the area comprised in the licence in accordance with such work programs as are approved by the Minister from time to time. Year one exploratory operations are guaranteed, and any subsequent licence year work program becomes guaranteed upon entry into any such licence year. These exploratory operations shall include but not necessarily be limited to:-

<b>Year of Term of Licence</b>	<b>Minimum Work Requirements</b>
<b>One</b>	<ul style="list-style-type: none"><li>• Review of existing geophysical and drilling data.</li><li>• 3D modelling to determine subsurface geology and location of possible granite bodies.</li><li>• Measure detailed geothermal gradients in any accessible water wells and oil wells.</li></ul> (To be conducted anywhere within the boundaries of GEL's 249 and 250)
<b>Two</b>	<ul style="list-style-type: none"><li>• Thermal resource modelling and rock fracture studies.</li><li>• Interpretation of all data to determine optimum drill site locations.</li></ul> (To be conducted anywhere within the boundaries of GEL's 249 and 250)
<b>Three</b>	<ul style="list-style-type: none"><li>• 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.</li><li>• Re-evaluation of theoretical thermal resources and fracture/permeability models based on drilling results.</li></ul>

<b>Four</b>	<ul style="list-style-type: none"> <li>• 1 deep pilot drillhole to intersect top of hot dry rock source.</li> <li>• Measure detailed temperature gradient.</li> <li>• Measure reservoir temperature.</li> <li>• Analysis of reservoir properties.</li> <li>• Analysis of reservoir fracturing.</li> <li>• Evaluation of thermal data and fracture/permeability models.</li> </ul> <p>(To be conducted anywhere within the boundaries of GEL's 249 and 250)</p>
<b>Five</b>	<ul style="list-style-type: none"> <li>• Drilling 1 production and 1 injection well to set up circulation cell.</li> <li>• Measurement of key parameters to determine viability of project.</li> <li>• If positive, detailed planning for full-scale exploitation.</li> </ul> <p>(To be conducted anywhere within the boundaries of GEL's 249 and 250)</p>

2. The Licensee must take all reasonable precautions to minimise the risks of its activities resulting in a significant loss of petroleum reserves or a significant reduction in the recovery of petroleum reserves.
3. The Licensee must:
  - (a) upon commencement of regulated activities under this licence, maintain in force during the term of this licence public liability insurance to cover regulated activities under this licence (including sudden and accidental pollution) in the name of the Licensee for a sum not less than twenty million dollars (\$20,000,000.00) or such greater sum as specified by the Minister and make such amendments to the terms and conditions of the insurance as the Minister may from time to time require;
  - (b) maintain in force during the drilling of any well or operation in any well, control of well insurance in the name of the Licensee for a sum not less than ten million dollars (\$10,000,000.00) or such greater sum as specified by the Minister and make such amendments to the terms and conditions of the insurance as the Minister may from time to time require;
  - (c) upon request by the Minister, provide the Minister with a cover note or certificate of currency of each insurance policy referred to in paragraphs (a) and (b).
4. The Minister in specifying the levels of insurance accepts no liability for the completeness of their listing, the adequacy of the sum insured, the limit of liability, the scoped coverage, the conditions or exclusions of these insurances in respect to how they may or may not respond to any loss, damage or liability.
5. The Licensee will ensure, when preparing an Environmental Impact Report under Part 12 of the *Petroleum Act 2000*, that the report also includes an assessment of the potential economic consequences for other licensees under the *Petroleum Act 2000* or *Mining Act 1971* and owners of land, arising out of proposed regulated activities to be carried out in the licence area.
6. The Licensee must keep confidential any measurements made in a well which would enable the estimation of petroleum reserves ("Confidential Information") and must not disclose the Confidential Information without first obtaining the written consent of the licensee of the overlapping compatible licence, unless:
  - (a) it is a disclosure required under the Act, this licence or any other law;
  - (b) it is a disclosure which is for the purposes of prosecuting or defending any legal proceedings; or

- (c) it is information which is or becomes public knowledge other than by breach of this licence condition.
7. A contract or agreement entered into by the licensee to transfer or accept liability for any well or facility constructed for the purpose of undertaking a regulated activity under the *Petroleum Act 1940* or *2000* cannot transfer, limit or exclude liability under the *Petroleum Act 2000* unless written consent of the Minister is obtained.
8. In the event that the Licensee during any year of the term of this licence (a year being the period of twelve calendar months ending on the anniversary of the date upon which the licence comes into force) fails to comply with the work program requirements of this licence, it is an express term of this licence that the Minister then may use discretion to either cancel this licence or authorise such variation to these requirements as the Minister thinks fit.
9. The Licensee shall during periods determined by the Minister, lodge and maintain with the Minister, for the satisfaction of obligations arising under the Act or this licence, a security of \$50,000 (fifty thousand dollars) or such greater sum as specified by the Minister from time to time.
- ("the Security").
- 9.1 The Security shall be lodged in the form of either;
- (a) cash; or
- (b) an unconditional, irrevocable bank guarantee or letter of credit in a form, and from a financial institution, approved by the Minister,
- 9.2 Interest will not be payable by the Minister to the Licensee on any cash Security.
- 9.3 All charges incurred by the Licensee in obtaining and maintaining the Security shall be met by the Licensee.
- 9.4 If upon expiry, this Licence is not renewed and the Minister is satisfied that there are no further obligations under this Licence or the Act, the Minister will return the Security to the Licensee.

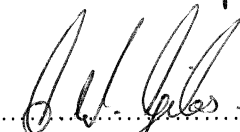
Date: 1 November 2006



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**BARRY A. GOLDSTEIN**  
**Director Petroleum and Geothermal**  
**Minerals and Energy Resources**  
**Primary Industries and Resources SA**  
**Delegate of the Minister for Mineral Resources Development**

**Signed by the said LICENSEE**

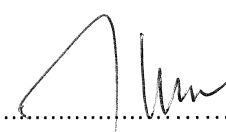
Date: 21 September 2006

  
.....  
Authorised Representative

Chris Giles  
.....  
Name

Technical Director  
.....  
Position

Geothermal Resources Ltd.  
.....  
Company

  
.....  
Witness

Jim Grosse  
.....  
Name

Company Secretary  
.....  
Position

Geothermal Resources Ltd.  
.....  
Company

# **GEOHERMAL EXPLORATION LICENCE**

**GEL 249**

## **THE SCHEDULE**

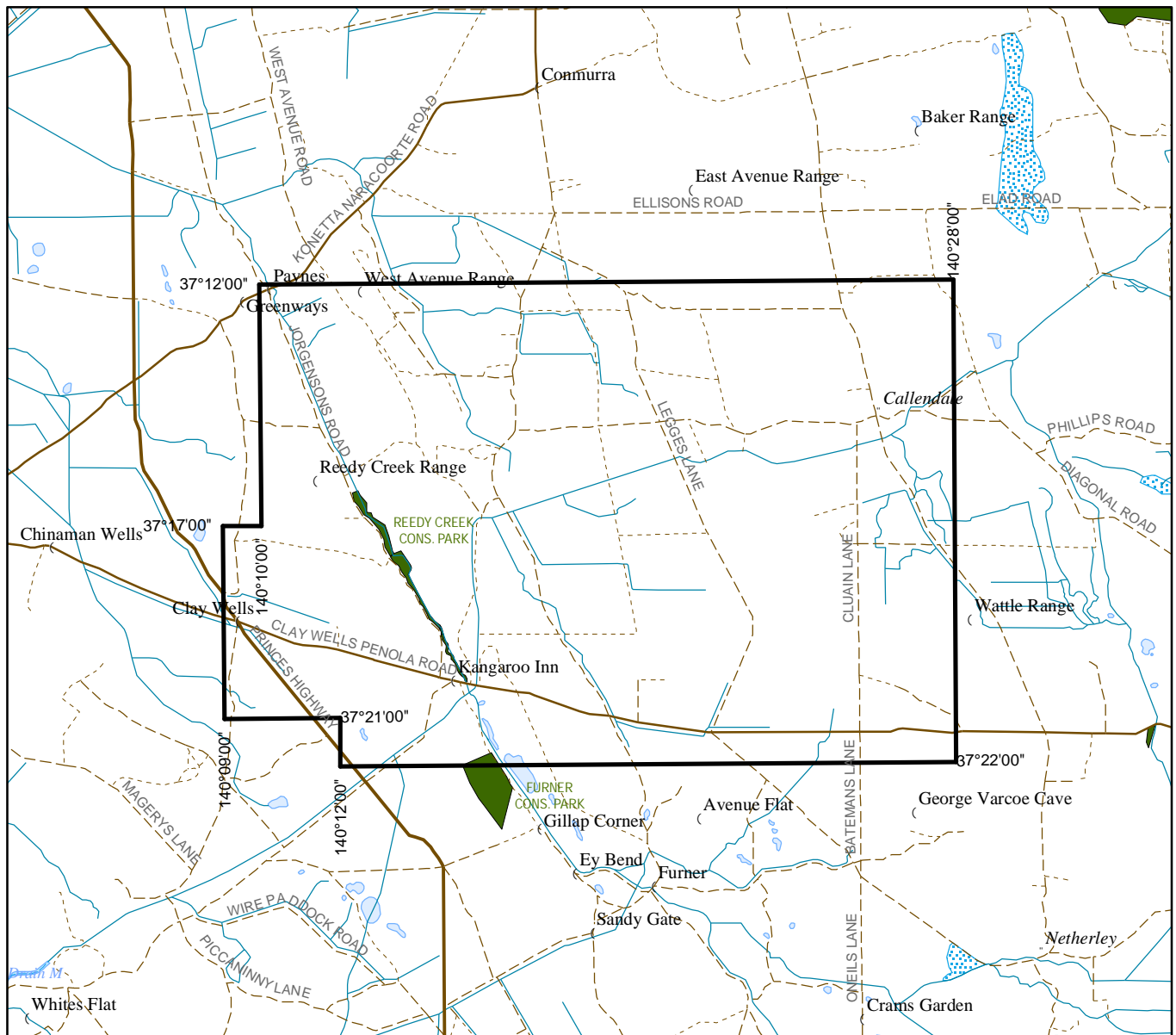
### **Description of Area**

All that part of the State of South Australia, bounded as follows:-

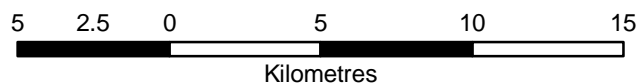
Commencing at a point being the intersection of latitude 37°12'00"S GDA94 and longitude 140°10'00"E GDA94, thence east to longitude 140°28'00"E GDA94, south to latitude 37°22'00"S GDA94, west to longitude 140°12'00"E GDA94, north to latitude 37°21'00"S GDA94, west to longitude 140°09'00"E GDA94, north to latitude 37°17'00"S GDA94, east to longitude 140°10'00"E GDA94, and north to the point of commencement but excluding Reedy Creek Conservation Park and Furner Conservation Park.

AREA: **497** square kilometres approximately.





SCALE 1:250 000



Note: There is no warranty that the boundary of this licence is correct in relation to other features of the map. The boundary is to be ascertained by reference to the Geocentric Datum of Australia (GDA94) and the schedule.

THE PLAN HEREINBEFORE REFERRED TO

**GEOHERMAL EXPLORATION LICENCE NO: 249**



Government of South Australia  
Primary Industries and Resources SA

**SR 27/2/408**

**AREA: 497 sq km (approx)**