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# Annual Technical Report

## for Period

### 18th September 2010 to 17th September 2011

## EL 27138 Cooloola

Titleholder	Toro Energy Ltd
Operator	Toro Energy Ltd
Tenement Agent	Toro Energy Ltd (Perth)
Title	EL27138 Cooloola
Project	Wiso
Report Title	EL27138 Cooloola Annual Technical Report for period 18 <sup>th</sup> September 2010 to 17th September 2011
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Corporate Author	Toro Energy Ltd
Target Commodity	Uranium
Date of Report	20 <sup>th</sup> November 2011
Datum	GDA94 Zone 53
250k Mapsheets	Lander River SF53-01, Bonney Well SF53-02, Mt Peake SF53-05 , Barrow Creek SF53-06
100k Mapsheets	Jarrah Jarrah 5556, Numagalong 5656, Wauchope 5756, Crawford 5655, Taylor 5755
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## Summary

This second Annual Technical Report for EL27138 covers work carried out during the twelve month period from 18<sup>th</sup> September 2010 to 17<sup>th</sup> September 2011. Exploration activities during the period have involved:

- Further analysis of SkyTEM data collected in previous reporting period.
- Progressing land access negotiations with Central Land Council. Toro attended a meeting with traditional owners in May 2011 and traditional owner support was gained in July. An exploration agreement was negotiated and signed in October 2011 and a clearance was carried out during the same month for proposed drilling in 2012.
- The protracted nature of these land access negotiations and the lengthy 2010/11 wet season did not enable any on ground exploration during the reporting period.

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## 1 INTRODUCTION

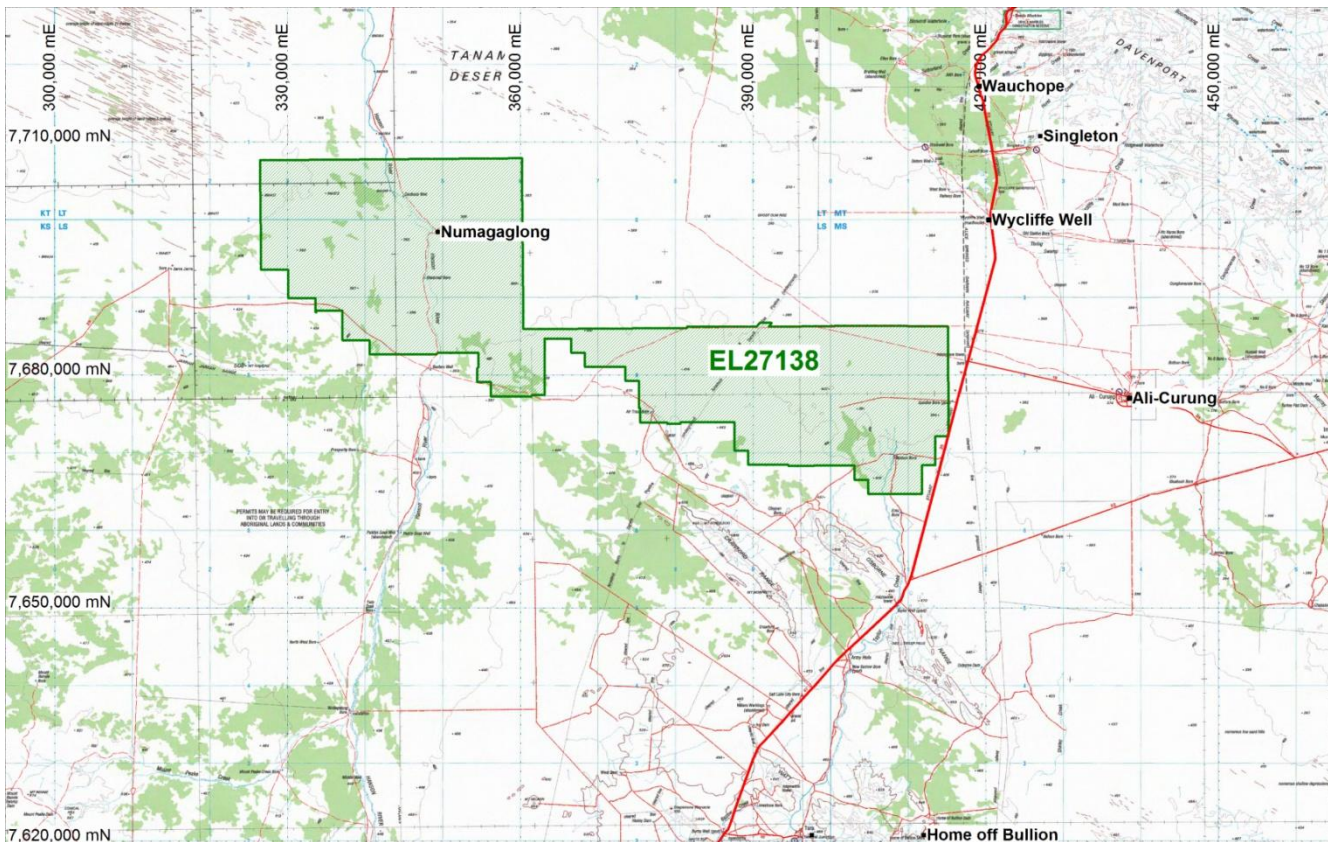
This report outlines the work conducted within the exploration tenement EL27138 during 2010-2011 by Toro Energy Limited (“Toro”; ticker code “TOE”).

EL27138 is located approximately half way between Alice Springs and Tennant Creek on the Stuart Hwy and is situated on the southern edge of the Wiso Basin and northern edge of the Arunta Block (Fig 4). Access from Alice Springs is 340km north along the sealed Stuart Highway and then west along station tracks (Fig 1).

The Tanami Region is semi arid with monsoonal influences, with 75-80% of rainfall occurring in the summer months. Annual rainfall is generally higher in the north of the region. The mean annual rainfall for Tennant Creek (to the North) is 375 mm. Rainfall is extremely erratic.

Most of the region is hilly range country, covered by Spinifex (hummock grassland) and a variety of stunted vegetation. Adjacent are sand plains with minor sand dunes containing Spinifex, Acacia, Blue Gum and Mallee scrub plants. Drainage from the high-relief ranges quickly dissipates into shallow water courses and floodplains that break up the sand plains or locally into ephemeral salt lakes.

Toro are exploring the Wiso Basin component of this tenement for palaeochannel/roll front – style uranium mineralisation with Tertiary cover and Bigrlyi-style uranium in the underlying Palaeozoic Wiso Basin. The survey area has received no uranium exploration in the past and only limited petroleum exploration. However, based on available data, it is analogous with the Amadeus and Ngalia Basins, being of similar age and having sedimentary components and intracratonic-foreland setting, and therefore has potential for Bigrlyi and Angela style deposits. There is also a likely presence of younger (Tertiary?) palaeochannel systems that might host tabular or roll front uranium akin to Beverley in South Australia. In an effort to progress both concepts, Toro undertook a collaborative AEM survey with the NT Government. The survey confirmed the latter concept and showed extensive structural dismemberment of the Wiso Basin, supporting the former concept.



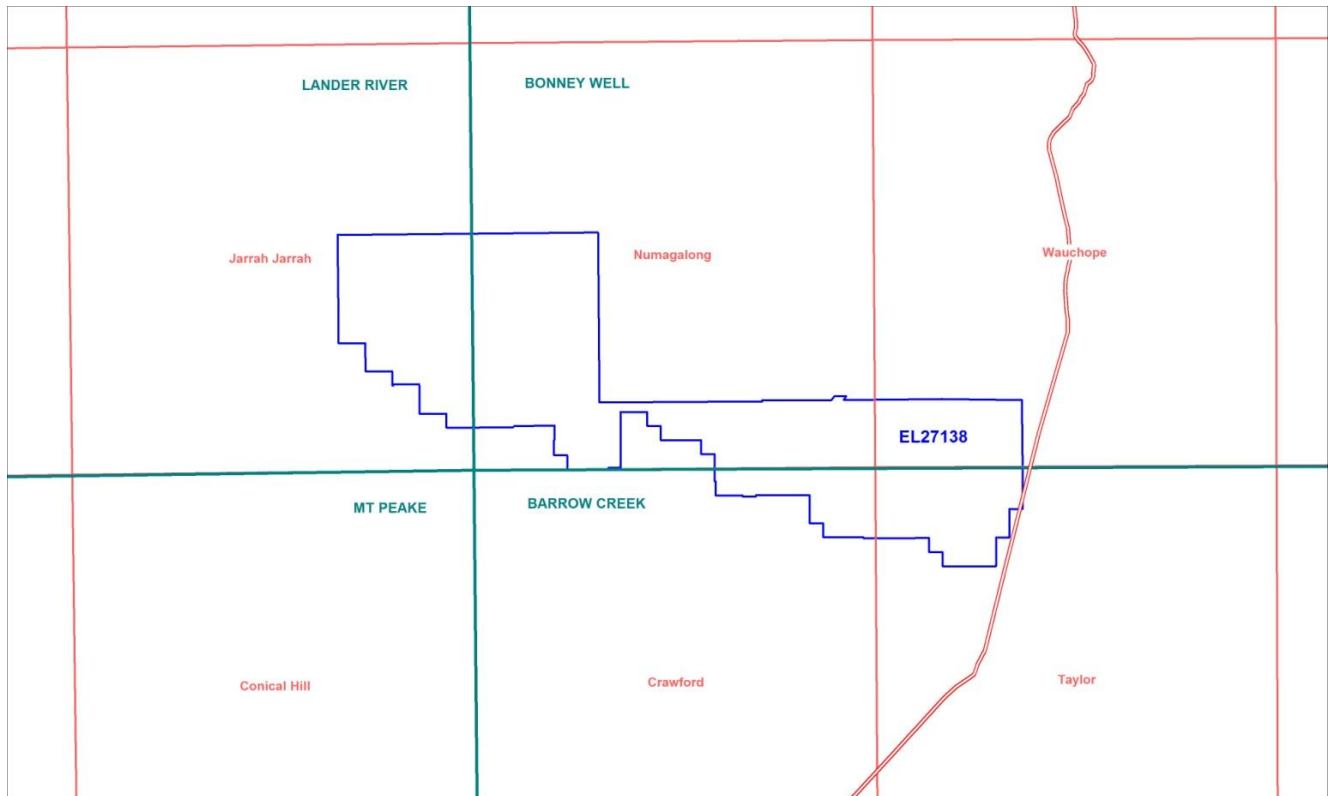
**Figure 1 Location EL27138 Cooloola**

## 2 TENEMENT

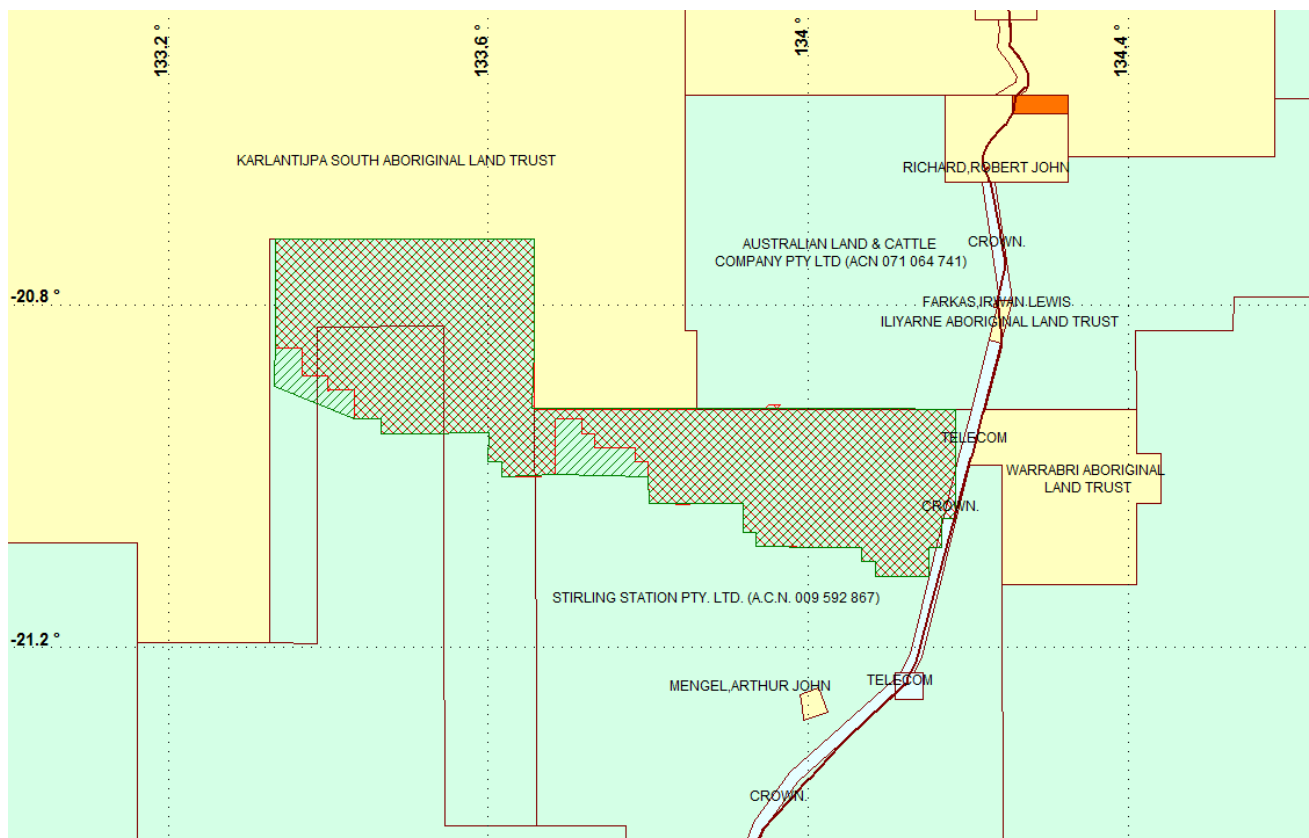
EL27138 was granted on 18<sup>th</sup> September 2009 to Toro Energy Ltd for a period of 6 years. This lease is in its second year of tenure and consists of 500 blocks covering a total area of approximately 1525 square kilometres.

**Table 1 EL27138 tenement details**

Tenement	Tenement_Name	sub blocks	sq km	Tenement_Licensee	Grant Date	Expiry Date	Licence Manager
EL27138	Cooloola	500	1525	Toro Energy Ltd	18-Sep-09	17-Sept-15	Toro Energy Ltd



**Figure 2 EL27138 Tenement Location over 250k and 100k mapsheets**



**Figure 3 EL27138 Location of Pastoral properties**

### 3 GEOLOGICAL SETTING

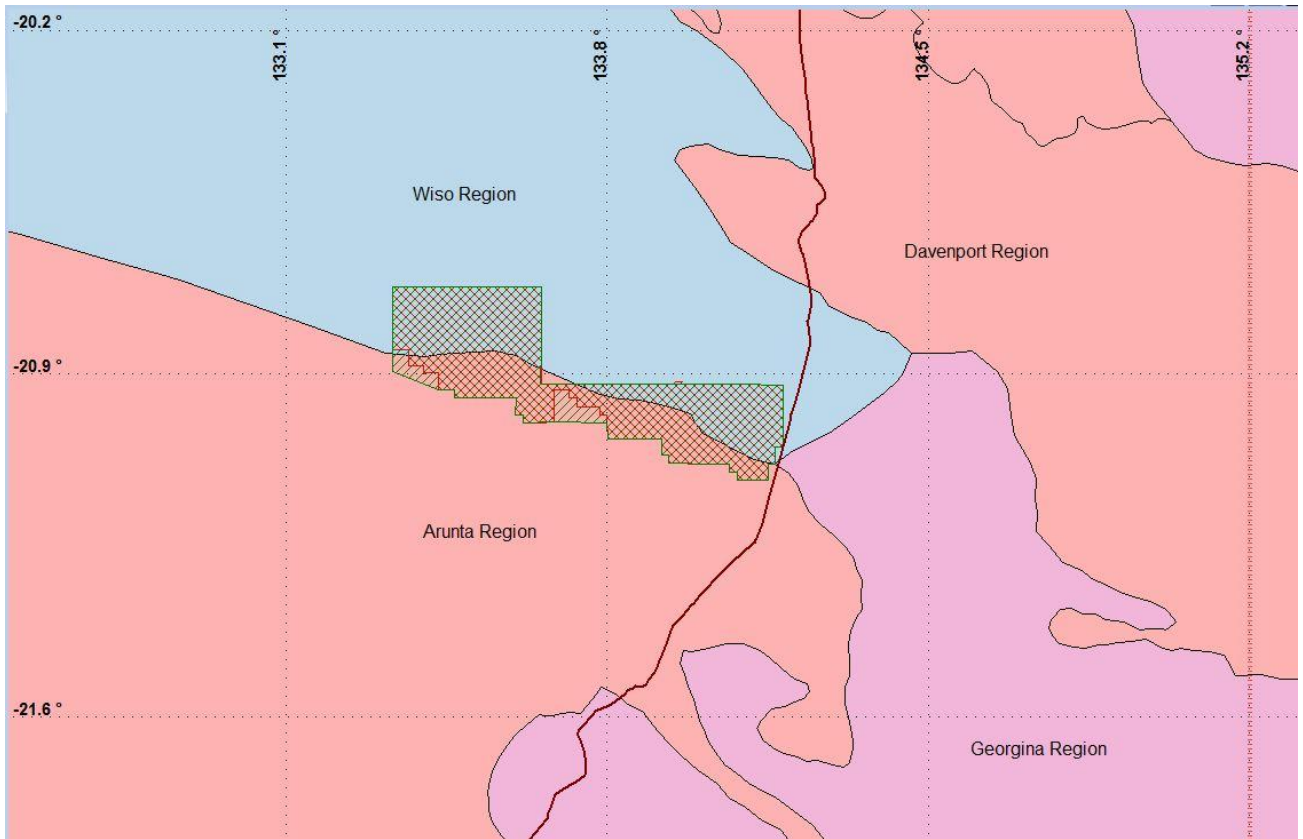
EL27138 lies within the Palaeozoic Wiso Basin region of the Northern Territory. It forms a broad, intracratonic depression which comprises an east southeast trending trough (Lander) in the south and an extensive shallow shelf to the north. The Wiso Basin sequence was deposited on a basement of deformed Proterozoic rocks, the Granites-Tanami Block in the west, the Arunta Block in the south and the Tennant Creek block in the east. The basin is continuous with the Daly River Basin and the Georgina Basin in the North and East and with the Dulcie Syncline of the Georgina Basin in the SE.

The Lander Trough at the southern edge of the basin covers an area of approximately 30,000 sq km. Sediments range from 2000-3000m deep and represent shallow marine to fluvial depositional environments with the lower and upper limits of the sequence defined by unconformity surfaces. Two additional unconformities are recognised in the sequence.

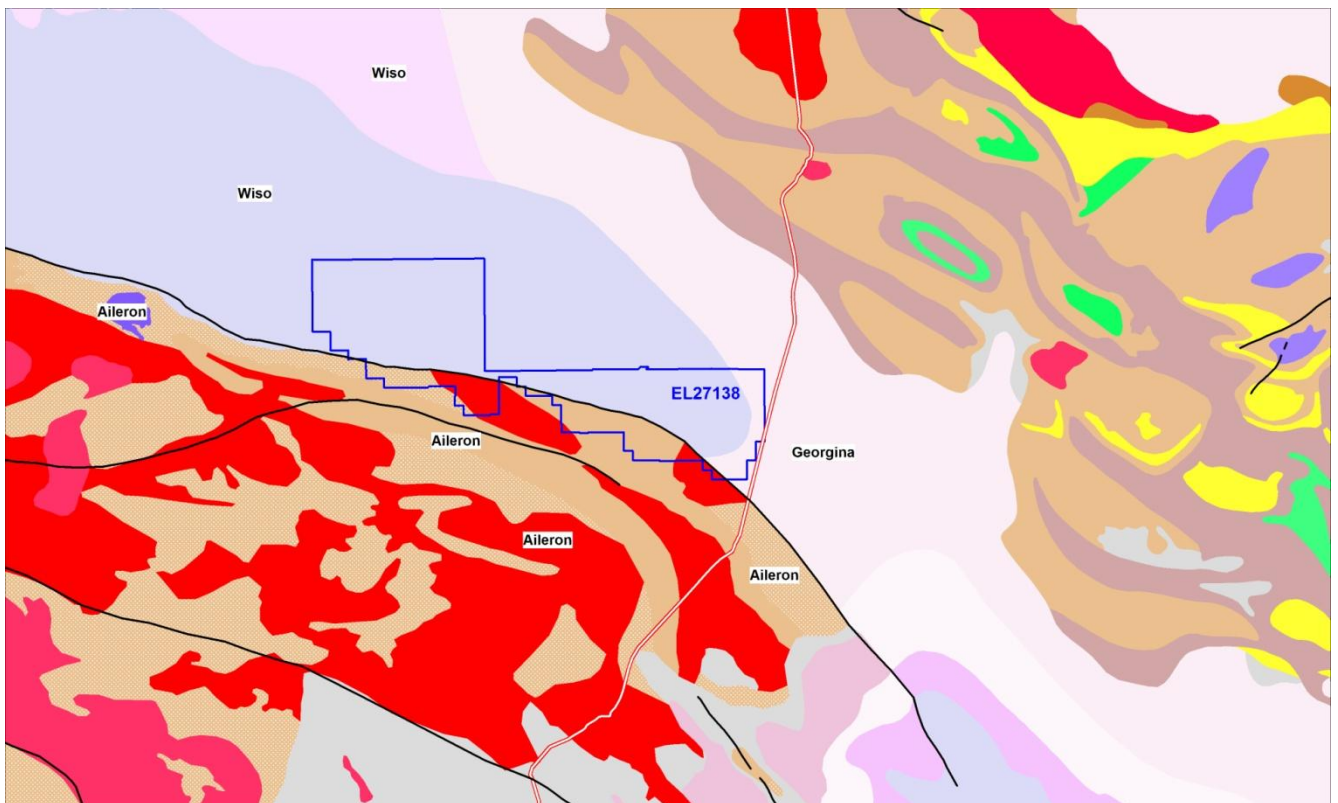
The most significant faulting is along the southern margin of the Lander Trough. A series of parallel, ESE trending faults with an overall displacement >2000m places sediments of the Wiso Basin against the crystalline rocks of the Arunta Complex (1989, NTGS)

The Arunta complex is a late Palaeoproterozoic to Ordovician succession of sedimentary, volcanic, and intrusive rocks interrupted by several tectonothermal events (deformation, metamorphism, granite production). The region comprises three provinces: Aileron Province, which makes up most of the Arunta, Warumpi Province along the south margin of the Arunta, and the triangular Irindina Province in the east. The Aileron Province consists of: (1) a basal Lander Package (1880-1840 Ma), which makes up about 60% of the north, centre, and west of the region; (2) the Ongeva Package (1810-1800 Ma) in the southeast, of unknown relationship to the Lander Package; (3) an unnamed sandstone unit above the Lander Package, with a maximum depositional age of 1820-1800 Ma; (4) the Reynolds Package, which is unconformable on the Lander Package and unnamed sandstone (Geoscience Australia, 2009).



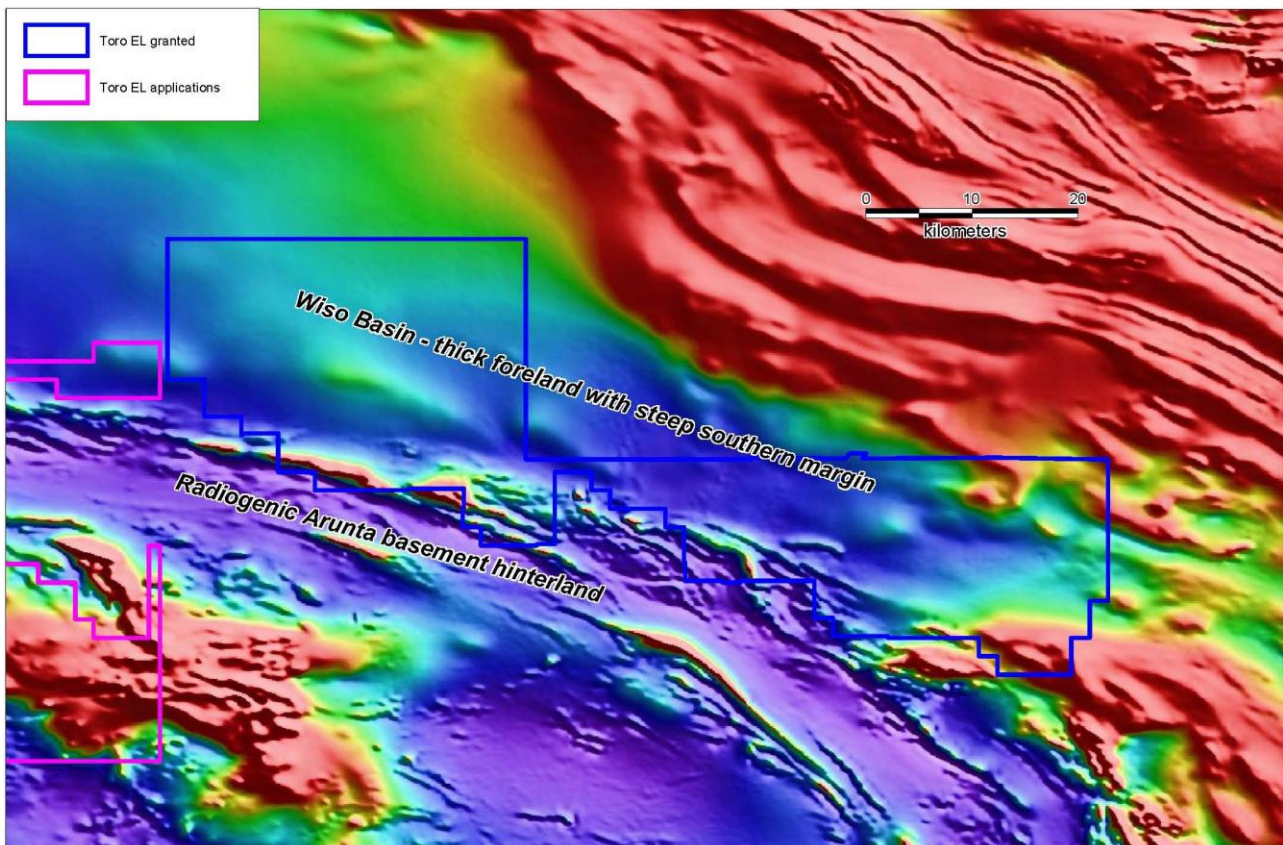


**Figure 4 EL27138 over major Geological provinces**



**Figure 5 EL27138 on NT Govt 2.5M scale geology interpretation & faults**





**Figure 6 EL27138 over TMI showing nature of boundary between basin and basement**

#### 4 PREVIOUS EXPLORATION

The Wiso Basin and its structurally-controlled southern margin are poorly understood compared with other areas of the NT, largely because the basin has not attracted the attention of explorers for its mineral economic potential. Regionally, existing data consists of 22 BMR shallow stratigraphic bores with an average depth of 100m (two occurring on licence). Geophysics included one seismic survey (5 fold, 1967; 200km), two aeromagnetic surveys (1967) and one gravity survey (1965). In addition, stratigraphic boreholes, a seismic survey, regional gravity and aeromagnetic surveys were carried out at various times. The basin is also substantially covered by Tertiary sediments and the eastern extension of the Tanami Desert. Limited historic exploration has been focussed on petroleum systems, analogous with the gas-producing Amadeus Basin. The maximum overlap of any historical tenement over the proposed survey area was 25%. Most historical exploration occurred over the southern edge of the proposed survey area and was mainly for base metals and gold with some uranium within the Arunta Complex. Toro Energy are exploring for a completely different style of mineralisation within the Wiso Basin, redox-controlled uranium. For more detailed information on previous exploration, see EL27138 Annual Technical Report – 2010.

**Table 2 Historical Geophysical Surveys over EL27138**

Name	Open File Rpt #	Overlap (%)	Type	Company	Contractor	Aircraft	Positioning	Date	Orientation	Spacing(m)	Height(m)	Type
Baxters Well	CR2000-0147	20	TMI, Radio - metrics	Normandy NFM	Kevron	Rockwell Aero-commander 500S	Real Time DGPS	1998	N-S	100	40m	Caesium vapour 256 ch
BAC R93		10	TMI, Radio - metrics									
Bonney Well		50	TMI, 256 ch Radio - metrics		Aust Geophysical surveys	Fixed Wing Cessna Caravan VH-AGS	Real time DGPS	1999	180	400 m	60	Caesium vapour Scintrex CS2
Mount Peake		30	TMI, Radio - metrics		Kevron	Fixed wing Rockwell Aero - commander	Real time DGPS	1995	180	500	100	Caesium Vapour Scintrex
Barrow Creek		30	TMI, Radio - metrics		Austir ex Int	Fixed Wing Nomad N22B VH-CPX 1981			180	500	100	Proton Precession
Hanson River	PR67/001A	5	Seismic	American Overseas	Ray Geophysics			1967				Five Fold, 217.21 km
Bougier Anomaly Grid		100	Gravity	Geoscience Australia				60's, 70's		11 km grid		

**Table 3 Historic Exploration - summary**

TenNum	Coverage (%)	Company	Reports	Commodity	Granted	Ceased	Exploration	Comments	Relevance 1 to 5	Report Numbers
AP 2602	15	Kewanee	1	CuPbZn	21/02/1970	20/02/1972	Gridding, sampling and geophysics	Conclusion was that any mineralisation would be below the weathered zone, >60m and controlled by structure	1	CR1973-0049
AP2651	25	Kewanee	1	CuPbZn	01/10/1970	30/09/1972	Diamond drilling, Airtrak,		3	CR1972-0072 (report not available - info from Mex Search abstract)
AP 2742	2	Kewanee	2	CuPbZn	12/10/1970	11/10/1971	Geochem, Airtrak/diamond drilling	Looking for large disseminated sulphide bodies in Lwr Proterozoic	1	CR1973-0064, CR1972-0072
AP 2753	15	Kewanee	1	CuPbZn	19/10/1970	18/10/1971	Mapping, Airtrak and Auger drilling	Looking for Tennant Ck style deposits	2	CR1973-0059
EL104	2	Kewanee	4	CuPbZn	28/04/1972	27/04/1973	Kewanee - Air photo interp, geochem, soil, stream and rock chip samples	80% soil coverage, geochem focused around porphyry, qtz blow, gossan and hornfels.	1	CR1973-0161,
EL 117	10	Kewanee	1	CuPbZn U <sub>3</sub> O <sub>8</sub>	07/05/1972	16/05/1973	Percussion drilling, 100 rock and soil samples, mag, scint and EM16 traverses over outcrop	No significant results - "without economic potential". Reference to a report written on the 16/5/73 which talks about a scintillometer survey over areas of calcrete. Cannot find report.	1	CR1973-0179,
EL 3201		Uni Adelaide					Fluid inclusion study?	No exploration	1	CR1983-0167
EL 372	10%	Kewanee	2	Cu	28/05/1972	27/05/1974	Regional geological mapping Construction and interpretation of stereo mosaics and BMR maps Soil and stream sediment samples were collected Airtrak drilling,	trace malachite	1	CR1973-174, CR1974-0012, CR1975-0072
EL 381	5	Kewanee	2	?	02/08/1972	01/08/1973	Field Reconnaissance		1	CR1973-0165
EL 5235	2	Poseidon/ Yuendumu	5	Au ,Cu (Granites style)	16/03/1988	24/12/1993	Hand and compass gridding, -80 mesh soil sampling(114 samples)	Western blocks were relinquished, several broad sympathetic Au-As anomalies weakly mineralised qtz veins	2	CR1993-0517, CR1991-0248 ,CR1992-0237, CR1993-0602, CR1992-0372
EL 5482	Adjacent	Yuendumu/ Australian Development Corp	4	All	17/09/1987	23/03/1992	Soils		2	CR1989-0014 CR1989-0794, CR1990-0672, CR1992-0223
EL 7929	15	Yuendumu/ Normandy	1	CuPbZnAu	05/02/1993	04/02/1999	-80#soils	low grade As/Au/Cu Zn anom.	3	CR1995-0030

EL 804	20	Kewanee	1	Cu	28/12/1972	27/12/1974	Airtrack/perc./ diamond/ airborne EM/ geol.mapping	detailed expln over Cu mineralisation	3	CR1974- 0012
EL 8771	5	Normandy Gold	2	Au	20/10/1994	16/5/2002	Regional gravity/ Airmag/ Soils/ RAB	much of area is granite with cover	3	CR1997- 0041, CR1998- 0237
SEL 10038	10	Newmont	1	Au	16/05/2002	14/07/2004	Soils/ Lag/ Aircore	Geochem worth a look	3	CR2004- 0408

## 5 EXPLORATION COMPLETED

In July 2010, Toro Energy commissioned Geoforce to carry out a SkyTEM airborne electromagnetic (AEM) survey over EL27138, covering 1625 km<sup>2</sup>. The collaborative geophysical survey between Toro Energy and the NT Department of Resources involved the acquisition, processing and interpretation of approximately 1100 line kilometres (1500m line spacing) of helicopter-borne electromagnetics. This survey was reported in the previous annual report.

The AEM survey has added substantially to the overall geological understanding of the Wiso Basin and the overlying cover. The juxtaposition of Wiso Basin with the Arunta Inlier is shown to be steep and highly complex, with Palaeozoic units of the Wiso Basin thickening northward from the southern boundary, suggesting this former depocentre is now inverted and was the principal site of episodic deformation and uplift. This is encouraging for Toro's exploration effort, as this type of history is crucial for the multiple phases of recycling of uraniumiferous sediments and development of topographic fluid flow. These allow the concentration of uranium in 'source' sediments that are later accessible to oxidised basinal fluids, which might carry it into locally reduced environments.

Airborne EM showed that groundwater in the Wiso region is not necessarily fresh. The western part of the tenement shows higher conductivity in shallow (<200 m deep) aquifers, indicating likely brackish or saline groundwater, whereas to the east the shallow aquifers carry non-conductive groundwater. This conclusion is supported by recent water bore drilling in the east, where locally-recharged fresh groundwater has been identified for agricultural use. A quick inspection of drill chips by Toro staff showed that the groundwater host is uniformly fine quartz sand with no interstitial clay

and with no confining or interlayered clay units. This is not a positive indicator for palaeochannel uranium and downgrades the potential of the eastern half of the tenement. In the west, EM conductivity depth images show that conductivity in the Wiso Basin sediments is variable, which is interpreted to mean that EM has distinguished some stratigraphic information (ie sandstone versus shales etc).

Toro hope to be able to drill test the western half of the tenement during 2012. Further follow up of Govt water bore drilling will be carried out to confirm the lack of potential to the east.

During the reporting period, Toro were unable to access the tenement to undertake on ground exploration, beyond a reconnaissance trip in May and inspection of Government water bores. The principal reasons were:

- Lengthy 2010/11 wet season, which made most of the area impassable until August 2011.
- Reluctance to undertake any on ground work until the support of traditional owners had been sought and an exploration agreement was in place.
- Need for a heritage clearance prior to any ground work.

To this end, Toro was able to progress land access negotiations with Central Land Council during the year. Toro attended a meeting with traditional owners in May 2011 and traditional owner support was gained in July. An exploration agreement was negotiated and signed in October 2011. Following this, a helicopter-supported heritage clearance was carried out during October for proposed drilling in 2012.

## **6 EXPLORATION EXPENDITURE**

Expenditure incurred during the second year for EL27138 was \$82,799 (see associated Expenditure Report) as compared with a covenant of \$79,000. In the first year of term for EL27138, expenditure was approximately \$188,288, well beyond the covenant at the time.

## **7 EXPLORATION PROPOSED**

The exploration programme for the upcoming reporting period will include the following:

- Roughly 2500 m of reconnaissance aircore drilling in the western half of the tenement to elucidate the nature of the Tertiary sedimentary sequence and the Wiso Basin stratigraphy

and structure; ground truth EM data; determine the nature of groundwater in the two sequences and; test for the presence or absence of redox variations that might support the proposition that uranium is or has been transported in the sediments and a potential reduced host.

- Further investigation of Government water bore data and sample material from the eastern half of the tenement. We understand that the pastoralist and Government are cooperating to develop a large scale agricultural project that will utilise large quantities of shallow good quality groundwater.
- Trial of various surface geochemical sampling methods that might suit the environment, such as soil gas and vegetation sampling.

## **8 REFERENCES**

Feb, 1989, NTGS, Northern Territory Geological Survey Petroleum Basin Study - Wiso Basin, Prepared by: Quests Australia Pty Ltd, Adelaide.

Rawlings, D. and Sullivan, C. 2010, EL27138 Cooloola Annual Technical Report for Period 18<sup>th</sup> September 2010 to 17<sup>th</sup> September 2011.