

## INDEX OF DOCUMENTS HELD ON THE PUBLIC REGISTER FOR GEOTHERMAL EXPLORATION LICENCE GEL 222

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- |                      |   |
|----------------------|---|
| 1. 21 March 2006     | Memorandum entering GEL 222 on the public register.   |
| 2. 21 March 2006     | Geothermal Exploration Licence GEL 222<br>Interests: Geothermal Resources Limited 100%  |
| 3. 23 March 2006     | Gazettal of Grant of GEL 222  |
| 4. 1 November 2006   | Notation of receipt of security.  |
| 5. 9 December 2008   | Suspension of licence for the period from and including 19 March 2008 to 27 June 2008.<br><br>Expiry date of GEL 222 is now 28 June 2011. |
| 6. 9 December 2008   | Memorandum entering the suspension of licence on the public register.   |
| 7. 9 December 2008   | Variation of licence conditions.  |
| 8. 9 December 2008   | Memorandum entering the variation of licence conditions on the public register.   |
| 9. 18 December 2008  | Gazettal of suspension of licence.  |
| 10. 22 December 2009 | Memorandum entering notation of revision to security arrangements is entered on the public register.                                      |
| 11. 13 January 2010  | Surrender of Licence  |
| 12. 13 January 2010  | Memorandum entering surrender on public register  |
| 13. 21 January 2010  | Gazettal of surrender of licence  |

## PETROLEUM AND GEOTHERMAL ENERGY ACT 2000

*Surrender of Geothermal Exploration Licences—GEL 222 and GEL 280*

NOTICE is hereby given that I have accepted the surrender of the abovementioned Geothermal Exploration Licences under the provisions of the Petroleum and Geothermal Energy Act 2000, pursuant to delegated powers dated 1 October 2009:

No. of Licence	Licensee	Locality	Date of Surrender	Reference
222	Geothermal Resources Limited	Lake Frome	22 December 2009	27/2/372
280				27/2/445

*Description of Area**GEL 222*

All that part of the State of South Australia, bounded as follows: Commencing at a point being the intersection of latitude 31°20'00"S GDA94 and longitude 140°17'00"E GDA94, thence east to longitude 140°22'00"E GDA94, south to latitude 31°41'00"S GDA94, east to longitude 140°26'00"E GDA94, south to latitude 31°47'00"S GDA94, west to longitude 140°17'00"E GDA94 and north to point of commencement.

Area: 464 km<sup>2</sup> approximately.

*GEL 280*

All that part of the State of South Australia, bounded as follows: Commencing at a point being the intersection of latitude 31°21'00"S GDA94 and longitude 140°22'00"E GDA94, thence east to longitude 140°39'00"E GDA94, south to latitude 31°27'00"S GDA94, west to longitude 140°37'00"E GDA94, south to latitude 31°28'00"S GDA94, west to longitude 140°34'00"E GDA94, south to latitude 31°32'00"S GDA94, west to longitude 140°22'00"E GDA94 and north to the point of commencement.

Area: 483 km<sup>2</sup> approximately.

Dated 13 January 2010.

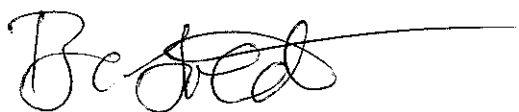
B. A. GOLDSTEIN,  
Director Petroleum and Geothermal  
Minerals and Energy Resources  
Primary Industries and Resources SA  
Delegate of the Minister for Mineral Resources Development

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

**MEMORANDUM**

**GEOHERMAL EXPLORATION LICENCES**  
**GELs 222 and 280**

1. Surrender of the abovementioned Geothermal Exploration Licences, with effect from 22 December 2009 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: 13 January 2010

Ref: 27/2/372  
27/2/445

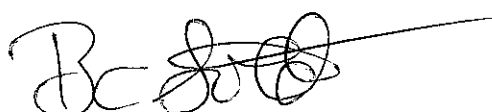
# ***Petroleum and Geothermal Energy Act 2000***

## **SURRENDER OF GEOTHERMAL EXPLORATION LICENCES GELs 222 and 280**

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 the provisions of section 89(2) 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 –

- a) hereby accept surrender of Geothermal Exploration Licences GELs 222 and 280 in the name of Geothermal Resources Limited, with effect from 22 December 2009.

Dated: 13 January 2010



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

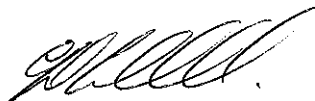
***Petroleum and Geothermal Energy Act 2000***  
**S.115**

**MEMORANDUM**

**GEOHERMAL EXPLORATION LICENCES**  
**GELs 181, 208, 214, 222 and 280**

**PETROLEUM EXPLORATION LICENCES**  
**PELs 186 and 187**

1. Notation of receipt of security in the form of a Bank Guarantee dated 25 November 2009 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. Notation of the discharge to Geothermal Resources Limited of Bank Guarantee dated 26 September 2006 and held as security in respect of geothermal exploration licences 181, 208, 214 and 222 is entered on the public register.



**C. D. COCKSHELL**  
**A/Director Petroleum and Geothermal**  
**Minerals and Energy Resources**  
**Primary Industries and Resources SA**  
**Delegate of the Minister for Mineral Resources**  
**Development**

Date: 22 December 2009

File: 27/2/306  
27/2/315  
27/2/316  
27/2/341  
27/2/363  
27/2/372  
27/2/445

## PETROLEUM ACT 2000

*Suspension of Geothermal Exploration Licence—GEL 222*

PURSUANT to section 90 of the Petroleum Act 2000, notice is hereby given that the abovementioned Geothermal Exploration Licence has been suspended under the provisions of the Petroleum Act 2000, for the period from and including 19 March 2008 to 27 June 2008, pursuant to delegated powers dated 28 March 2002, *Gazetted* 11 April 2002, page 1573.

The expiry date of Geothermal Exploration Licence GEL 222 is now determined to be 28 June 2011.

Dated 9 December 2008.

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 222 and 280**

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: 27/2/372  
27/2/445

# Petroleum Act 2000

## VARIATION OF GEOTHERMAL EXPLORATION LICENCE GEL 222

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 Licence GEL 222 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:-

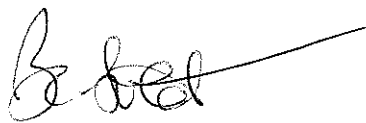
Year of Term of Licence	Minimum Work Requirements
One	<ul style="list-style-type: none"><li>• Review of existing geophysical data;</li><li>• 3D Modelling to determine subsurface geology and location of possible granite bodies; and</li><li>• Measure detailed geothermal gradients in any accessible water wells and oil wells.</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>• Review of open file geophysical and drilling data to obtain depth of cover and bedrock lithology information;</li><li>• 3D modelling to determine subsurface geology and location of possible buried granite bodies;</li><li>• Temperature measurements in any accessible mineral drill holes; and</li><li>• Completion of 1 shallow drill hole to a depth of 500m.</li></ul> <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"> <li>Assessment of test results and decision on whether to drill further shallow holes.</li> </ul> <p><i>Year 4 work program to be conducted anywhere within the boundaries of GELs 222 and 280.</i></p>
Five	<ul style="list-style-type: none"> <li>Assessment of test results and decision on whether to drill 1 deep pilot hole to 1800m depth; and</li> <li>Temperature logging.</li> </ul> <p><i>Year 5 work program to be conducted anywhere within the boundaries of GELs 222 and 280.</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***  
**S.115**

**MEMORANDUM**

**GEOHERMAL EXPLORATION LICENCE  
GEL 222**

1. Suspension of licence from and including 19 March 2008 to 27 June 2008 is hereby entered on the public register.
2. The expiry date of GEL 222 is now 28 June 2011.



**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

***Petroleum Act 2000***  
**S.90**

**SUSPENSION OF  
GEOTHERMAL EXPLORATION LICENCE  
GEL 222**

I, BARRY A. GOLDSTEIN, Director Petroleum and Geothermal, Minerals and Energy Resources, Department of 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 delegated powers dated 28 March 2002, Gazetted 11 April 2002, page 1573 –

- (a) suspend geothermal exploration licence GEL 222 for the period from and including 19 March 2008 to 27 June 2008.
- 1. No regulated activities are permitted to be carried out during the period of the suspension.
- 2. The expiry date of the GEL 222 is now determined to be 28 June 2011.

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  
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

*Grant of Geothermal Exploration Licence—GEL 222*

NOTICE is hereby given that the undermentioned Geothermal Exploration Licence has 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	Area in km <sup>2</sup>	Reference
GEL 222	Geothermal Resources Limited	Arrowie Basin area	464	27/2/372

*Description of Area*

All that part of the State of South Australia, bounded as follows: Commencing at a point being the intersection of latitude 31°20'00"S GDA94 and longitude 140°17'00"E GDA94, thence east to longitude 140°22'00"E GDA94, south to latitude 31°41'00"S GDA94, east to longitude 140°26'00"E GDA94, south to latitude 31°47'00"S GDA94, west to longitude 140°17'00"E GDA94, and north to the point of commencement.

Area: 464 km<sup>2</sup> approximately.

Dated 20 March 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 LICENCE  
GEL 222**

1. This Licence granted on 20 March 2006 is 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: 20 March 2006

Ref: 27/2/372

# **PETROLEUM ACT 2000**

## **GEOHERMAL EXPLORATION LICENCE**

### **GEL 222**

I, BARRY ALAN GOLDSTEIN, Director Petroleum, 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 19 March 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; and</li><li>• Measure detailed geothermal gradients in any accessible water wells and oil wells.</li></ul>
<b>Two</b>	<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>
<b>Three</b>	<ul style="list-style-type: none"><li>• Drill 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; and</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>• Drill 1 deep pilot hole 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; and</li> <li>• Evaluation of thermal data and fracture/permeability models.</li> </ul>
<b>Five</b>	<ul style="list-style-type: none"> <li>• Drill 1 production and 1 injection well to set up circulation cell;</li> <li>• Measurement of key parameters to determine viability of project; and</li> <li>• If project viable, conduct detailed planning for full-scale exploitation.</li> </ul>

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: 20 March 2006



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

**Signed by the said LICENSEE**


Date: 14<sup>th</sup> March.....2006

  
.....  
Authorised Representative

Chris Giles  
.....  
Name

Technical Director  
.....  
Position

Geothermal Resources Limited.  
.....  
Company

  
.....  
Witness

Bob Johnson  
.....  
Name

Chairman  
.....  
Position

Geothermal Resources Limited.  
.....  
Company

# GEOTHERMAL EXPLORATION LICENCE

**GEL 222**

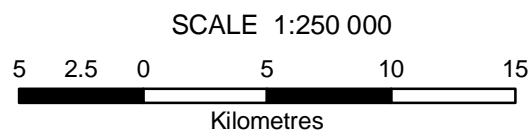
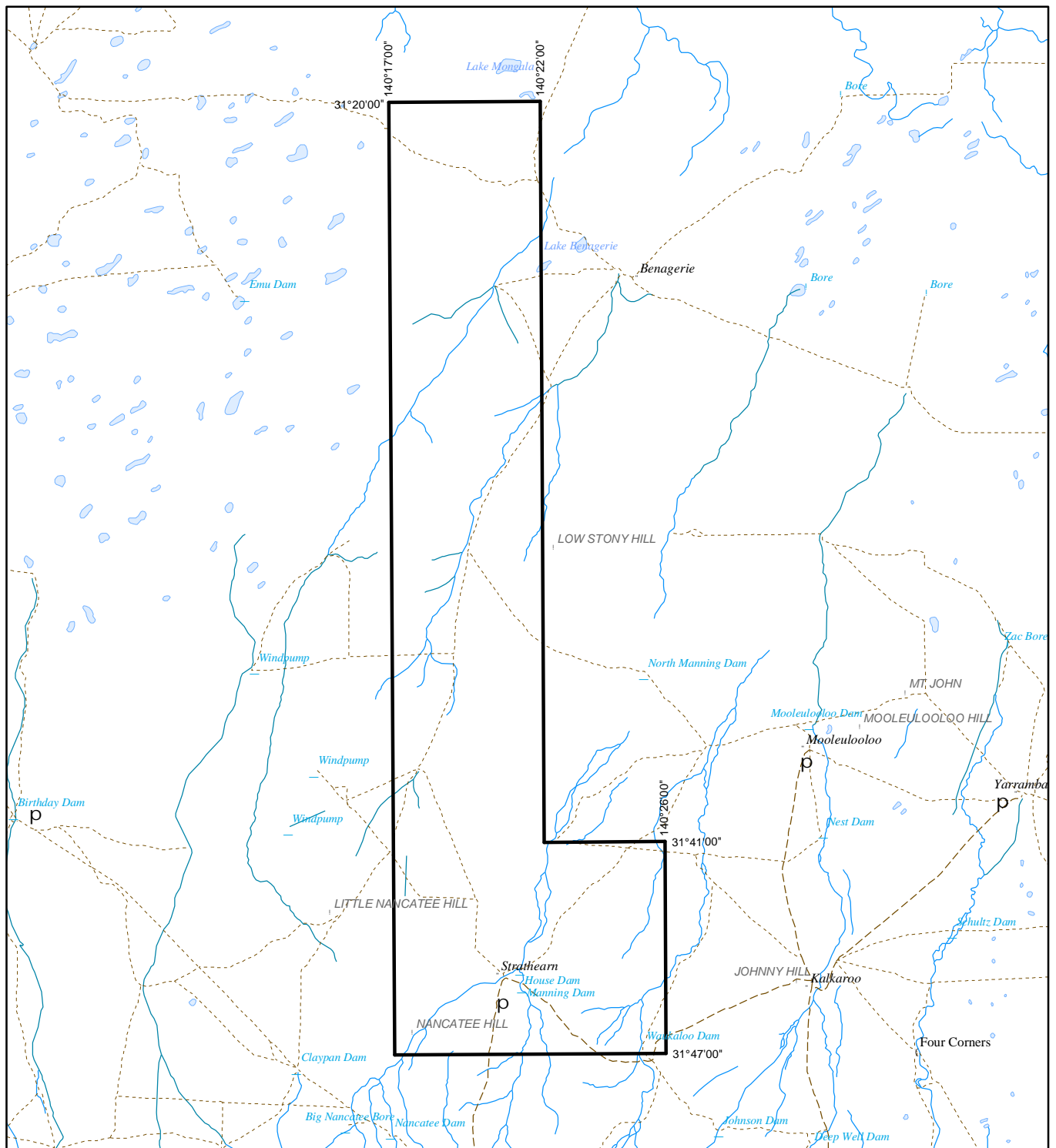
## THE SCHEDULE

### Description of Area

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

Commencing at a point being the intersection of latitude 31°20'00"S GDA94 and longitude 140°17'00"E GDA94, thence east to longitude 140°22'00"E GDA94, south to latitude 31°41'00"S GDA94, east to longitude 140°26'00"E GDA94, south to latitude 31°47'00"S GDA94, west to longitude 140°17'00"E GDA94, and north to point of commencement.

AREA: **464** square kilometres approximately.



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: 222**



Government of South Australia  
Primary Industries and Resources SA

SR 27/2/372

AREA: **464** sq km (approx)