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# Final Technical Report

## EL 26478 Western Creek

### 3<sup>rd</sup> June 2008 to 12<sup>th</sup> April 2013

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Operator	Toro Energy Ltd
Tenement Agent	Toro Energy Ltd
Title	EL26478 Western Creek
Project	Reynolds Range
Report Title	Final Technical Report EL26478 Western Creek 3 <sup>rd</sup> June 2008 to 12 <sup>th</sup> April 2013
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## **Summary**

This Final Technical Report for EL26478 covers work carried out by Toro Energy during tenure from 3rd June 2008 to 12th April 2013. Tempest (AEM) was flown and six aircore holes completed over an interpreted palaeochannel. Multielement assays were obtained and no anomalous results warranted follow-up. No palaeochannel facies were present, nor was any uranium mineralisation encountered. Lithologies indicate AEM anomaly is a result of a structural feature rather than a palaeochannel. This is indicated by the shallow depth to basement consisting of sheared metamorphics.

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## 1 INTRODUCTION

This report outlines the work conducted within relinquished portion of the exploration tenement EL26478 from 3rd June 2008 to 12th April 2013 by Toro Energy Limited (“Toro”; ticker code “TOE”).

Uranium mineralisation is known in the region and is restricted (thus far) to the Proterozoic Aileron Province and Carboniferous Ngalia Basin. Uranium at Nolans Bore (Arafura Resources), 100 km to the southeast, occurs in phosphatic and REE-enriched metasomatic pods and veins within the high-metamorphic-grade Lander Rock beds. Uranium is also present in high grades at Bigrlyi (Energy Metals-Paladin JV) to the southwest and within carbonaceous sandstones of the Mt Eclipse Sandstone. The deposit is a roll-front style formed during uplift and deformation of the basin in the Carboniferous.

Locally, EL26478 incorporates Lander Rock beds and Aileron Province granites. These outcrop sparsely and indicate that the tenement has good potential for Tertiary palaeochannels. Previous literature supports this.

EL26478 is located approximately 250 km north-northwest of Alice Springs (Figure 1) in the Reynolds Range province on the Mt Theo and Mt Peak 1:250,000 mapsheets.

The Reynolds Range 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. This tenement lies at the southeastern end of the Reynolds Range and incorporates largely hilly country in the south and dissected low hills at the headwaters of the Lander River in the north.

Access to the region is via the sealed Stuart Highway to Aileron, then west along the gravel access road to Mt Denison and Pine Hills Stations. The tenement lies within the northern

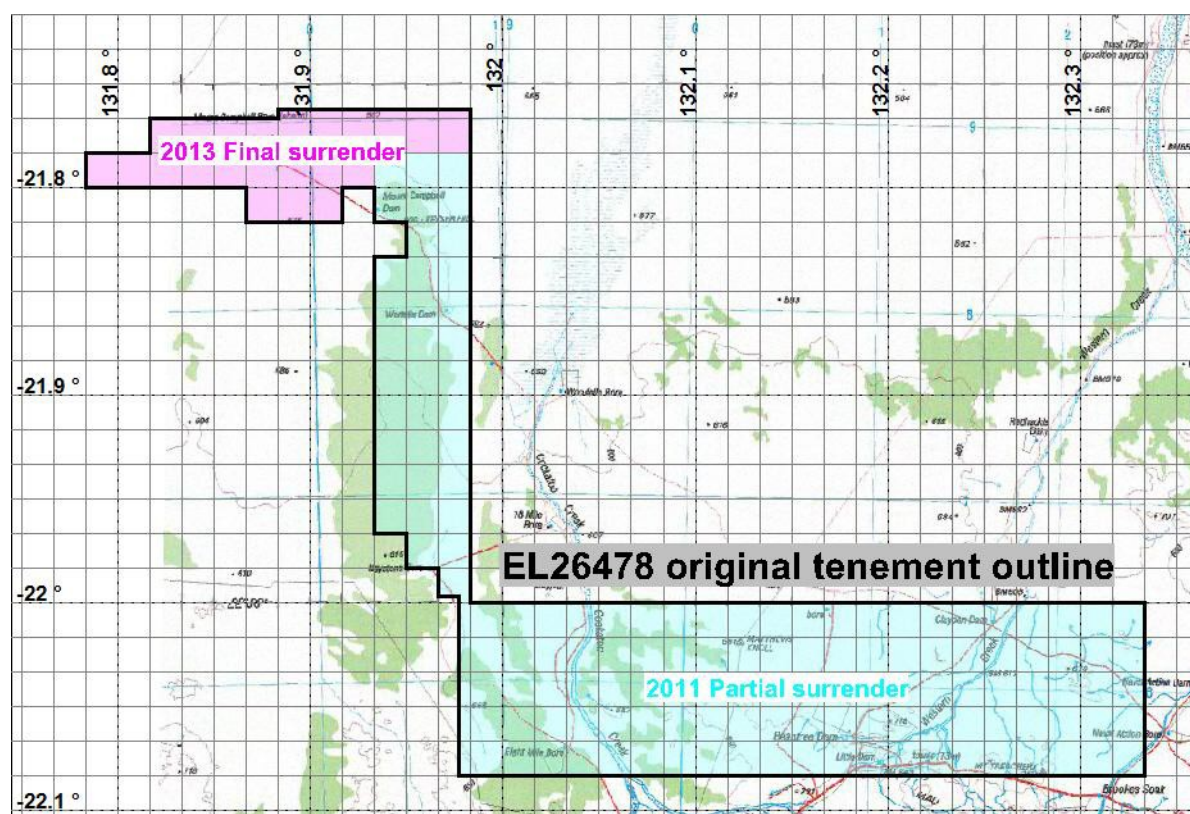
part of Mount Denison Station (PPL 1110). Access within the tenement is via unsealed station tracks within Mt Denison station. Remote areas can only be accessed by helicopter (Figure 1)



**Figure 1 Location Western Creek EL26478 (red)**

## **2 TENEMENT**

EL26478 was granted on 3<sup>rd</sup> June 2008 to Toro Energy Ltd for a period of 6 years. A waiver for the compulsory relinquishment of 50% for the 3<sup>rd</sup> year of grant was approved and 173 blocks were retained until the 2<sup>nd</sup> June 2011. 145 blocks were relinquished at the end of the 3<sup>rd</sup> year. Final surrender of the remaining tenement occurred on April 12th 2013 (Figure 2). EL26478 has been the subject of group reporting with EL26287 which was approved on 19<sup>th</sup> February 2010 (GR No.144-10).



**Figure 2 Plan of relinquished portion of EL26478**

### 3 GEOLOGICAL SETTING

The Reynolds Range project lies within the Arunta-Ngalia region of the Northern Territory. Basement is comprised of Palaeoproterozoic to Mesoproterozoic metasedimentary and granitic rocks assigned to the Aileron Province, including the Reynolds Range Group. These granites and orthogneisses are notably highly-radiogenic within the Reynolds Range, hosting numerous veins and pegmatites with anomalous uranium and thorium. These rocks are overlain by Neoproterozoic to Carboniferous sediments of the Ngalia Basin to the south of the tenement. Locally, the Aileron Province rocks are overlain by a veneer of Tertiary to Recent clastic sequences, derived by erosion of the radiogenic granites in the Reynolds Range.

Uranium mineralisation is known in the region and is restricted (thus far) to the Proterozoic Aileron Province and Carboniferous Ngalia Basin. Uranium at Nolans Bore

(Arafura Resources), to the southeast, occurs in phosphatic and REE-enriched metasomatic pods and veins within the high-metamorphic-grade Lander Rock beds.

This deposit is subject of ongoing feasibility studies. Uranium is also present in high grades at Bigrlyi (Energy Metals-Paladin JV) to the west, within carbonaceous sandstones of the Mt Eclipse Sandstone. The deposit is a roll-front style formed during uplift and deformation of the basin in the Carboniferous.

The local geology comprises sodic granites, gneisses and minor amphibolites, folded metasediments and intruded metabasic rocks. Major northwest shears cut the sequence and are associated with barren quartz intrusion. The two most prominent structures are located along the Lander River Valley and along the Salt Creek – Blue Bush Bore Valley.

The granites batholiths are interpreted to be shallowly eroded and exposure is of their roof pendants and upper levels only, resulting in an abundance of pegmatite outcrop typically of quartz-feldspar-muscovite-tourmaline composition. Some very coarse examples occur in association with minor tantalum or tin mineralisation that has in places been mined.

The metasediments, comprising meta shales, cherts, siltstone and fine sandstone range in grade from low greenschist to schist facies and are common in the Lander valley. Some exhibit quartz sericite alteration.

Tertiary to recent cover comprising lateritic sands and clays, calcrete and ferricrete is common in low lying areas and exhibits depths in the order of 70m in drilling. Some calcrete shows replacement by chalcedonic silica and this silcrete has been demonstrated to be uraniferous, with a chip sample grading 500ppm in the region.

The present static watertable is significantly below the base of calcrete in drilling and thus is older than the present hydrogeological scheme. This is likely to have an influence on both the preservation and appropriate media of trap sites for secondary uranium mineralisation and the recognition of palaeo flow directions and source rocks.

In the Hann Range, the Vaughan Springs Quartzite (which unconformably overlies the Arunta Palaeoproterozoic rocks) preserves the basal conglomerates of that sequence.

These conglomerates have been shown to be anomalous in uranium (40-50ppm) at surface, where leaching is expected to have occurred

#### **4 PREVIOUS EXPLORATION**

Previous Exploration by preceding licence holders is detailed in the First Annual Technical Report (see appendices)

#### **5 EXPLORATION COMPLETED**

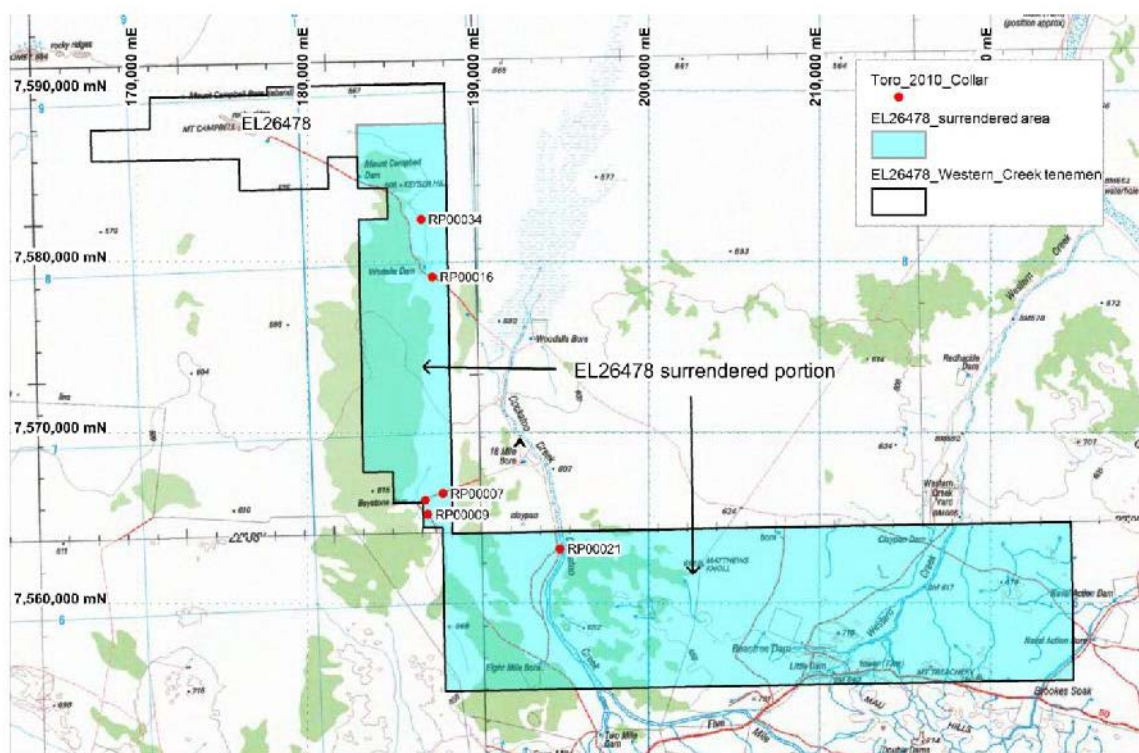
- ☐ **2008** - Toro undertook a brief reconnaissance field trip in July 2008. This involved driving some of the local pastoral tracks to gauge logistics and access issues for future ground exploration. Limited foot traverses of granites were carried out using a scintillometer. A consistent high background was noted, suggesting natural high thorium and uranium concentrations in the Aileron granites. This is consistent with the airborne radiometric data. No samples were collected for analysis.
- ☐ **2009** – Commissioned Fugro to fly Tempest AEM survey in August 2009.
- ☐ **2010** – Toro drilled six Aircore holes for 308m into an interpreted palaeochannel target as indicated by the AEM (Figure 3; Figure 4; Table 1). All holes were gamma logged and composite samples collected varying from 2 to 4m. Samples were sent to ALS in Alice Springs for multi-element assay by ICP-MS (see Appendices). No palaeochannel facies were present, nor was any uranium mineralisation encountered. Lithologies indicate AEM anomaly is a result of a structural feature rather than a palaeochannel. This is indicated by the shallow depth to basement consisting of sheared metamorphics.
- ☐ **2011** No exploration activities were carried out during the reporting period.
- ☐ **2012** No exploration activities were carried out during the reporting period.
- ☐ **2013** No exploration activities were carried out during the reporting period.

#### **5.1 Drilling**

Six holes were completed over EL26478. Aircore drilling was carried out by contractors, Wallis Drilling using a Delta 10 drill rig. Collar locations are shown in Figure 3 and Figure 4 and listed in Table 1. Holes were drilled to refusal through interpreted Tertiary sediments consisting of varying sand, silts and clays. Basement consists of quartzite, granite, gneiss and metasediments.



One metre samples were collected from the drilling cyclone in plastic bags. Each metre sample was litho-logged and radiation was recorded with a scintillometer. Holes were gamma logged using a 27mm probe. Assay samples consisting of either, 8m composites, 4m composites or 1m original samples were collected by scoop into calico bags and sent to ALS Alice Springs. Samples were assayed for As, Ce, Cu, Mo, Ni, Pb, Se, Th, U, W by ICP-MS.



**Figure 3 EL26478 Detail of drillhole locations on relinquished area over topography**

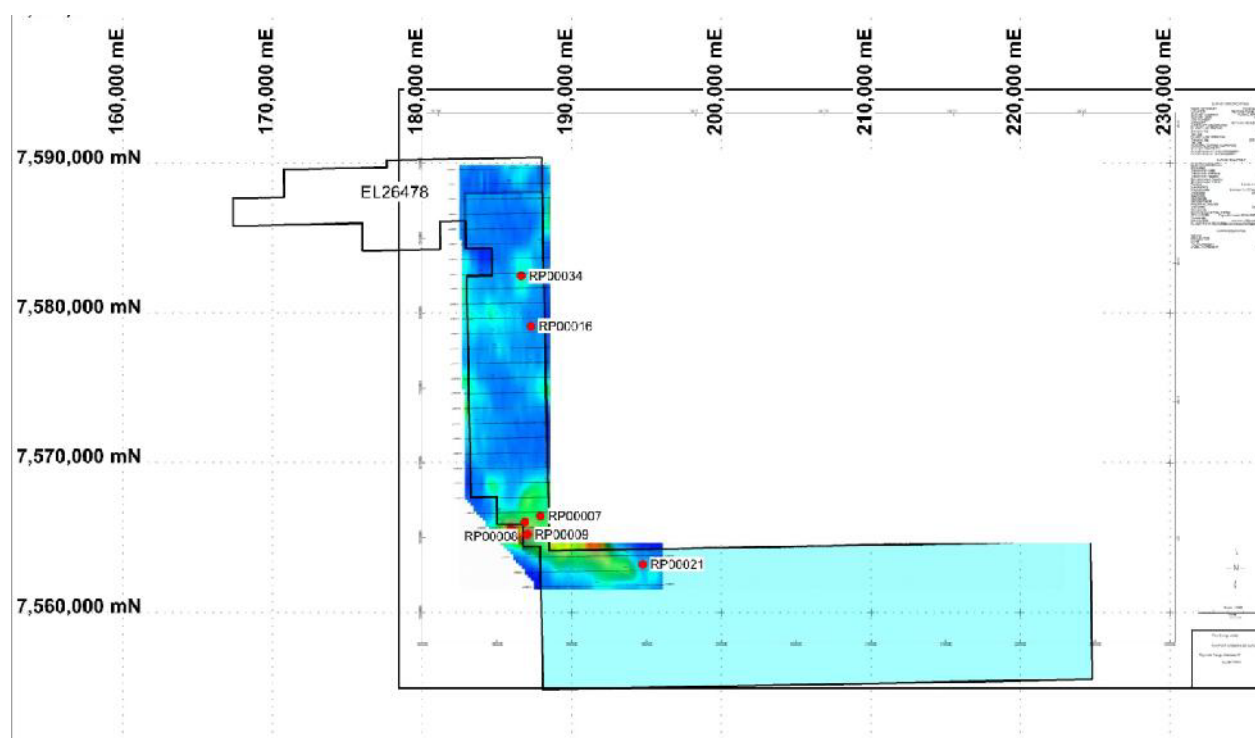


Figure 4 Drillhole locations on AEM image.

Table I Drillhole details

Hole_ID	Hole_type	MGA94_53 east	MGA94_53 north	RL	Total Depth
RP00007	AC	187949	7566431	612	36
RP00008	AC	186916.7	7566036	612	84
RP00009	AC	187055.8	7565204	612	66
RP00016	AC	187317.1	7579109	591	48
RP00021	AC	194784.4	7563205	626	66
RP00034	AC	186651.4	7582475	584	8

## 5.2 Geophysics

Fugro were commissioned to fly and AEM survey during August 2009. The survey was flown at 1000m spacing on EVW flight paths. The processed image in Figure 4 highlights relatively more conductive areas in green and yellow. AEM data can be found in the Appendices.

## 6 CONCLUSION

Tempest (AEM) was flown and six aircore holes completed over an interpreted palaeochannel. Multielement assays were obtained and no anomalous results warranted followup. No palaeochannel facies were present, nor was any uranium mineralisation encountered. Lithologies indicate AEM anomaly is a result of a structural feature rather than a palaeochannel. This is indicated by the shallow depth to basement consisting of sheared metamorphics.

## 7 APPENDICES

### Drilling Data Filenames:

EL26478\_2013\_F\_01\_reportbody.pdf  
EL26478\_2013\_F\_02\_DHLocations.txt  
EL26478\_2013\_F\_03\_DHLithology.txt  
EL26478\_2013\_F\_04\_DHAssay.txt  
EL26478\_2013\_F\_17\_DHRadiometrics.txt  
EL26478\_2013\_F\_07\_File\_Verification.txt  
EL26478\_2013\_F\_10\_Tempest data (digital folder)  
Lithology\_Code.pdf

## 8 REFERENCES

Rawlings, D. and Sullivan, C., 2009. EL26478 Western Creek Annual Technical Report for Period 3rd June 2008 to 2nd June 2009.

Rawlings, D. and Sullivan, C., 2010. Combined Annual Technical Report for Period 2<sup>nd</sup> April 2009 to 1<sup>st</sup> April 2010 EL26287 Mount Denison EL26478 Western Creek.

Rawlings, D. and Sullivan, C., 2011. Combined Annual Technical Report for Period 2<sup>nd</sup> April 2010 to 1<sup>st</sup> April 2011 EL26287 Mount Denison EL26478 Western Creek.

Rawlings, D. and Sullivan, C., 2011. Partial Relinquishment Report EL26478 Western Creek 23<sup>rd</sup> May 2011.