



# TRI-STAR ENERGY COMPANY

*THREE RIVERWAY  
3 RIVER WAY, SUITE 1930  
HOUSTON, TEXAS 77056  
PHONE: 713 222 0011  
FAX: 713 622 6812  
houston@tri-starpetroleum.com  
Incorporated in Texas, USA*

*RIVERSIDE CENTRE  
LEVEL 35, 123 EAGLE ST  
BRISBANE, Q 4000  
PH: 61 7 3236 9800  
FAX: 61 7 3221 2146  
brisbane@tri-starpetroleum.com  
ARBN 089 539 695  
ABN 86 089 539 695*

13 July 2010

Government of South Australia  
Primary Industries and Resources SA  
Petroleum & Geothermal Group

**By Email: [pirsa.petcompliance@saugov.sa.gov.au](mailto:pirsa.petcompliance@saugov.sa.gov.au)**

Dear Sir/Madam

**RE: TRI-STAR ENERGY COMPANY - GEL 310 ANNUAL REPORT YEAR 2**

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We refer to the above matter.

Please find attached the Annual Report for GEL 310 in true digital form.

Should you have any further queries in relation to this matter, please do not hesitate to contact our office on (07) 3236 9800.

Yours faithfully,  
**TRI-STAR ENERGY COMPANY**



**Sophie Love**  
Land and Contacts Manager



# **TRI-STAR ENERGY COMPANY**

Annual Report

Year 2

14 May 2009 - 13 May 2010

**GEL310 – Strzelecki Track Project**

12 July 2010

**Tri-Star Energy Company**  
The Riverside Centre  
Level 35, 123 Eagle Street  
Brisbane, Q. 4000

GEL 310 – Strzelecki Track Project  
Annual Report Year 2  
14 May 2009 – 13 May 2010

CONTENTS

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INTRODUCTION .....	3
1 WORK REQUIREMENTS.....	4
2 WORK CONDUCTED.....	4
Office-Based Work.....	4
Field Work.....	5
3 PROPOSED OPERATIONS FOR YEAR THREE.....	5
4 COMPLIANCE ISSUES .....	6
5 EXPENDITURE STATEMENT.....	6
APPENDIX 1 EXPENDITURE STATEMENT.....	7

FIGURES

Fig. 1	Location Map
Fig. 2	Geological Region Map
Fig. 3	Native Title Claim Map
Fig. 4	Native Title Applications and Determination Areas Map
Fig. 5	Petroleum Wells Map

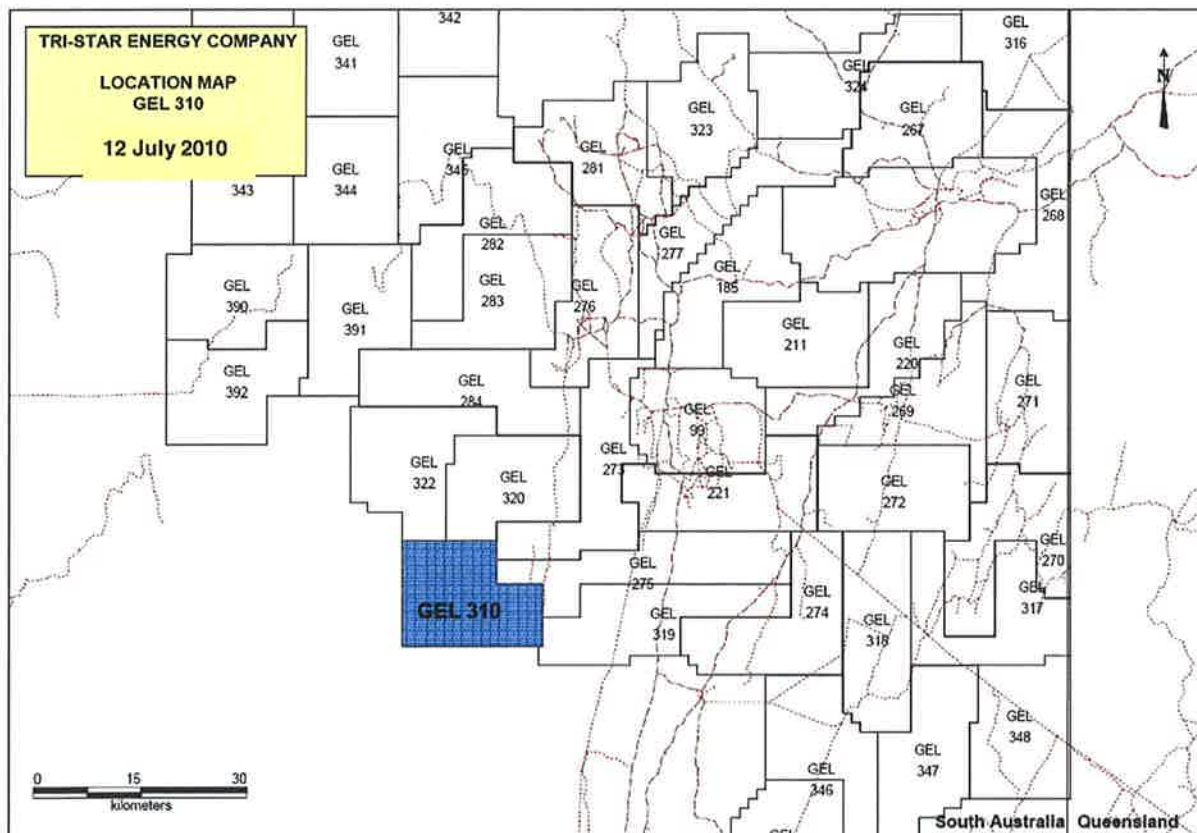
## Introduction

Gel 310 was granted to Tri-Star Energy Company; ARBN 089 539 695, on 14 May, 2008, for a period of five (5) years. The licence area is located in north east South Australia, bounded by the following coordinates and has an approximate area of 473 square kilometres:-

<b>L Latitude</b>	<b>Longitude</b>
28 20	139 52
28 24 30	139 52
28 24 30	139 57 30
28 31	139 57 30
28 31	139 41
28 20	139 41

GEL 310 is located in Map 100 000: 7044 Cordillo III.

This report describes the work performed during year two of the licence (14 May 2009 to 13 May 2010), and planned activity during year three, in accordance with Regulation 33 of the *Petroleum Act 2000*.



## 1 Work Requirements

The work program related to GEL 310 as set out in accordance with the conditions of the licence, are as follows:-

Licence Year	Minimum Work Program
Year 1	<ul style="list-style-type: none"><li>• Geological and geophysical studies.</li></ul>
Year 2	<ul style="list-style-type: none"><li>• Geological and geophysical studies.</li></ul>
Year 3	<ul style="list-style-type: none"><li>• Geological and geophysical studies.</li></ul>
Year 4	<ul style="list-style-type: none"><li>• Geological and geophysical studies; and</li><li>• Drill and complete one injection well to a depth of 2,550 metres.</li></ul>
Year 5	<ul style="list-style-type: none"><li>• Geological and geophysical studies; and</li><li>• Conduct fracture stimulation tests.</li></ul>

## 2 Work Conducted

### Office-Based Work

During the reporting period, Tri-Star Energy Company furthered their research around the design and functionality of geothermal power plants. The focus has been on a single well binary cycle power plant which utilises an organic Rankine cycle. Tri-Star has also continued to build upon the geological and geophysical database gathered in the previous reporting period.

GEL 310 is located in the north of the Strzelecki Regional Reserve, South Australia covered by the Great Artesian, Eromanga, Lake Eyre, Warburton and Cooper Basin. Please see attached Figure 1 Location Map and Figure 2 Geological Region Map.

Tri-Star has previously identified all relevant parties in relation to the tenure, such as landowners and Native Title Claimants. Please refer to Figure 3 Native Title Claim Map and Figure 4 Native Title Applications and Determination Areas Map.

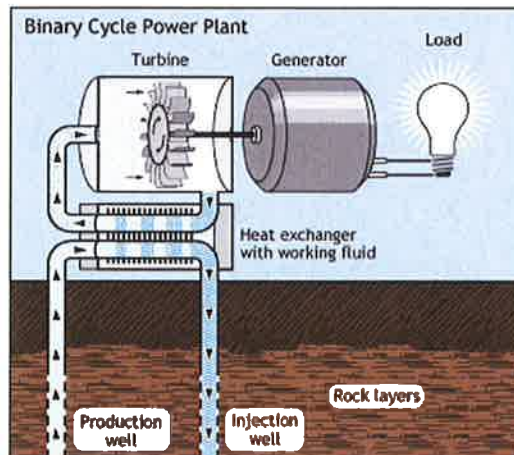
The geological characteristics of the Cooper Basin area are that of hot rock, and a lack of natural subterranean reservoirs of hot water. It is this characteristic which has directed Tri-Star to investigate the binary cycle power plant.

The crucial benefit of using an organic Rankine cycle is the low boiling point of the organic working fluid. The efficiency of the system is increased due to the lower temperature the geothermal water needs to reach before converting the working fluid to power generating steam. The organic working fluids may include Ammonia,

HCFC123 (Dichlorotrifluoroethane), n-Pentane, PF5050 (Perflurotri-N-Butylamine) and i-Butane. In the upcoming reporting year the aforementioned fluids will be investigated to determine the most cost-effective design.

The binary system is a closed loop system. This ensures the working fluid and the geothermal water never come in contact with one another thus reducing the likelihood of environmental damage as there are virtually no emissions to atmosphere from the system.

The following depicts a typical dual well binary cycle power plant:



The difference between this system and the system Tri-Star have investigated (and will continue to investigate) is the need for a production well and an injection well. Tri-Star will endeavour to integrate the two wells in an effort to reduce costs and take advantage of the horizontal hydrothermal energy flows in the rock. This well integration will also reduce bacteria contamination to surrounding aquifers due to the lack of water being cycled through the rock layers.

Tri-Star must establish whether the tenure area has the capability of supporting the single well design. There is uncertainty surrounding the single well design, which will need to be more thoroughly investigated, as no known well of similar design is in operation at present. The third term investigation will be concentrated around this design and the capability in the GEL 310 tenure area.

## Field Work

No drilling or other field work was conducted during this second year of work.

## 3 Proposed Operations for Year Three

During the third term, Tri-Star will focus on the complex design of the proposed single well organic binary cycle power output system. To gain complete understanding of the tenure's geological behaviour Tri-Star will compare heat values from wells in other parts of the Great Artesian Basin.

Tri-Star's future exploration programme will also involve further research of the sedimentary cover contained in and around GEL 310, continued review and testing of

available geological, geophysical and environmental data pertaining to the area, begin a feasibility study and conduct further mapping of available data.

#### **4 Compliance Issues**

Tri-Star Energy Company did not perform any activities that fall within the purview of Regulation 33. Given that no regulated activities were undertaken in the licence year, many of the regulations are inapplicable at this stage, and no instances of non-compliance have been noted. No reportable incident occurred and no threats have been identified during licence year one.

Tri-Star Energy Company recognises the importance of achieving regulatory compliance and is committed to achieving best practice in its management strategies, work practices, and procedures, in an environmentally and socially responsible manner. Tri-Star Energy Company is in the process of developing a management system that will ensure this commitment is met.

#### **5 Expenditure Statement**

Please refer to Appendix 1 for the expenditure statement for the current reporting period 14 May 2009 - 13 May 2010.

Commercial in Confidence

# **FIGURE 1**

**Annual Report GEL 310**

**Dated 12 July, 2010**

## **LOCATION MAP**



# GEL 310 Location Map July 2010

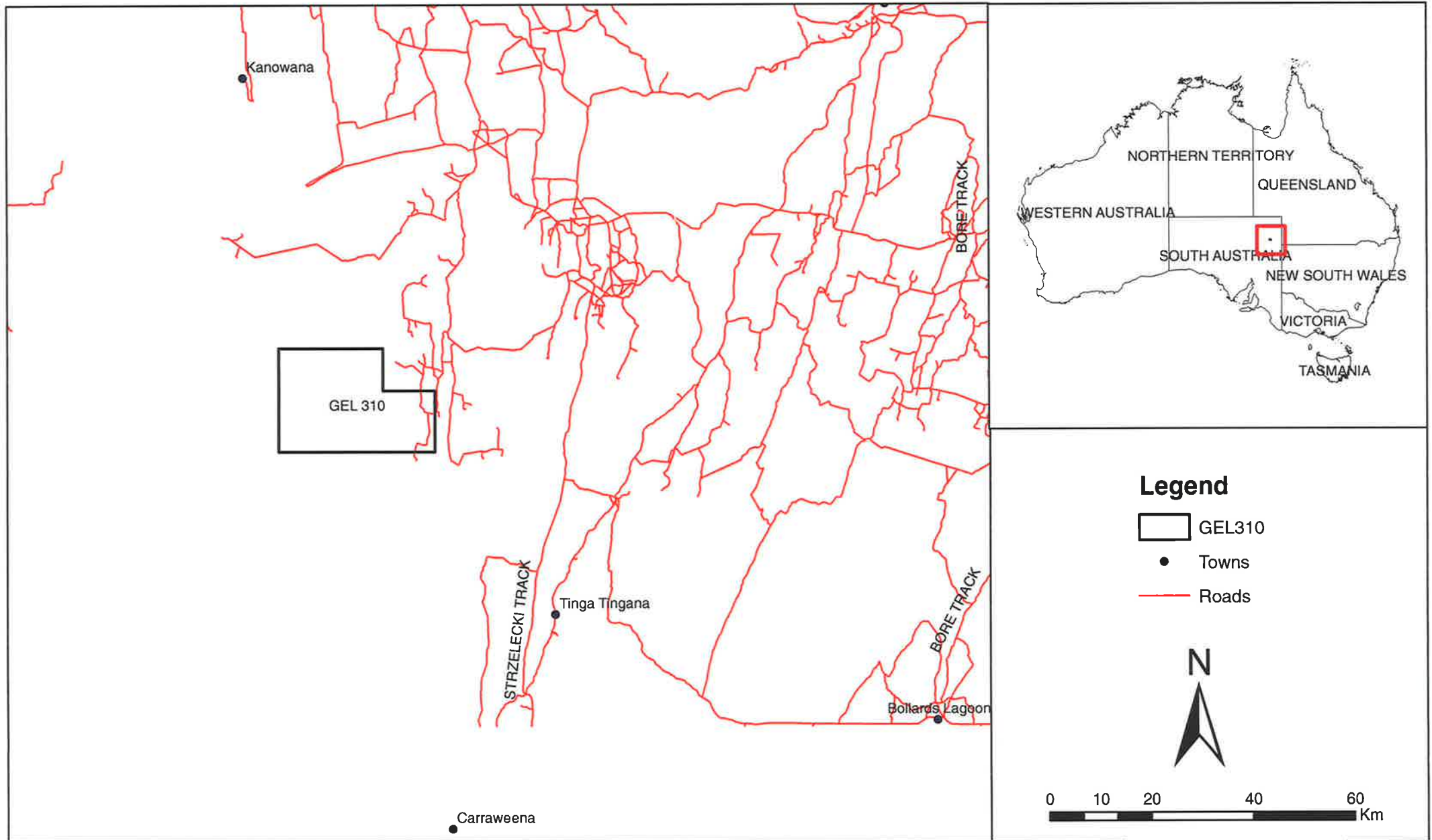


Figure 1

# **FIGURE 2**

**Annual Report GEL 310**

**Dated 12 July, 2010**

## **GEOLOGICAL REGION MAP**

# GEL 310 Regional Geology Map July 2010

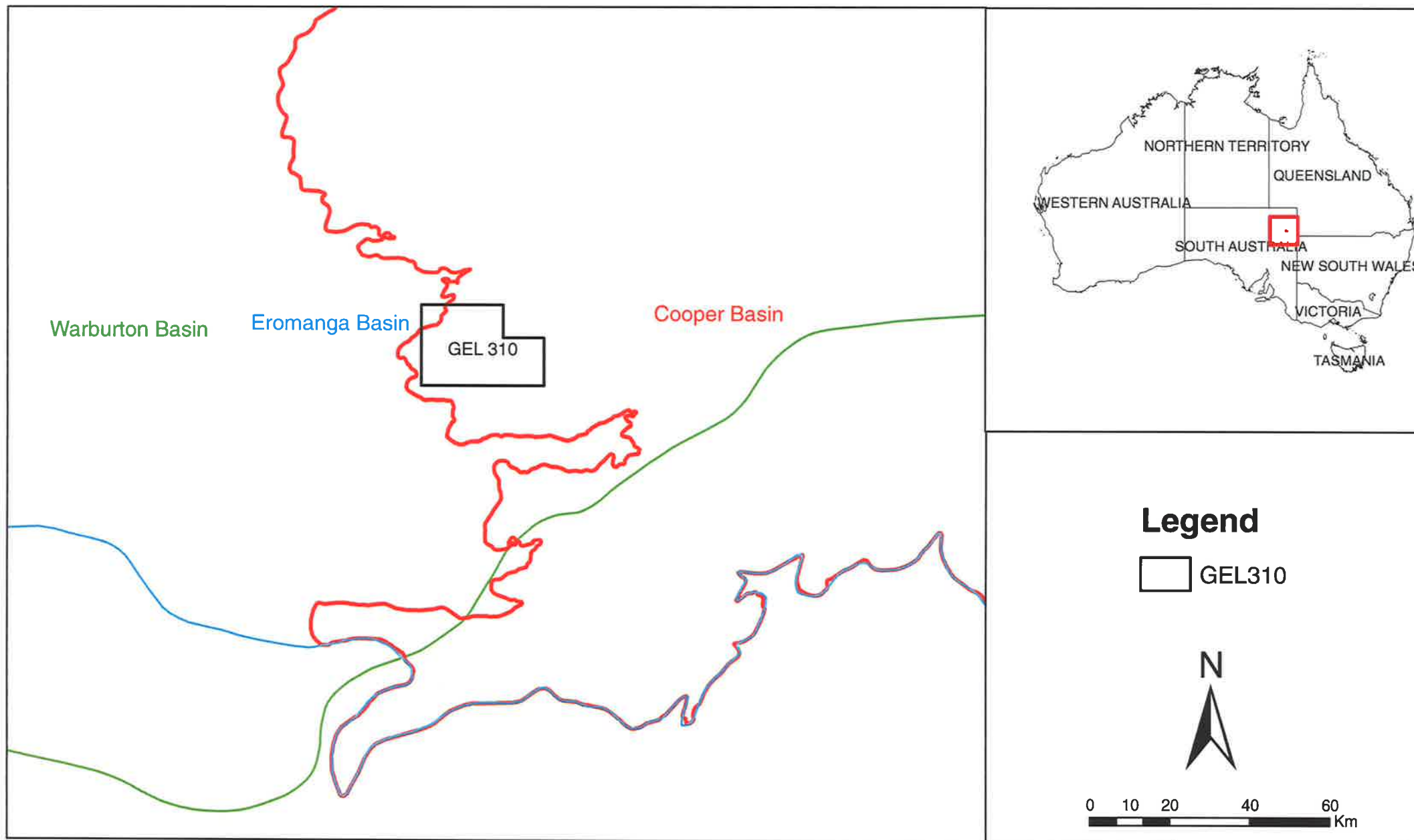


Figure 2

# **FIGURE 3**

**Annual Report GEL 310**

**Dated 12 July, 2010**

## **NATIVE TITLE CLAIM MAP**

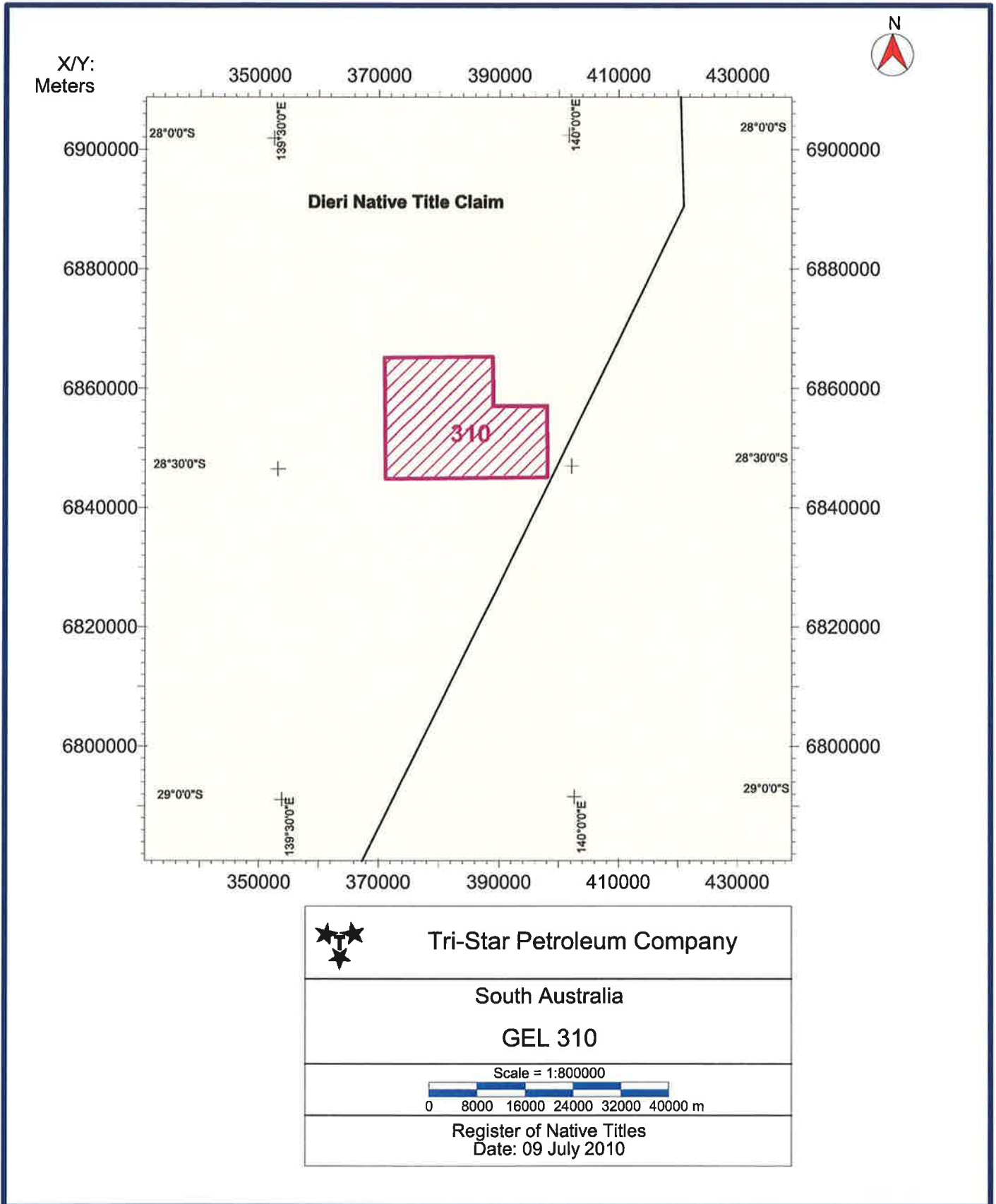


Figure 3

# **FIGURE 4**

**Annual Report GEL 310  
Dated 12 July, 2010**

## **NATIVE TITLE APPLICATIONS AND DETERMINATIONS AREA MAP**

# South Australia

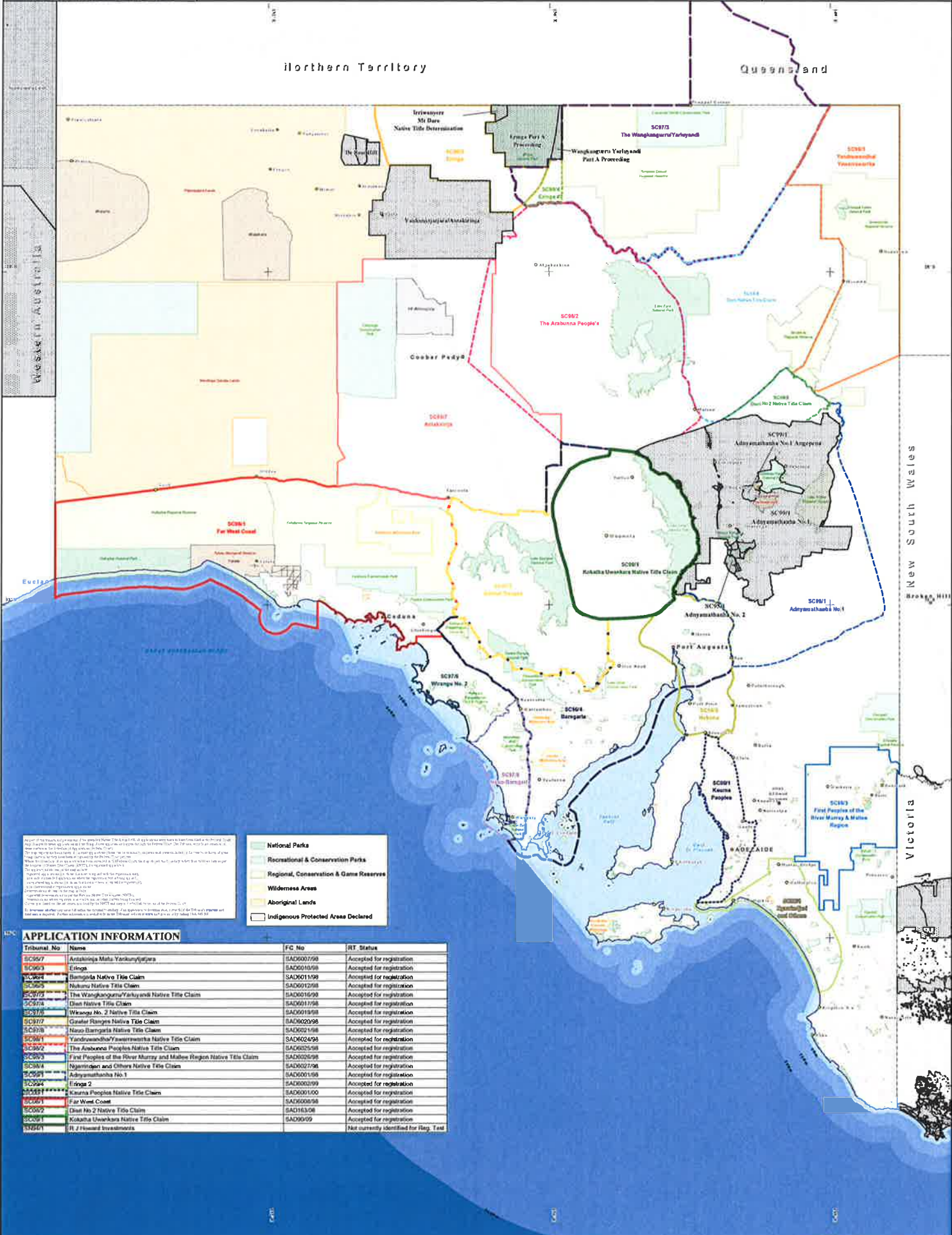
## Native Title Applications and Determination Areas

As per the Federal Court (31 March 2010)

**Native Title Application**  
External boundary of application (NNTT Number and name shown)

**Determination of Native Title**  
External boundary of determination area (NNTT Name shown)

**Native Title Status**  
 Yellow: Registered Native Title  
 Red: Pending Native Title  
 Blue: Native Title Determined  
 Green: Native Title Determined (with conditions)



All of the Native Title Applications were made under the Native Title Act 1993. The Native Title Act 1993 provides a framework for the determination of Native Title claims. The Native Title Act 1993 provides a framework for the determination of Native Title claims. The Native Title Act 1993 provides a framework for the determination of Native Title claims.

- National Parks
- Recreational & Conservation Parks
- Regional, Conservation & Game Reserves
- Wilderness Areas
- Aboriginal Lands
- Indigenous Protected Areas Declared

### APPLICATION INFORMATION

Tribunal No	Name	FC No	IRT Status
SC957	Antakinja Maba Yankunytjatjara	SAD007798	Accepted for registration
SC958	Elings	SAD001098	Accepted for registration
SC959	Barngarla Native Title Claim	SAD001198	Accepted for registration
SC960	Nukunu Native Title Claim	SAD001298	Accepted for registration
SC973	The Wangkangurru/Yankayandj Native Title Claim	SAD001698	Accepted for registration
SC974	Diak Native Title Claim	SAD001798	Accepted for registration
SC978	Wiranga No. 2 Native Title Claim	SAD001898	Accepted for registration
SC977	Gawler Ranges Native Title Claim	SAD002098	Accepted for registration
SC975	Marru Barngarla Native Title Claim	SAD001998	Accepted for registration
SC980	Yandruwandi/Yandruwandi Native Title Claim	SAD002498	Accepted for registration
SC982	The Arabunna Peoples Native Title Claim	SAD002598	Accepted for registration
SC979	First Peoples of the River Murray & Mallee Region Native Title Claim	SAD002698	Accepted for registration
SC984	Nyngandien and Others Native Title Claim	SAD002798	Accepted for registration
SC991	Adnyamatjamba No. 1	SAD001158	Accepted for registration
SC994	Eringa 2	SAD000299	Accepted for registration
SC998	Koorua Peoples Native Title Claim	SAD001100	Accepted for registration
SC996	Far West Coast	SAD000498	Accepted for registration
SC992	Diak No. 2 Native Title Claim	SAD11308	Accepted for registration
SC991	Kokatha Unwankara Native Title Claim	SAD0009	Accepted for registration
SN001	R. J. Howard Investments		Not currently identified for Reg. Test

Figure 4

# **FIGURE 5**

**Annual Report GEL 310  
Dated 12 July, 2010**

## **PETROLEUM WELLS MAP**



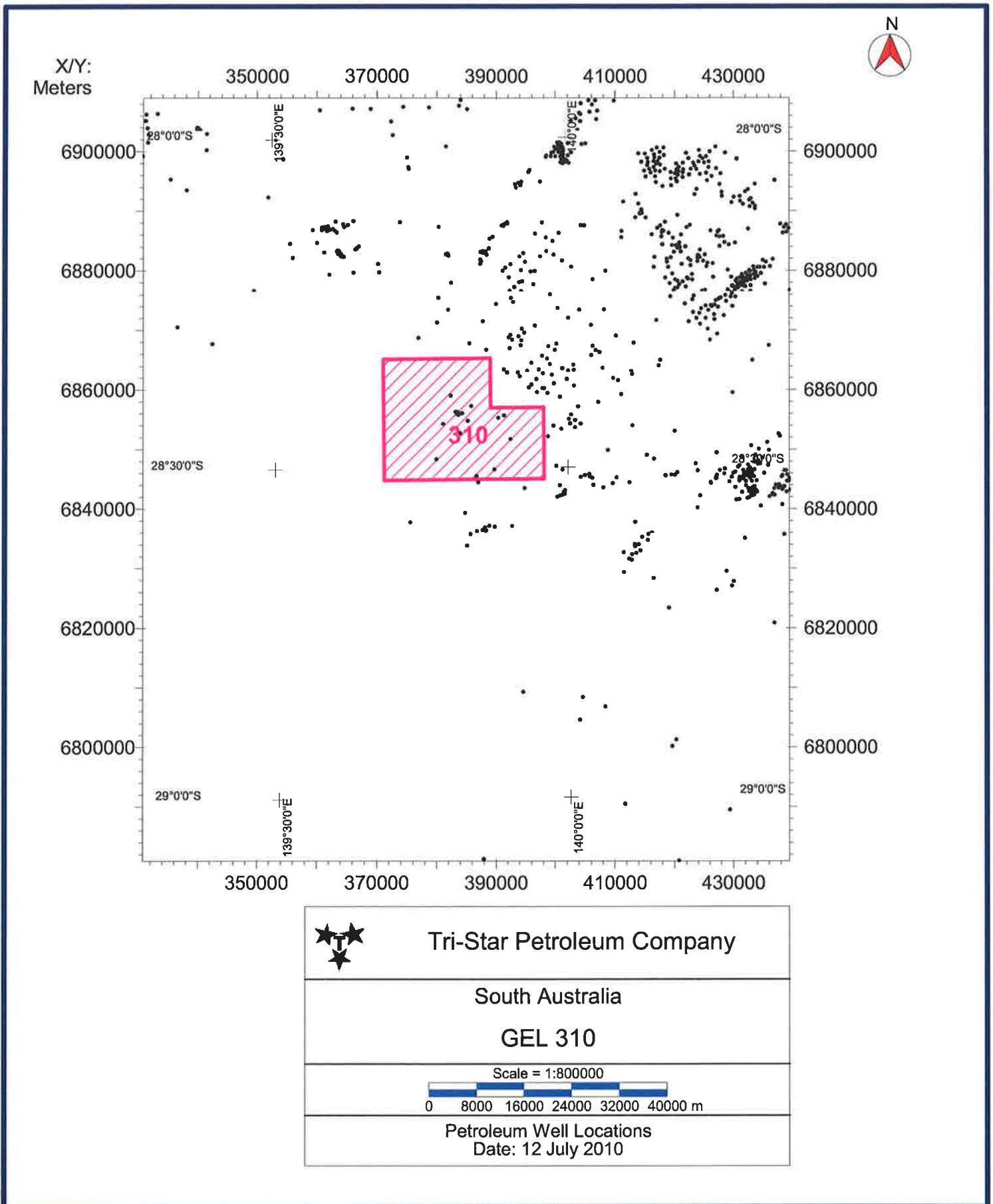


Figure 5