

# **Open File Envelope**

## **No. 12,082**

**EL 4298**

**YARLEY**

**ANNUAL REPORTS TO LICENCE EXPIRY/SURRENDER,  
FOR THE PERIOD 19/8/2009 TO 18/8/2012**

Submitted by  
Torrens Energy Ltd  
2012

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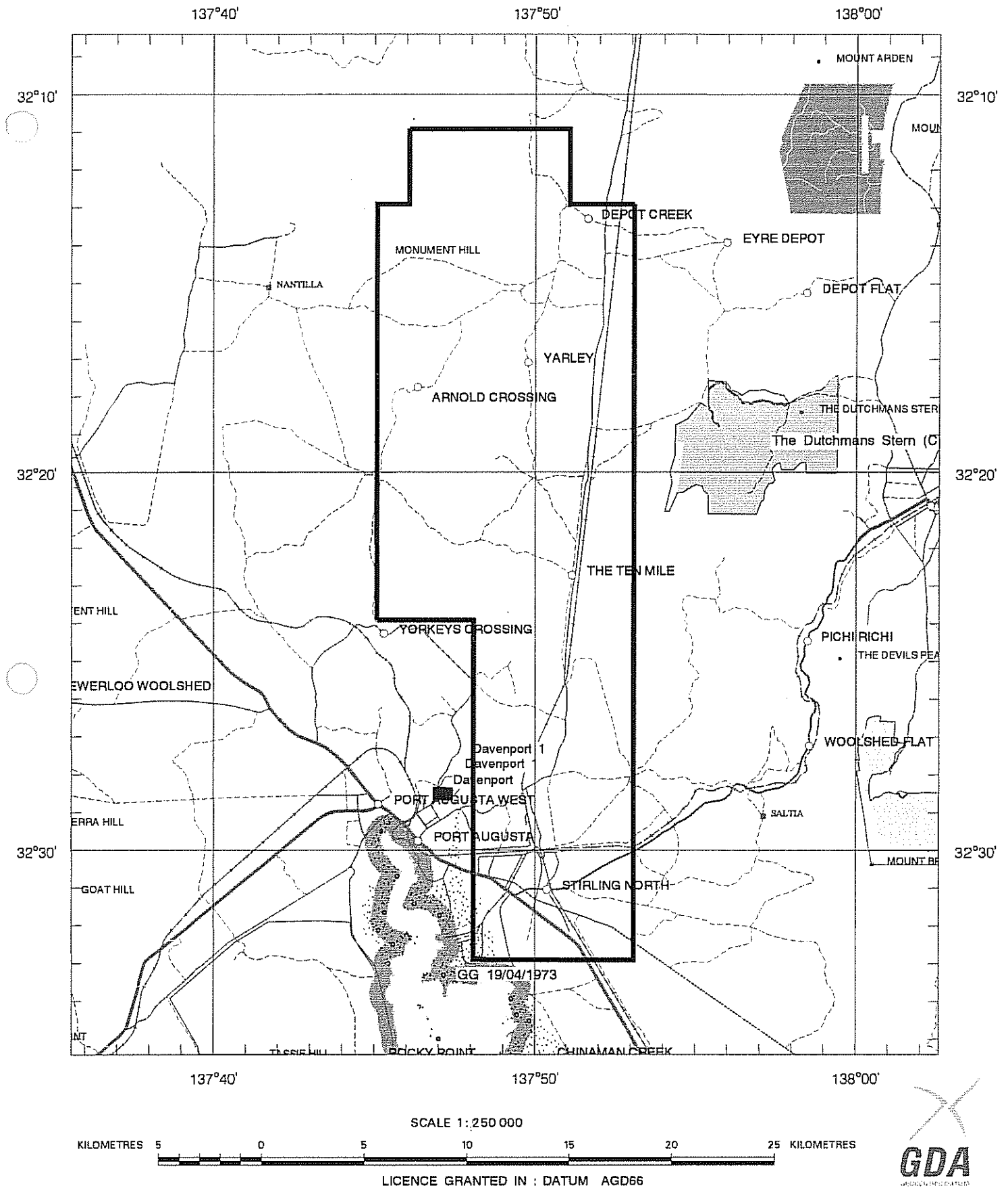
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**Government of South Australia**

Department for Manufacturing,  
Innovation, Trade, Resources and Energy

# SCHEDULE A



APPLICANT : **TORRENS ENERGY LTD**

FILE REF : **54/09**

TYPE : **MINERAL ONLY**

AREA : **415 km<sup>2</sup> (approx.)**

1:250000 MAPSHEETS : **PORT AUGUSTA**

LOCALITY : **YARLEY AREA - Immediately northeast of Port Augusta**

DATE GRANTED : **19-Aug-2009**

DATE EXPIRED : **18-Aug-2010**

EL NO : **4298**

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RENEWABLE SUSTAINABLE GEOTHERMAL ENERGY

## Annual Report

19 August 2009-18 August 2010

EL4298

Torrens Energy Ltd 100% Holder and Operator



Jerome Randabel

19 October 2010

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## Introduction

Exploration Licence 4298 (Port Augusta) comprises 415 km<sup>2</sup> of predominantly pastoral land. EL 4298 was granted on 18 August 2009 with an expenditure commitment of \$70,000. The tenement was acquired to explore for coal and to lesser degree uranium, which is surmised to occur within a North-South trending graben between Port Augusta and Wilkatana on the northeast corner of the PORT AUGUSTA 1:250,000 map sheet. This Tertiary basin is believed to have potential for Tertiary coal measures. Torrens Energy's GEL285 overlies this area.

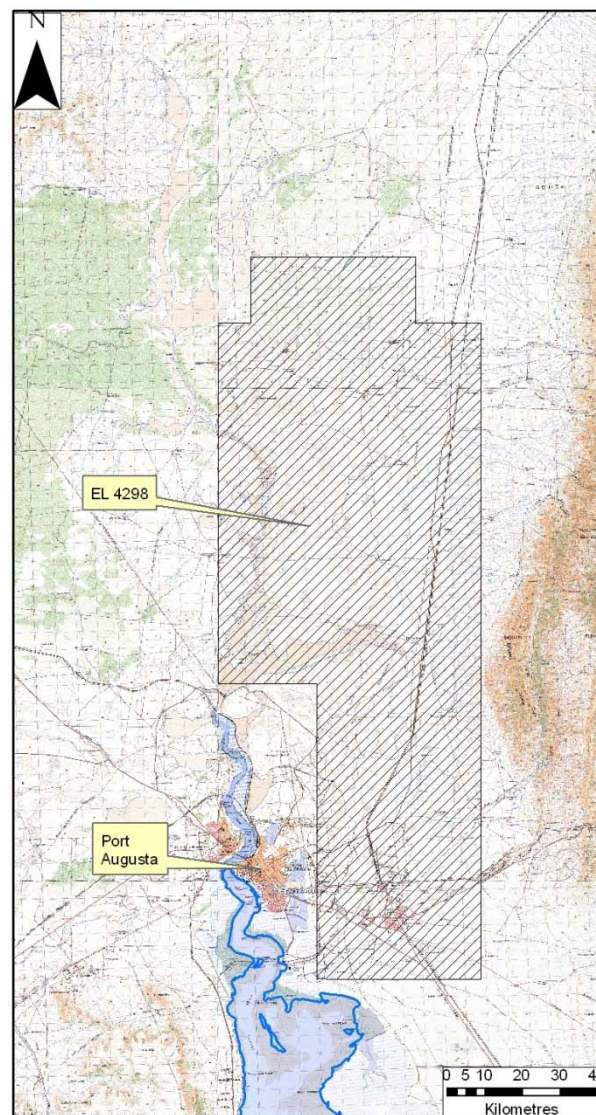


Figure 1: Location Map of EL 4298

## Geological framework

The geology of the central Flinders Ranges is comprehensively covered by MESA Bulletin 54 (Geology of South Australia), Bulletin 53 (The Adelaide Geosyncline) and the PORT AUGUSTA, PARACHILNA and ORROROO 1:250000 geological map sheets. The Port Augusta tenement straddles the transition from shallow Proterozoic basement of the Gawler Craton in the west to regions of thicker Adelaidean, Cambrian and Tertiary cover in the east (Torrens Hinge Zone).

## Review of previous exploration

A number of companies have been active in this area in the past. A list of the companies can be seen in Table 1. Figure 1` shows the location of the historical ELs.

TEN_NUM	GRANTED	EXPIRY	LICENSEE	AREA_KM2	LOCALITY	Minerals
<a href="#">60</a>	13/04/1973	12/04/1975	Delhi International Oil Corp.	0	Lake Torrens	Salt, base metals
<a href="#">206</a>	28/08/1975	27/08/1977	Delhi International Oil Corp.	0	Port Augusta - Lake Torren	Salt, base metals
<a href="#">370</a>	28/11/1977	27/11/1979	Delhi International Oil Corp.	0	Port Augusta	Salt, base metals
<a href="#">582</a>	24/01/1980	23/01/1982	Delhi Petroleum Pty Ltd	0	Port Augusta	Salt, base metals
<a href="#">973</a>	18/03/1982	17/03/1987	Delhi Petroleum Pty Ltd	0	Port Augusta	Salt, base metals
<a href="#">1477</a>	28/03/1988	27/03/1989	Stockdale Prospecting Ltd	1812	Port Augusta	diamonds, gold
<a href="#">1909</a>	30/12/1993	29/12/1996	Jimbilly Pty Ltd	35	Port Augusta Area	Base metal Gold
<a href="#">2474</a>	11/12/1997	10/12/1998	Minotaur Gold NL	385	Port Augusta Area	Base metals
<a href="#">3015</a>	23/09/2002	22/09/2004	Avoca Resources Ltd	1679	Northern Spencer Gulf	Basemetals, IOCG
<a href="#">3238</a>	3/09/2004	2/09/2005	Menzel B W, Blackfire Resources Pty Ltd	366	Port Augusta Area	Base metals, IOCG
<a href="#">3670</a>	1/12/2006	30/11/2008	Globe Resources Pty Ltd	735	Port Augusta	Base metals IOCG

Table 1: List of Previous explorers

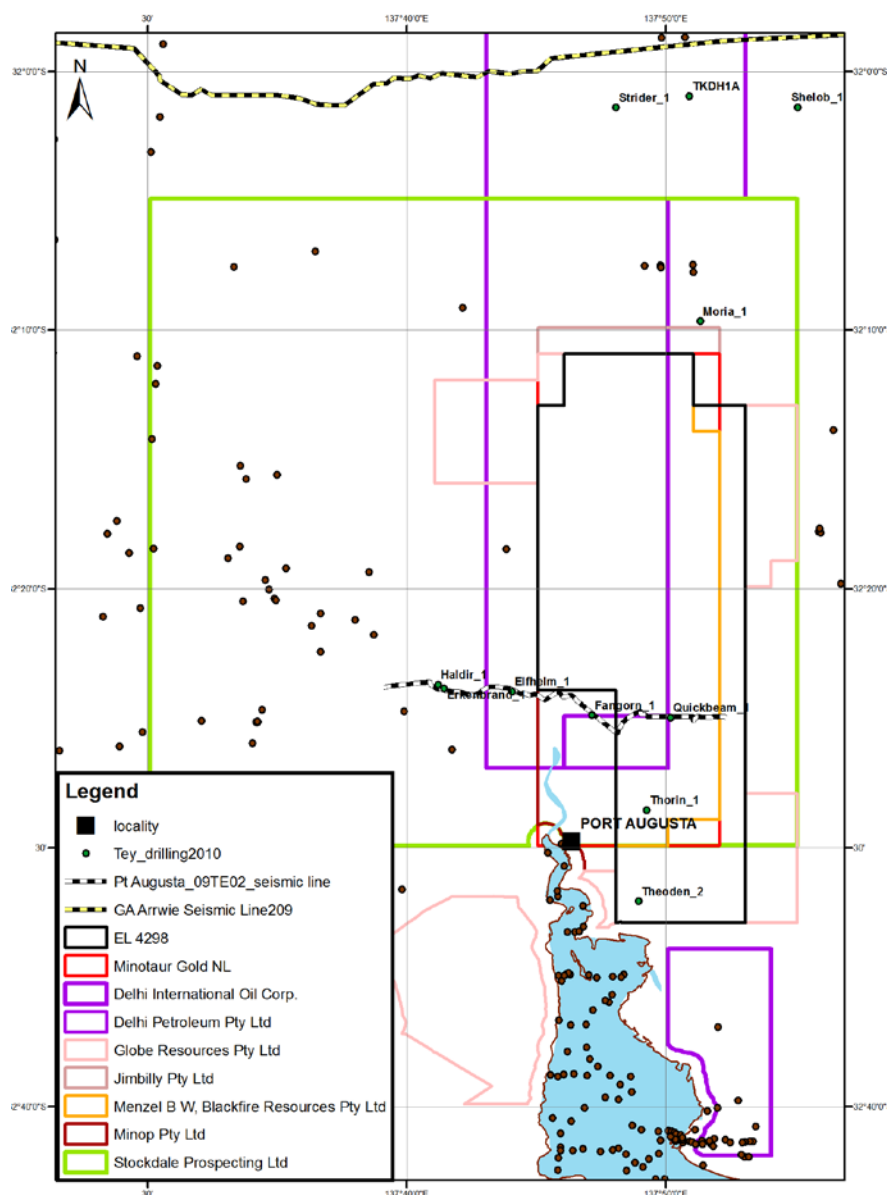


Figure 2: Location of previous exploration licences.

## Drilling

There is no historical drilling data available within the tenement boundary. However drilling immediately north at Wilkatana has intersected coal in a number of wells drilled for Cambrian hosted oil.

The company drilled two shallow geothermal wells in 2009, Theoden 2 and Thorin 1 as part of its exploration for geothermal energy within the overlying GEL 285. These wells targeted flat lying Torrens Hinge one rocks to obtain a temperature gradient. No mineralisation or coal was intersected in these holes.

Details of the wells have been extracted from their respective well completion report and are summarised in the table below as well as the geological summary.

Annual Report EL4298 – 19 October 2010

Well name:	Thorin 1	Company:	Torrens Energy Ltd.	
Well category:	Geothermal exploration well	Project:	Port Augusta Project	
Well status:	open, capped	GEL:	285	
Depth:	363.1	Location (GDA 94):	-32.475674235	
Artesian (y/n):	No		137.821151532	
Spud date:	19 May 2009	Elevation (AHD):	26.196	
Rig release:	6 June 2009	Survey Company:	Peter Crettenden	
Drilling Company:	Watson Drilling	Rig type:	Bournedrill 1000	
Age	Formation	Top (m)	Lithology	
Quaternary	?	0	red sands, red and grey clays, gravels and silcrete	
Tertiary	Neuroodla or equivalent	38	light brown/yellow and grey clay	
Tertiary	Cotabena or equivalent	87	medium to dark grey clay and sandy clay with minor lignite toward base	
Neoproterozoic (Adelaidean)	?	116	purple and grey saprock shale	
Neoproterozoic (Adelaidean)	Brachina/ Tregolana	134	Very fine grained, micaceous, red-purple-brown silty shale w/ green-grey reduction bands; small-medium (~5-50cm) sandy beds occasionally; calc (fizzy!) infill in minor fractures	
Neoproterozoic (Adelaidean)	Whyalla Sandstone (?)	270	Fine-medium grained, light brown to tan sandstone with lesser mudstone, with trace sulphides	
Neoproterozoic (Adelaidean)	Trezona Formation (?)	287	Intercalated gritty carbonate unit with sands and silts, and some thick sequences of shales (up to 8 metres).	
Drilling	Bit type	Size	Depth (from) m	Depth (to) m
Rotary mud	Blade	12.25" (311.15)	0	24
Rotary mud	Blade, rock roller	6.5" (165.1mm)	24.0	162.0
Diamond core	HQ diamond	3.761" (95.53 mm)	162.0	363.1

Table 2: Thorin 1 drilling summary

Annual Report EL4298 – 19 October 2010

Well name:	Theoden 2	Company:	Torrens Energy Ltd.
Well category:	Geothermal exploration well	Project:	Port Augusta Project
Well status:	open, capped	GEL:	285
Depth:	372.2 metres	Location (GDA 94):	-32.534628852
Artesian (y/n):	Very weak (~0.5L / minute)		137.816030860
Spud date:	17 February 2009	Elevation (AHD):	8.320
Rig release:	3 March 2009	Survey Company:	Peter Crettenden
Drilling Company:	Watson Drilling	Rig type:	Bournedrill 1000
Age	Formation	Top (m)	Lithology
Quaternary	?	0	Red sands and clays, silcrete at base
Tertiary	?	18	Light brown and white clays
Tertiary	?	62	Sand
Neoproterozoic (Adelaidean)	?	68	Weathered saprolite/saprock
Neoproterozoic (Adelaidean)	Brachina/ Tregolana?	137	Red-purple and green (reduction bands) shale
Neoproterozoic (Adelaidean)	Nuccaleena?	224	White-beige dolomite
Neoproterozoic (Adelaidean)	Elatina?	225	Red-pink-brown arkosic sandstone and quartzite, with some silty sections – glacial tillite.
Neoproterozoic (Adelaidean)	Elatina?	345	Red-purple and green (reduction bands) shale, with arkosic/tillite bands throughout (member of unit above?)

Drilling	Bit type	Size	Depth (from) m	Depth (to) m
Rotary mud	Blade	12.25" (311.2mm)	0	24
Rotary mud	Blade, rock roller	6.5" (166.1mm)	24	168
Diamond core	HQ diamond	3.8" (95.53mm)	168	372.2

Table 3: Theoden 2 drilling summary

## Geophysics

The geophysical data available for the area consist of state regional aeromagnetics, gravity, and seismic data which was collected by Torrens Energy as part of their geothermal exploration within GEL285.

### Aeromagnetics

The aeromagnetic data does not show any basement anomalies worth investigating, as the basement is interpreted to be deep in most of the area. Figure 3.

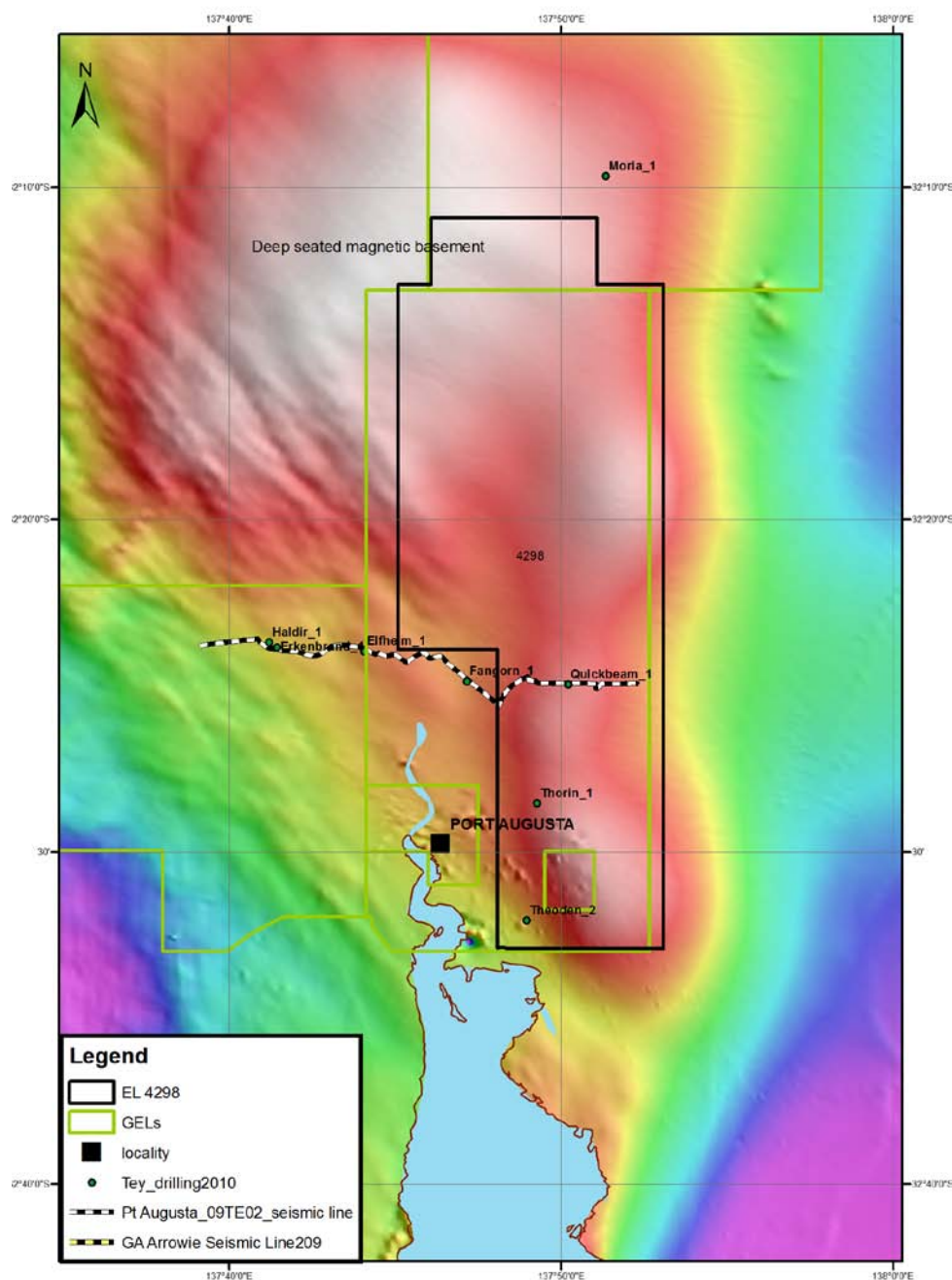


Figure 3: Aeromagnetic image showing deep seated magnetic body.

## Gravity

The state gravity image for this area shows that EL4298 lies over a gravity low, which is interpreted to represent a basinal structure, which may host coal measures. Figure 4

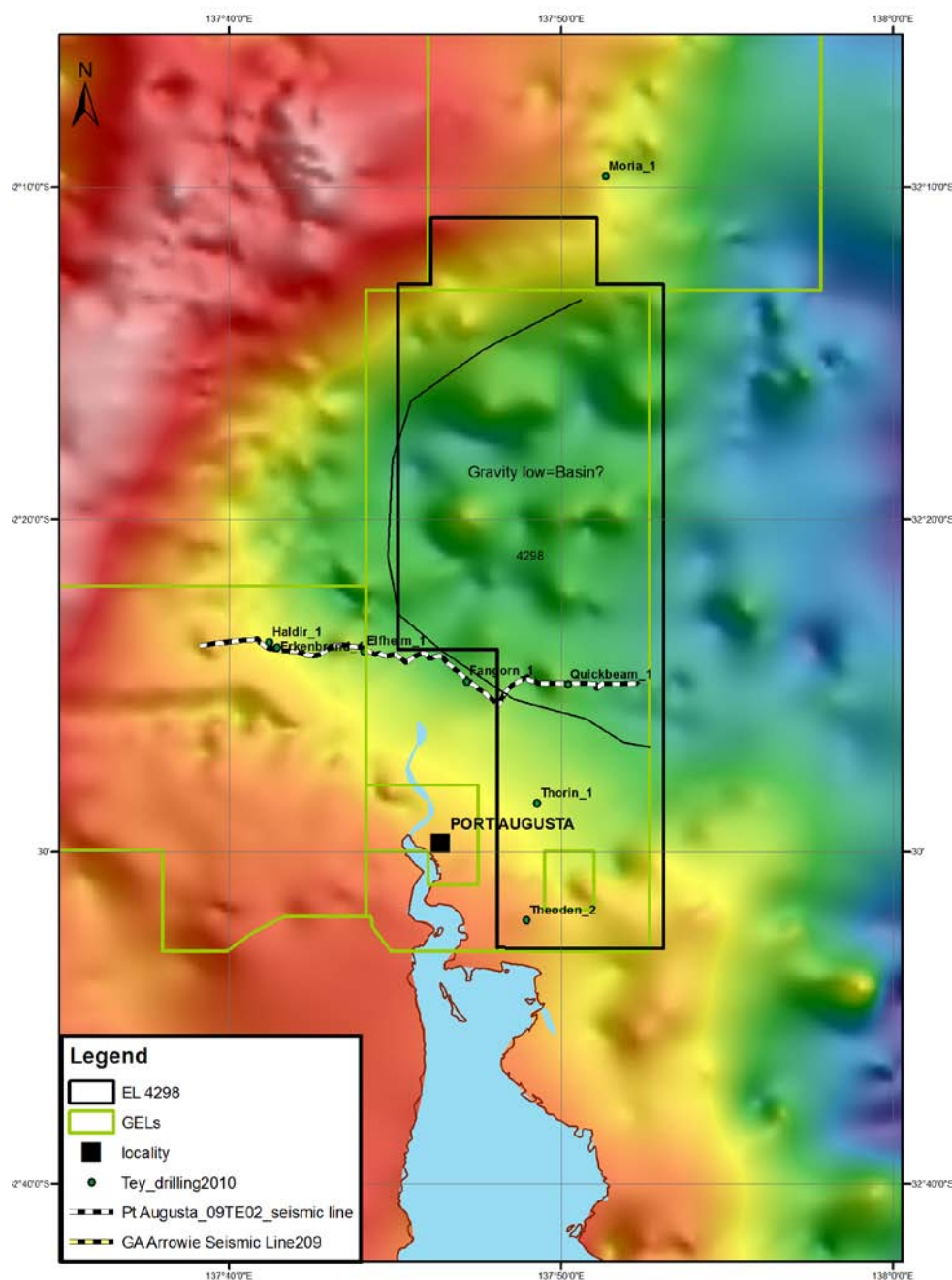


Figure 4: Gravity image showing gravity low within EL 4298

## Seismic

The seismic data obtained from seismic line 09-TE02 shot by Torrens Energy as part of its geothermal exploration program within the overlying GEL285 The section figure 5, shows that a thick sequence of relatively flat to slightly inclined Cambrian and Neoproterozoic rocks. See Figure 5. The seismic line unfortunately cannot clearly resolve the presence of a Tertiary Basin without further processing.

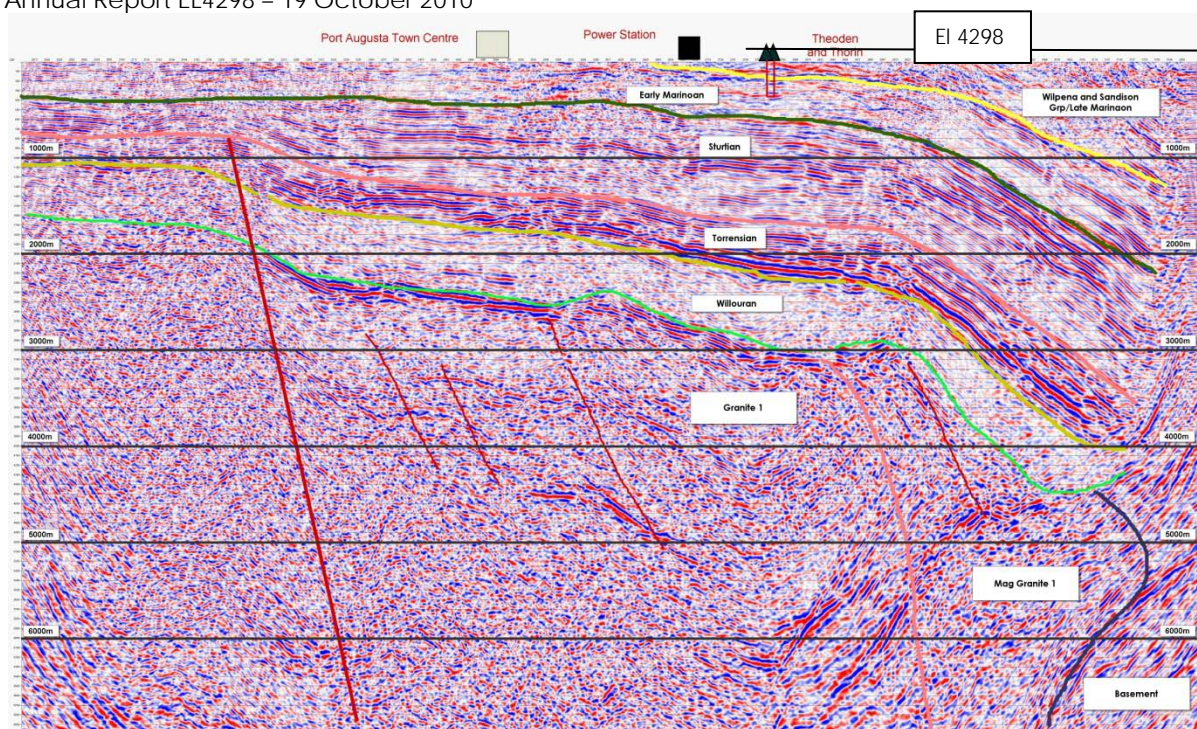


Figure 5: Seismic line 09-TE02 located at Port Augusta

## Prospectivity

The main reason for obtaining this tenement was for its coal potential within Tertiary sediments which is believed to occur within the Tertiary basin. Coal was intersected in an area to the north in the early 1950's which led to drilling by Santos in 1956 at Wilkatana, which confirmed the presence of coal measures to a thickness of 2m at the historic Wilkatana oil field.

The areas mineral prospectivity is considered to be low as the depth to basement is believed to be in the vicinity of 1500 to 2000m based on the seismic data. The thick cover and great depth to basement is not very encouraging.

## Conclusion and Recommendation

It is recommended that further work be pursued to identify the coal potential of the EL via further geological modelling, seismic data reprocessing to obtain the early time response and eventually drilling. Since the area is overlain by the GEL285, work carried out for geothermal exploration will be used to further assess the coal and mineral prospectivity of EL4298.

**Expenditure Statement**

(18 August 2009 to 18 August 2010)

Annual expenditure for period 18 August 2009 to 18 August 2010 on EL 4298 as a portion of Port Augusta excluding Drilling and Seismic.

Operating & Administrative :                 \$30,434

Technical Evaluation & Analysis :           \$3,559

Total: \$33,993

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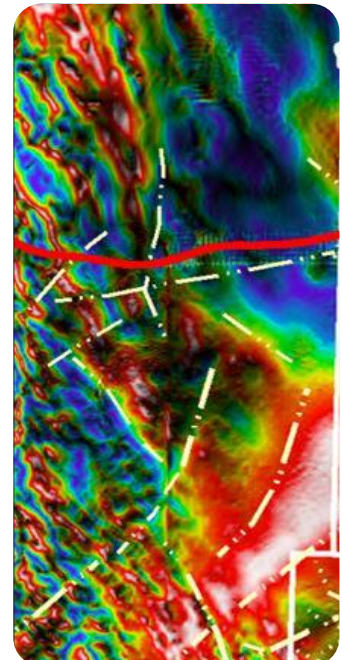


EL4298

# ANNUAL TECHNICAL REPORT

12 MONTH PERIOD ENDING 18/08/2011

PORT AUGUSTA PROJECT AREA, SA



John Canaris

June 2012

Friday 29 June, 2012

Nella Petruzzella  
EL Reporting Officer  
Mineral Resources Division  
Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE)  
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Dear Nella

**ANNUAL REPORT FOR EL4298,  
12 MONTH PERIOD ENDING 18/02/2011**

Please find enclosed Torrens Energy Limited 12 month Annual Report for the Exploration Licence 4298, Port Augusta. Technical activities relating to this area are detailed here. The area remains an important part of the Company's landholding in SA. Our apologies for the lateness of this report.

Yours sincerely



John Canaris  
Consulting Geologist  
**Torrens Energy Limited**

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Figure 1: Location Map of EL 4298

Figure 2: Area of Interest

Figure 3a: Arrowie 2D Seismic Line Interpreted Geology

Figure 3b: Port Augusta 2D Seismic Line Interpreted Geology

Figure 4a: Arrowie Interpreted Geology Section

Figure 4b: Port Augusta Interpreted Geology Section

Figure 5a: Total Magnetic Intensity (TMI) Image

Figure 5b: Bouguer Gravity Image

Table 1: List of Previous explorers

Table 2: Simplified Stratigraphic Table

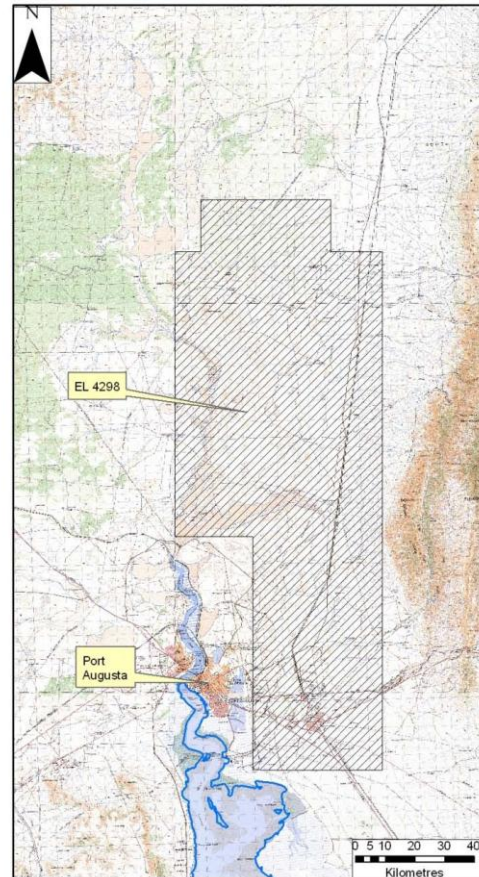
## INTRODUCTION

Exploration Licence 4298 (Port Augusta) comprises 415 km<sup>2</sup> of predominantly pastoral land. EL 4298 was granted on 18 August 2009 with an expenditure commitment of \$70,000. The tenement was acquired to explore for coal and to lesser degree uranium, which is surmised to occur within a North-South trending graben between Port Augusta and Wilkatana on the northeast corner of the PORT AUGUSTA 1:250,000 map sheet (Figure 1. below). This Tertiary basin is believed to have potential for Tertiary coal measures. Torrens Energy's GEL285 overlies this area (Figure 2., below).

**Figure 1.** EL4298 Location Diagram

### Geological Framework

The geology of the central Flinders Ranges is comprehensively covered by MESA Bulletin 54 (Geology of South Australia), Bulletin 53 (The Adelaide Geosyncline) and the PORT AUGUSTA, PARACHILNA and ORROROO 1:250000 geological map sheets. The Port Augusta tenement straddles the transition from shallow Proterozoic basement of the Gawler Craton in the west to regions of thicker Adelaidean, Cambrian and Tertiary cover in the east (Torrens Hinge Zone).



### Review of Previous Exploration

A number of companies have been active in this area in the past, summarised below.

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**Table 1.** List of Previous Explorers

## **Drilling**

There is no historical drilling data available within the tenement boundary, however drilling immediately north at Wilkatana has intersected coal in a number of wells drilled targeting Cambrian hosted oil. The company drilled two shallow geothermal wells in 2009, Theoden 2 and Thorin 1 as part of its exploration for geothermal energy within the overlying GEL 285. These wells targeted flat lying Torrens Hinge one rocks to obtain a temperature gradient. No mineralisation or coal was intersected in these holes. Details of these wells have been extracted from their respective well completion report and were provided in the Company's previous Annual Report for EL4298.

## **Geophysics**

The geophysical data available for the area consist of state regional aeromagnetics, gravity, and seismic data which was collected by Torrens Energy as part of their geothermal exploration within GEL285. The aeromagnetic data has been reinterpreted and is given in the relevant section below. The state gravity image for this area shows that EL4298 lies over a gravity low, which is interpreted to represent a basinal structure, which may host coal measures. A gravity image is provided below and has been incorporated in a reinterpretation of the area. Two principal seismic data sets, one acquired by Torrens Energy as part of its geothermal exploration program within the overlying GEL285, and the other provided by Geoscience Australia, have been reinterpreted. The work summarised below shows that a thick sequence of relatively flat to slightly inclined Cambrian and Neoproterozoic rocks are present.

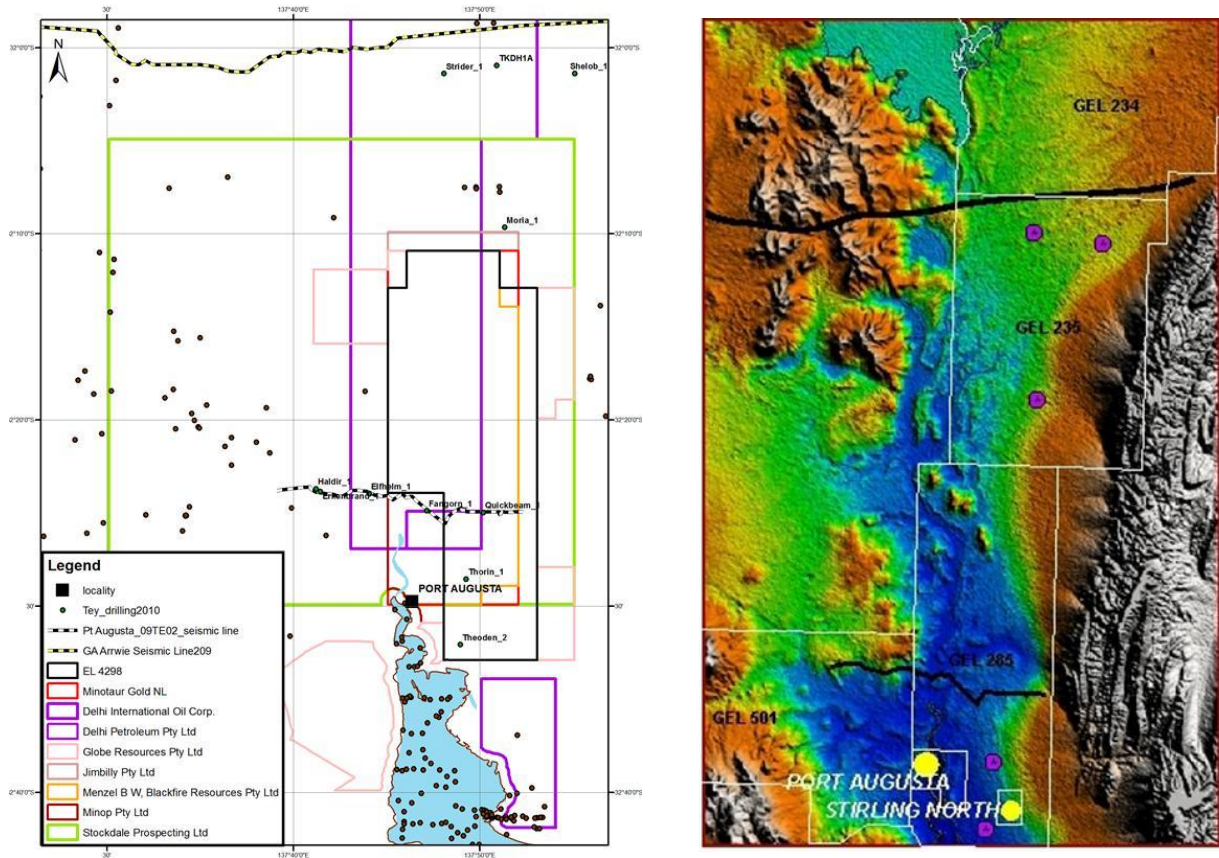
## **EL4298**

### **Prospectivity**

The principal reason for obtaining EL4298 was for its potential for coal and hydrocarbons within the Tertiary sequences of the mapped basin. Coal was indeed intersected in an area to the north in the early 1950's which led to drilling by Santos in 1956 at Wilkatana. The Wilkatana drilling confirmed the presence of coal measures to a thickness of 2m at the historic Wilkatana oil field.

### **Reinterpretation of Work Completed 2009**

In 2009 Torrens Energy commissioned consulting geophysicist Matthew Zengerer BSc (Hons) to undertake a 3D assessment of the geology underlying EL4298. The work aimed to provide the basis for an improved geological control of the area for geothermal exploration however this has also provided an improved basis for understanding its mineral potential. The methodology behind a 2D/3D Geophysical/Geological Modelling study of the Torrens Energy Port Augusta Geothermal Prospect, based over their GELs 234, 235, 285 and 501 is as follows:



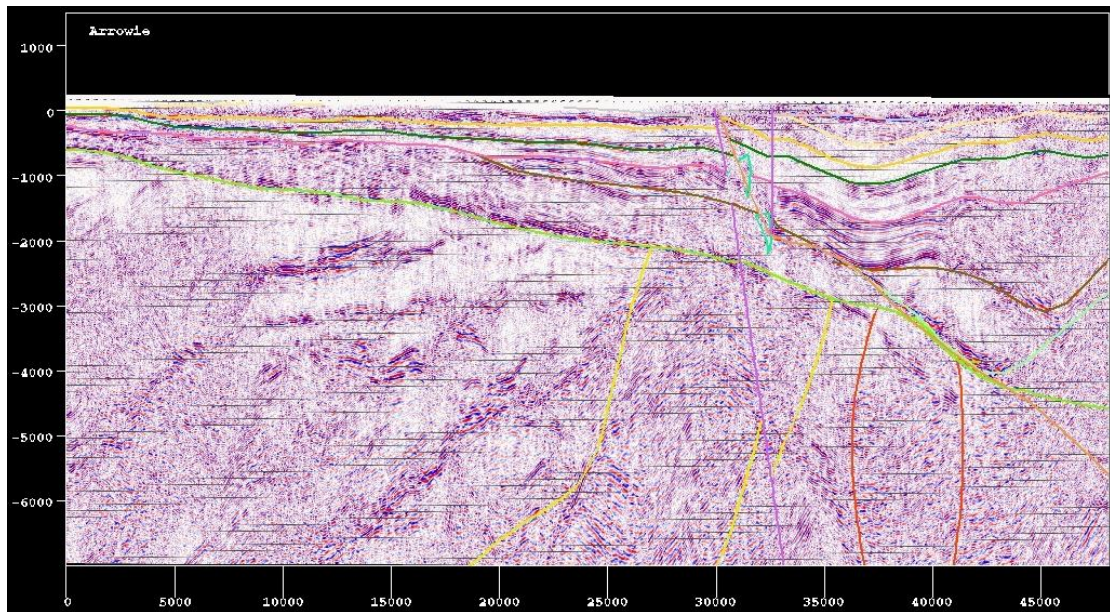
**Figure 2.** Area of Interest, Port Augusta, showing Digital Elevation and location of GELs, drillholes (purple) and 2D Seismic Lines 09TE-02 (south) and 08GA-A1 (north).

This type of modelling aims to integrate existing geological and drilling information with geophysical data such as seismic, gravity and magnetics, in a 3D environment which will simulate the 3D geology of the region of interest by creating a 3D geological model which can then be used as an input for thermal modelling. The Port Augusta Area of Interest (AOI) is shown in Figure(s) 2.

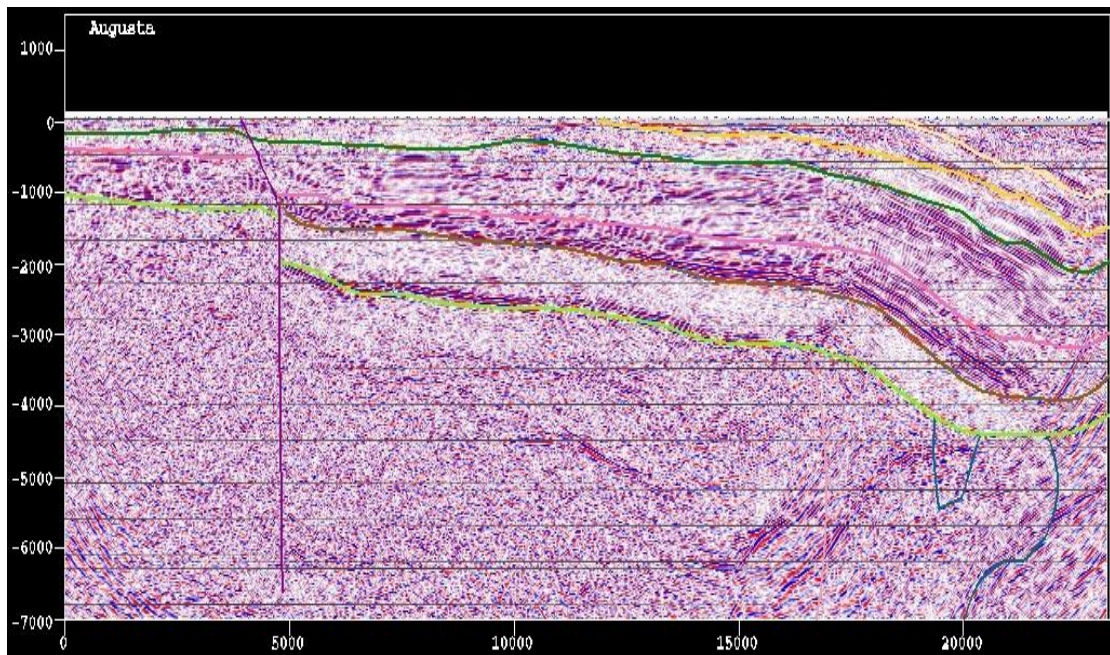
Available geological data included several Torrens Energy drillholes, State drillholes and State geological mapping. Geophysical data comprised existing State 400m line-spaced magnetics, State regional Bouguer Gravity at very coarse spacing, and two recently acquired 2D Seismic Lines, 09TE-02 by Torrens Energy, and 08GA-01 by Geoscience Australia (see Fig1 & 2).

The Intrepid 3D Geomodeller suite was used to build the 3D Geological Model, with the ultimate intention to output a 3D voxel model to use in 3D Geothermal Modelling. The 3D Geomodeller software interpolates between geological boundaries, orientation data and drillholes to generate a 3D geological model that is flexible and readily adaptable with additional geological information. Geomodeller also supports faults and fold information into its interpolation.

To supplement the existing geological information, interpretation of the 2D seismic lines were performed and adapted into Geomodeller. A simplification of the stratigraphy was also performed, grouping units into their gross Cainozoic – Proterozoic time equivalents for ease of modelling.



**Figure 3a.** The Arrowie 2D seismic line 08GA-01 showing interpreted geology lines. VE = 3:1.



**Figure 3b.** The Port Augusta 2D seismic line 09TE-02 showing interpreted geology. VE = 3:1.


















The interpretation on the seismic lines is still the subject of some debate, until such time as some specific drilling is performed along the lines and stratigraphic correlations are performed. The interpretation has been made through careful cross-comparison of nearby drillholes using Geomodeller as a guide, using logged depths to specific units and comparing how they are distributed across the area, and existing geological mapping. Many inferences have been made, however, on the nature of deeper sedimentary and units, and older Proterozoic basement, as the geology is complex in places and clearly folded, faulted and thrust to the east particularly in the northern Arrowie line.

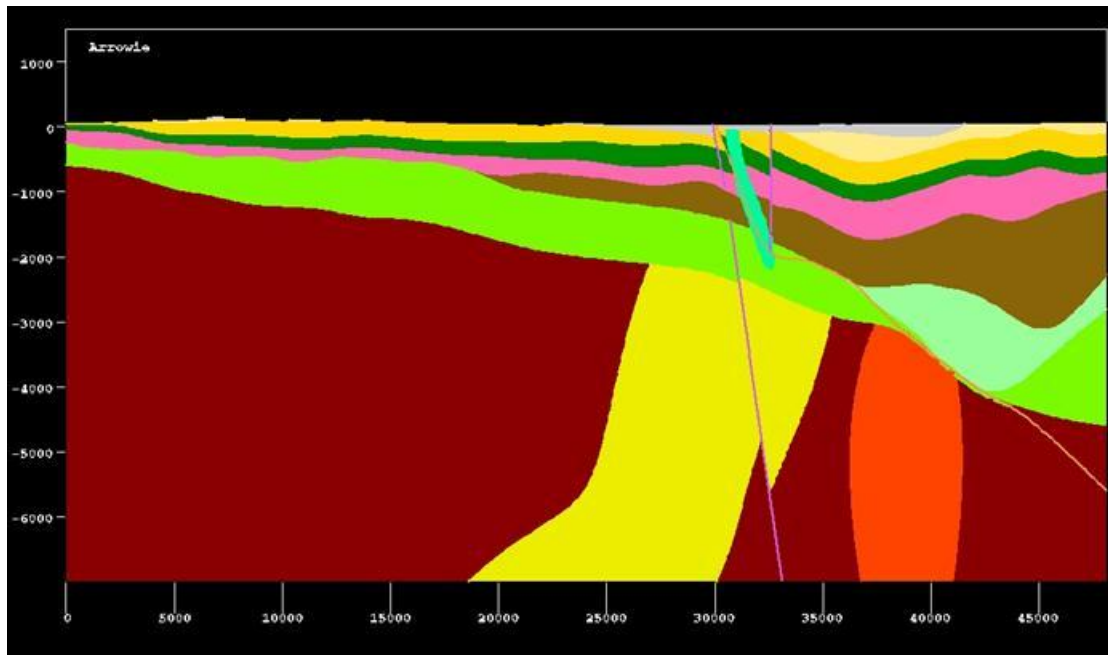
These inferences particularly concern the nature and distribution of the Willouran and Torrensian age rocks west of the main Flinders Ranges thrust fault at the forefront of the range, which lies just to the east of both seismic sections. Torrensian/Burra Group rocks are not known to occur west of this structure or anywhere on the Stuart Shelf, however Torrens Energy and I have inferred their existence in a fashion similar to the interpretation at Parachilna. Both there and here we have implied from the seismic that Torrensian rocks pinch out or fault out fairly consistently 20-30km west of the range front, mainly at depths deeper than what has been currently encountered in drill holes. The implication from this interpretation is that Torrensian sedimentation is controlled by a second onset of strong rift-related extension closer to the Central Flinders Zone.

Willouran age/Callanna Group rocks have long been enigmatic in terms of their relationship to other rocks of the Adelaide Fold Belt and the Gawler Craton, but inferences on their distribution and geology have implications for understanding the early evolution of the rift zone and later deformation. Basaltic rocks of the Beda Volcanics have been encountered in many drillholes on the Stuart Shelf, mostly at shallow depths, but also may have been confused with older Gawler Range Volcanics (GRV) in some holes. These rocks and associated intertonguing sediments of the Backy Point Formation are thought to form the basal units of the Adelaide Fold Belt rift sequence. Exactly how thick these units are, and whether additional sediments lie beneath the volcanics, is unknown, however drillhole information suggests that the Beda Volcanics are probably only a few hundred metres thick, and their flat-lying nature suggests that they should form a good reflector in seismic data.

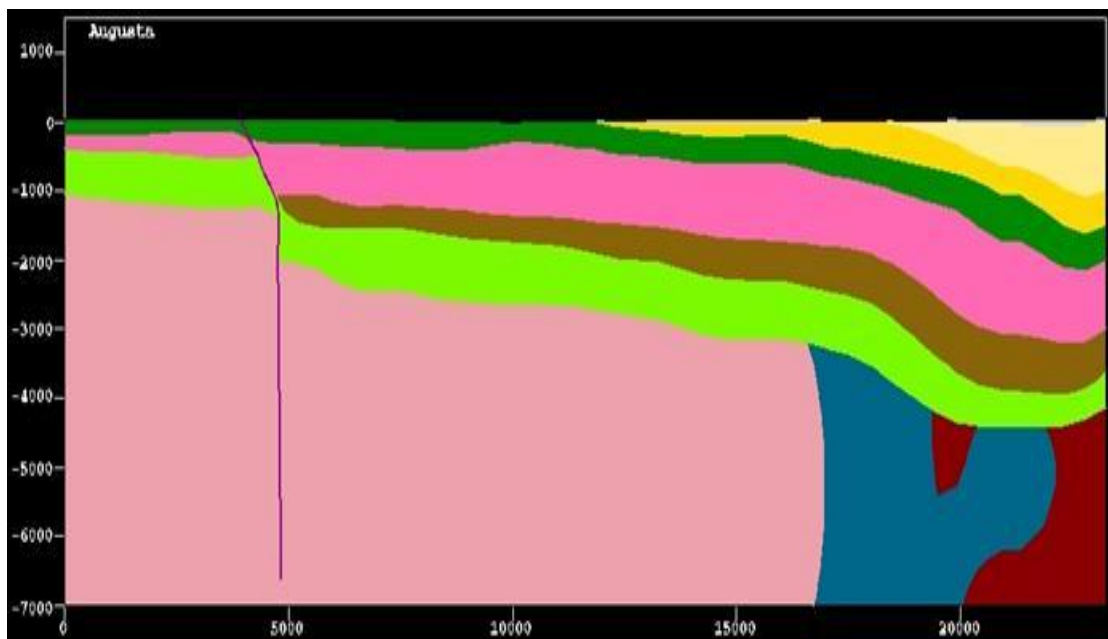
Both seismic lines in the area show good deep continuous reflectors just above or not far above the basement, but in places drillholes appear to have intersected Beda Volcanics well above the suspected horizon, at another reflector. The Port Augusta seismic line even appears to show what may be another rift graben well beneath what is interpreted as Willouran, but until this is confirmed by further studies we have assumed it to be basement, or at least GRV or similar age sediments. Elsewhere we have inferred that the Beda Volcanics are reasonably thick or probably have much larger proportions of Backy Point Formation beneath them; the other two possibilities are that beneath the Beda/Backy Point rocks lie reasonable thicknesses of Mesoproterozoic rocks such as the Pandurra Formation and GRV, or that Torrensian and Sturtian rocks increase dramatically in thickness east of about 750000E.

**Table 2.** Simplified stratigraphy used in Port Augusta 3D Geological Modelling. Assumptions made are that the Beda Thrust, Callanna, Willouran and possibly eastmagbody all belong to the Willouran system.

Reference: Bottom		
Cainozoic_Series (Erode)		Cainozoic
BedaThrust_Series (Erode)		BedaThrust
eastmagbody_Series (Erode)		eastmagbody
EarlyCambrian_Series (Onlap)		EarlyCambrian
Marinoan_Series (Onlap)		Wilpena
		Sandison
		EarlyMarinoan
Sturtian_Series (Erode)		Sturtian
Torrensian_Series (Erode)		Torrensian
Callanna (Onlap)		Callanna
Willouran_Series (Erode)		Willouran
Pandurra_Series (Erode)		Pandurra
GRV_Series (Erode)		GRV
granite1_Series (Erode)		granite1
		maggranite1
locg_Series (Erode)		locg
maggranite3_Series (Erode)		maggranite3
maggranite5_Series (Erode)		maggranite5
eastmaggranite_Series (Erode)		eastmaggranite
Basement_Series (Onlap)		Basement



**Figure 4a.** Interpreted model geology along Arrowie seismic section 08GA-01. Thrust and other fault networks shown by coloured lines. Vertical Exaggeration 3:1.



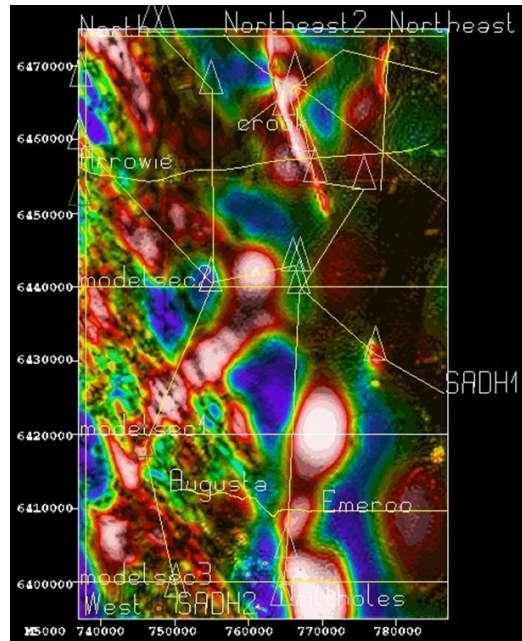
**Figure 4b.** Interpreted model geology along Port Augusta seismic section 09TE-02. Fault shown by red purple line. Vertical Exaggeration 3:1.

Further information has come through gravity and magnetics (Figs 5a, 5b). Petrophysically, the Beda Volcanics are known to be moderately magnetic, but their flat-lying nature and probable magnetisation pattern means that unless they are tipped on their sides, the net effect is only to add a regional dc shift to the overall magnetic signal. High pass and analytic signal filtering of the state magnetics, however, has revealed where Beda Volcanics have been tipped on their sides and thrust to surface at Beda Thrust and Depot Creek (Figure 4a), where they have been intersected at surface or in drillholes, with the thrust also visible in the Arrowie seismic section.

Elsewhere other magnetic signals have been interpreted to be from deep magnetic intrusives, with a possible IOCG lying in the centre of the region (though perhaps slightly too deep for drilling, see modelling), and the Gairdner Dyke Swarm.

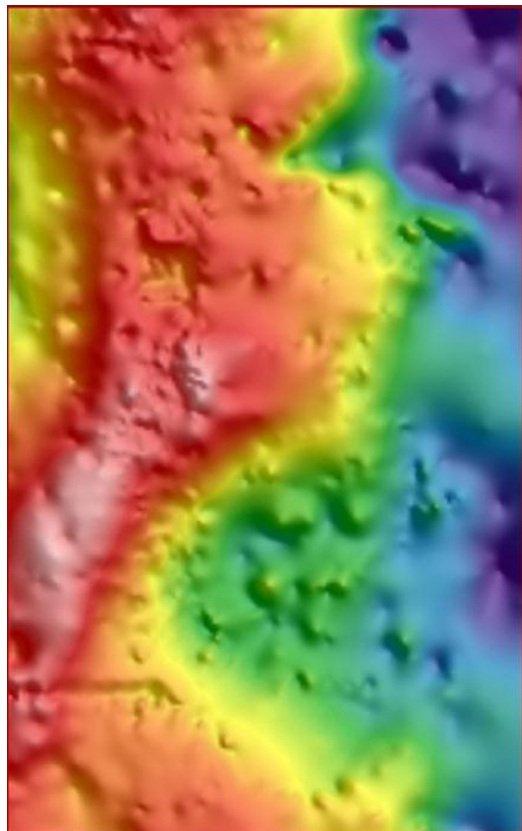
Gravity (Figure 5b) was also used in a qualitative way for fault and basin interpretation, which influenced the final outcome, although gravity data were deemed too coarse for 2D modelling.

**Figure 5a.** Band Pass Filtered TMI draped over TMI Analytic Signal Amplitude image of AOI, showing Seismic sections, cross-sections and interpreted magnetic units.



Magnetic modelling was performed in Model Vision with results shown from Figures 4a & b. A different approach was required from that used in Parachilna where some simple lateral extrapolation away from the seismic line was possible, and similar stratigraphy overlying basement could be inferred. Due to the large area and the varied nature of different magnetic sources, and the virtual non-contribution of Adelaidean sediments, it was decided that the best option was to use the magnetic modelling as a depth-to-magnetic basement exercise, and then use the results to constrain basin depth and imply distribution and shape of magnetic basement units in the final 3D modelling.

**Figure 5b.** Bouguer Gravity image over AOI.



Therefore although 2D modelling was performed on selected sections, these were chosen to cross over magnetic units, with bodies emplaced in a 3D sense and then their overall shapes and depths adjusted to imply consistency across several sections. There were still some difficulties with this approach. The background regional magnetic response was difficult to subtract away from the sources due to the deeply buried nature of some bodies and their distribution, which made modelling these bodies in 2D difficult.

Additional geophysical depth to basement input came from Euler depth to basement estimation. The Euler method relies on automated scanning of changes in the magnetic signal in windows across a grid, with depth estimates to magnetic sources dependent on the size, intensity, and shape of bodies, and window size. Two different window sizes were used, the first scanning to depths of 2km and the other to

8km. The results of the shallower window targeted mainly the tops of the Gairdner Dyke Swarm, known to be Beda Volcanic equivalent ages, and therefore by implication minimum depths to the Base of Sturtian Adelaidean rocks in the west and Base of Torrensian rocks in the east where the method detected thrust Beda Volcanics. These results were statistically culled for reasonableness and then by proximity to dykes or thrust volcanics or closeness to interception in drillholes. The deeper window targeted intrusions, by implication Base of Willouran across the area. Again these results were statistically culled and sorted by proximity to the inferred "tops" of magnetic body depths.

The depth estimates from Euler were input back into Geomodeller as 3D geological points where some further editing took place according to reasonableness of fit. The 3D magnetic body shapes were also exported from Model Vision and converted to 3D geology points inside Geomodeller to provide the basis for the construction of basement magnetic intrusions and overall depth to basement. Some further geological bias was provided along additional sections where necessary based on the findings of the seismic and 2D modelling, and potential field interpretation.

overall trends modelled show a thickening wedge of sediments toward the range front, with possible down-thrown rift basins evolving closer to the range. To the northeast thrust faults are occurring sub-parallel to the Dyke Swarm before the range front and are possibly facilitated by Callanna group evaporitic units and/or diapirism. East of these thrusts sediments begin to dip more strongly or are deformed, some gentle deformation and sediment warping is also present west of the thrusts.

Localised basins may also contain Cambrian sediments as evidenced in the central Wilkatana area but overall sediment distribution may remain relatively simple despite the onset of thrusting and folding.

## Conclusion

This work may represent the most comprehensive study of the stratigraphy in the Port Augusta area. The resulting Figure 5 demonstrates the variability in current understanding, and the power of 2 & 3D sectional interpretation to predict more accurately regional trends.

Viewing this image shows that, although effort has been made to ensure continuity and believability of the model calculation across the area, due to the area's size and a bias in east-west information and interpretation, some inconsistencies may remain in the final model in the north-south direction. This can be adjusted as more information comes becomes available.

## EXPENDITURE STATEMENT

(18 August 2010 to 18 August 2011)

Mat Zengerer Interpretation Work 2009 (\$20,000) x 20%:	\$4,000
Technical Evaluation & Analysis:	\$2,000
Operating & Administrative:	\$2,000
<b>Total:</b>	<b>\$8,000</b>

Monday 2 September, 2012

Nella Petruzzella  
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Dear Nella

**ANNUAL REPORT FOR EL4298,  
12 MONTH PERIOD ENDING 18/08/2012**

Please find enclosed Torrens Energy Limited 12 month Annual Report for the Exploration Licence 4298, Port Augusta. There were nil Technical activities and nil expenditure relating to this area during the last 12 month period.

Yours sincerely



John Canaris  
Consulting Geologist  
**Torrens Energy Limited**