

Titleholder: Gulf Copper Pty Ltd

**Operator: Lagoon Creek Resources Pty Ltd** 

Tenement: EL 29898

**Partial Relinquishment Report** 

Corporate Author: Lagoon Creek Resources Pty Ltd

Date of Report: October 2014

Target Commodities: Uranium and Gold

250,000 Map sheet: Calvert Hills, NT, SE 53-8

**100,000 Map sheets:** Wollogorang, NT, 6463

Seigal, NT, 6462

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#### **ABSTRACT**

Gulf Copper Pty Ltd (GC) is the registered holder of Exploration License 29898 (formally 10335), a project known as "Debbil Debbil Creek". Due to the size of the tenement EL10335 was split into two separate exploration licences and renewed as EL10335 and EL29898 in May 2013, in accordance with the new Minerals Title Act. Lagoon Creek Resources Pty Ltd (LCR) is conducting exploration on EL29898 under an earn-in agreement with GC. Following work undertaken on this tenement the decision was made to relinquish 39 sub-blocks from a total of 110 sub blocks. The area relinquished represents approximately 126km².

LCR has been undertaking uranium and gold exploration on the relinquished ground in an attempt to find additional uranium deposits similar, and possibly related, to the Westmoreland uranium deposit.

The exploration work undertaken by LCR for the sub-blocks to be relinquished has included an airborne magnetics and radiometrics survey which was undertaken in 2005 using a Cessna 210 fixed wing survey aircraft. The survey was flown at 100m NS line spacing with 1000m spacing EW tie lines, at a nominated sensor height of 60m. The survey covered an approximate area of 1,950km<sup>2</sup>, totalling 21,504 line kilometres. Onground exploration has comprised collection of regional stream sediment samples from 54 locations in 2007. Samples were submitted for ME-MS41 and Au-CN12 laboratory analysis. Results revealed the highest uranium concentration of 2.78ppm in sample 1048A. The highest gold concentration was 7.5ppb from sample 1043B. In 2009, a combination of on-ground scintillometer and soil sampling was undertaken over two separate NW trending faults (Target areas 10 and 11) and were considered favourable for uranium mineralisation. The scintillometer work was undertaken at 25m north-south and 50m east-west intervals. A total of 2,405 scintillometer readings were taken, with the highest uranium reading being 12.3ppm at sample point 837 within Target 10. Following the scintillometer work, soil sampling was undertaken over the two target areas. In total, 81 soil samples, at the same spacing as the initial scintillometer points, were taken and submitted for ME-ICP61 laboratory analysis. The laboratory analysis did not reveal any elevated uranium concentrations with all of them falling below the minimum detectable level of 10ppm.

It was decided to relinquish these sub-blocks so that LCR can concentrate exploration on the more prospective areas of the tenement; and to enable a more effective and efficient approach for on-ground work.

#### INTRODUCTION

#### **Location and Access**

EL 29898 is situated on Wollogorang Station, Pastoral Lease 1113 (NT Portion 674). Access to the tenement has been gained from the Savannah Way Highway on the Queensland side and then via station-owned tracks through to the Northern Territory.

#### **Physiography Climate and Vegetation**

The tenement is part of the Gulf Falls and Uplands bioregion comprising undulating terrain with scattered low, steep hills of Proterozoic rocks. The soils are mainly skeletal and shallow sands. Generally the area comprises open flat plain, laterite upland plains with isolated low-moderate relief hilly areas dominated by open woodland.

The climate is sub-tropical, with wet summers and warm dry winters. Heavy rainfall during the summer months can cause substantial access problems, with vehicular access into the principal areas of interest impossible between December and March and sometimes for several months either before or after that period.

Vegetation consists of scattered small trees, shrubs and spinifex. Larger trees occur along the water courses.

#### **TENURE**

Gulf Copper Pty Ltd (GC) is the registered holder of Exploration License 29898 (formally 10335), a project known as "Debbil Debbil Creek".

EL10335 was first granted on 15 August 2002 and LCR entered into an earn-in agreement in February 2005 on the southern portion of EL10335. Due to the size of the tenement EL10335 was split into two separate exploration licences and renewed as EL10335 (the northern area comprising 215 sub-blocks) and EL29898 (the southern area comprising 110 sub-blocks) in May 2013, in accordance with the new Minerals Title Act.

In 2014, the decision was made to reduce EL29898 by 39 sub-blocks, leaving EL29898 with 71 sub-blocks. The area relinquished represents approximately 126km². It was decided to relinquish these sub-blocks so that LCR can concentrate exploration on the more prospective areas of the tenement; and to enable a more effective and efficient approach for on-ground work.

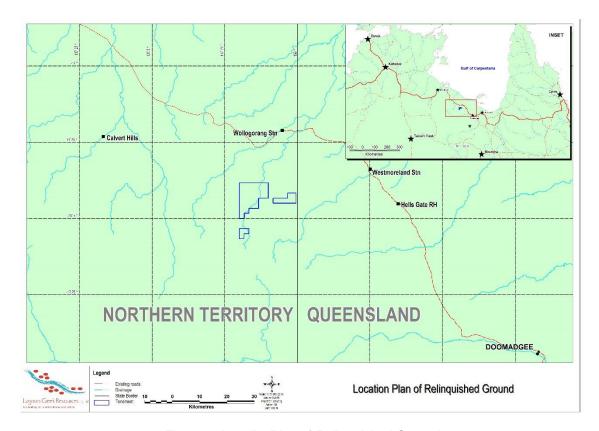


Figure 1: Locality Plan of Relinquished Ground

# **Tenement Relinquishment**

# Tenement area before relinquishment

State: Northern Territory

Exploration Licence Area: EL29898

Number of Sub-Blocks: 110

Dlook		Sub-Block																							
Block	Α	В	С	D	Е	F	G	Н	J	K	L	М	Ν	0	Р	Q	R	S	Т	U	٧	W	Χ	Υ	Ζ
SE531222																			Н	J				Υ	Ζ
SE531223																Ø	R	S	H	J	>	W	Χ	Υ	Ζ
SE531224																Ø	R	S	H	J	>	W	Χ	Υ	Ζ
SE531294				Δ	Е				J	K				0	Ρ				H	J				Υ	Ζ
SE531295	Α	В	C	О	Е	H	G	Τ	J	K	L	M	Z	0	Р	Q	R	S	Т	U	٧	W	Χ	Υ	Ζ
SE531296	Α	В	O	Δ	Е	F	G	Ι	J	K	┙	Μ	Z	0	Ρ	Ø	R	S	H	J	>	W	Χ	Υ	Ζ
SE531366				Δ	Е				J	K				0	Ρ				H						
SE531367	Α	В	С	D	Е	F	G	Н	J	K	L														
SE531368	Α	В	C	О	Е	F	G	Τ																	
Total	11	0 sı	ıb-b	loc	ks (1	tota	l be	fore	rec	duct	tion	)		•		•	•			•	•	•			

## **TO BE REDUCED BY 35%**

## Tenement area to be retained

Dlook												Su	b-B	lock											
Block	Α	В	С	D	Е	F	G	Н	J	K	L	М	Ν	0	Р	Q	R	S	T	U	٧	W	Χ	Υ	Ζ
SE531222																									
SE531223																				כ					Ζ
SE531224																Ø	R	ഗ	H	כ	>	V	Χ	Υ	Ζ
SE531294																									Ζ
SE531295					Е			Τ	J	K			Z	0	Ρ	Ø	R	ഗ	H	כ	>	V	Χ	Υ	Ζ
SE531296	Α	В	O								┙	М	Z	0	Ρ	Ø	R	ഗ	H	כ	>	V	Χ	Υ	Ζ
SE531366				D	Е				J	K															
SE531367	Α	В	C	D	Е	H	G	Τ	J	K	L														
SE531368	Α	В	С	D	Е	F	G	Н																	
						•					•	•									•				
Total	71	suk	o-ble	ocks	s (re	etair	ነ)																		

Number of sub-blocks to be retained by Lagoon Creek Resources Pty Ltd: 71

# Tenement area to be relinquished

Block												Su	b-Bl	ock											
DIOCK	Α	В	С	D	Е	F	G	Н	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Χ	Υ	Ζ
SE531222																			Т	U				Υ	Ζ
SE531223																Q	R	S	Н		٧	W	Χ	Υ	
SE531224																									
SE531294				D	Е				J	Κ				0	Р				Т	U				Υ	
SE531295	Α	В	С	D		F	G				L	М													
SE531296				D	Е	F	G	Н	J	Κ															
SE531366														0	Р				Т						
SE531367																									
SE531368																									
Total	39	suk	o-blo	ocks	s (re	elino	quisl	h)																	

Number of sub-blocks to be relinquished by Lagoon Creek Resources Pty Ltd: 39

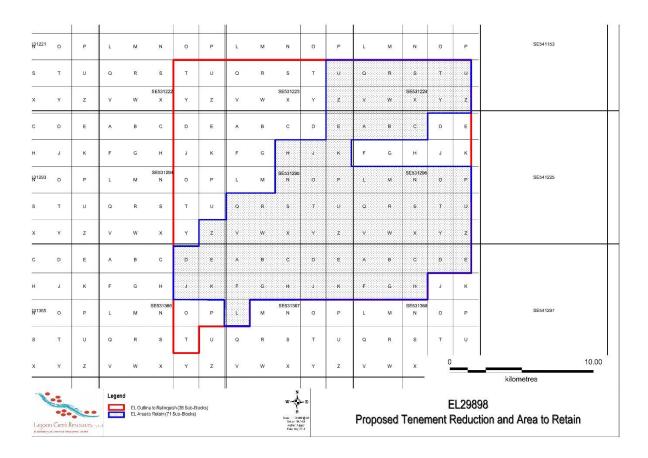


Figure 2: Reduction of EL29898

#### **GEOLOGICAL SETTING**

#### **Regional Geology**

(From Jones, 2005)

The Westmoreland region lies within the Palaeoproterozoic Murphy Tectonic Ridge, which separates the Palaeoproterozoic Mt Isa Inlier from the Mesoproterozoic McArthur Basin and the flanking Neoproterozoic South Nicholson Basin.

The oldest rocks exposed in the area are early Proterozoic sediments, volcanics and intrusives which were deformed and regionally metamorphosed prior to 1875 Ma. These Murphy Metamorphics (Yates et al., 1962) are represented mainly by phyllitic to schistose metasediments and quartzite. They are overlain by two Proterozoic cover sequences laid down after the early deformation and metamorphism of the basement, and before a period of major tectonism which began at about 1620 Ma. The oldest cover sequence is the Cliffdale Volcanics unit, which unconformably overlies the Murphy Metamorphics. The Cliffdale Volcanics contain over 4000 m thickness of volcanics of probably subaerial origin, more than half of which consist of crystal-rich ignimbrites with phenocrysts of quartz and feldspar. The remainder are rhyolite lavas, some of which are flow banded. The ignimbrites are more common in the lower part of the sequence, with the Billicumidjii Rhyolite Member occurring towards the top.

The Cliffdale Volcanics are comagmatic with the Nicholson Granite and together they comprise the Nicholson Suite. SHRIMP dating of both the Nicholson Granite and the Cliffdale Volcanics gave an age of 1850 Ma (Scott et al., 1997). The Nicholson Granite is predominantly I-type granodiorite in composition.

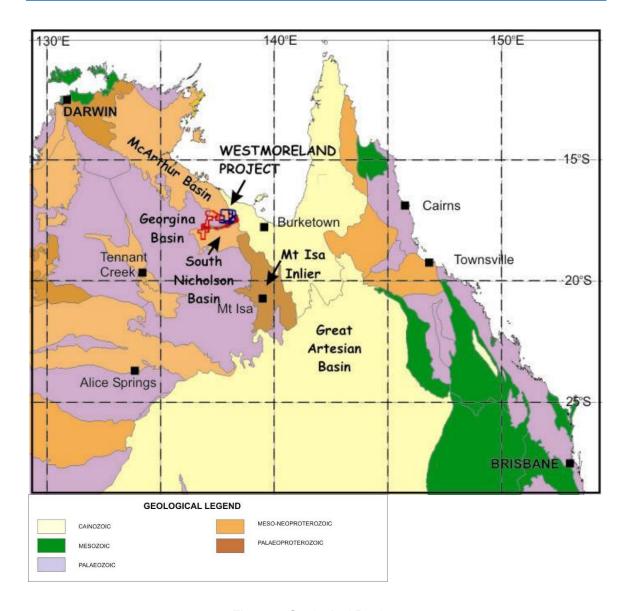


Figure 3: Geological Regions

Compiled by D G Jones from published data

The Nicholson Suite shows little evidence of fractional crystallisation and on this basis the potential for forming large tonnage deposits is considered to be minor, although small tonnages of high grade are possible. In the vicinity of the granites there are no significant potential host rocks documented. Potential exists for small Sn and W deposits within the granite and for smaller Cu and Au deposits outside the granite (Budd et al., 2001).

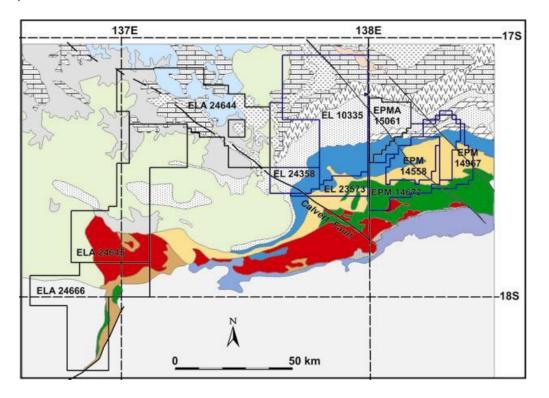


Figure 4: Generalised geology, Westmoreland area

Compiled by D G Jones from published data; for legend see Figure 5.

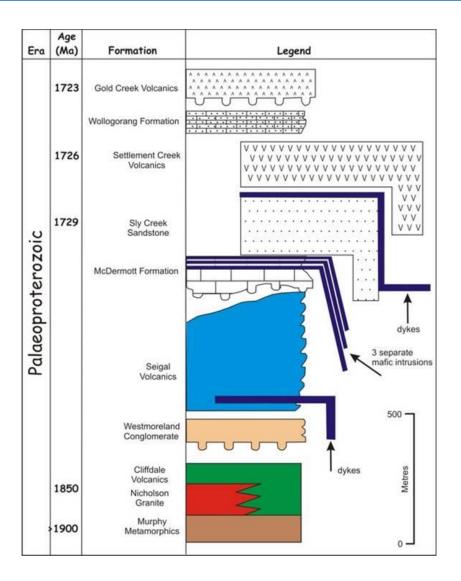


Figure 5: Simplified Stratigraphy in the Westmoreland Region

Compiled by D G Jones from published data

Unconformably overlying the Nicholson Suite is the Tawallah Group (Yates et al., 1962). This is the oldest segment of the southern McArthur Basin. The base is a sequence of conglomerates and sandstones comprising the Westmoreland Conglomerate (Carter et al., 1958). The conglomerates thin out to the southeast and are in turn conformably overlain by the Seigal Volcanics (Grimes & Sweet, 1979), an andesitic to basic sequence containing interbedded agglomerates, tuffs and sandstones. Together these units comprise about two-thirds of the total thickness of the Tawallah Group. The volcanics are overlain in turn by the McDermott Formation, the Sly Creek Sandstone, the Aquarium Formation and the Settlement Creek Volcanics.

Uranium mineralisation has been recognised in the Westmoreland region in numerous structural and stratigraphic positions. These include:

- 1. associated with faults and fractures in Murphy Metamorphics;
- 2. in shear zones in the Cliffdale Volcanics near the Westmoreland Conglomerate unconformity;
- 3. at the reverse-faulted contact between Cliffdale Volcanics and Westmoreland Conglomerate:
- 4. within Westmoreland Conglomerate about 50m above its base;
- 5. in Westmoreland Conglomerate in close proximity to the overlying Seigal Volcanics:
- 6. in association with mafic dykes and sills; and
- 7. in shear zones within the Seigal Volcanics.

The most important uranium deposits occur on the northern dip slope of the Westmoreland Conglomerate in situation 5 above. The deposits represent thicker and higher grade concentrations of trace uranium mineralisation than is regionally common beneath the Seigal Volcanics-Westmoreland Conglomerate contact and along the flanks of the Redtree Dyke Zone. Mineralisation in other settings is only present in trace amounts (Rheinberger et al., 1998).

The deposits are associated with an altered basic dyke system intruded along faults. Mineralisation is present in both the sandstones and dyke rocks. To the north the Westmoreland Conglomerate is overlain by the Seigal Volcanics under Recent alluvium cover.

The Westmoreland Conglomerate is a flat-lying sequence dipping between 5° and 10° to the NNW. The dominant fault directions are WNW and NE. A prominent open joint system trending NE appears to have some control on the mineralisation.

Locally, the Westmoreland Conglomerate consists of a sequence of coarse to gritty feldspathic sandstone with local pebble and cobble lenses, overlaying a basal conglomerate bed containing abundant volcanic material.

Vesicular tholeitic dykes have intruded along the fault zones in an en echelon pattern. The dykes weather more easily than the conglomerate and thus tend to be obscured at surface. Fresh dykes in core are brecciated and sheared, and extensively altered along the contact zones. The unaltered dyke is typically a dark green dolerite.

#### **Geological History**

Sands, muds and calcareous sediments were deposited prior to 1900 Ma over much or all of the regions shown in brown on Figure 3 above. The source area for the sediments was probably the Archaean granitic terrane to the west. Felsic and minor mafic volcanism related to accompanying intrusive activity affected some areas of the Murphy Tectonic Ridge.

During the Barramundi Orogeny (1860-1850 Ma) the basement rocks were tightly folded and regionally metamorphosed to greenschist facies, to form the Murphy Metamorphics. The tectonism resulted in uplift and erosion, and by 1875 Ma most of the region was probably a land area where large tracts of metamorphic rocks were exposed.

From 1840 to 1800 Ma, widespread felsic volcanic activity together with minor mafic volcanism and local clastic sedimentation took place to form the Cliffdale Volcanics. The abundance of ignimbrites indicates that the eruptions were predominantly subaerial. Comagmatic with the volcanics, granites of the Nicholson Granite Complex were emplaced. A suite of mafic dykes were intruded about the same time.

Some contact metamorphism and local folding, tilting and faulting accompanied the granite emplacement and volcanism, but no major region-wide deformation or regional metamorphism took place during this period. Most of the region was probably a land area subjected to erosion throughout this period. By 1800 Ma, parts of some granite plutons had become unroofed and metamorphic basement rocks were exposed.

Sudden regional subsidence in a linked array of basins controlled by segmented northstriking extensional faults resulted in rapid sedimentation re-commencing about 1790 Ma to form the Westmoreland Conglomerate, the basal unit of the Tawallah Group. The first sediments laid down were alluvial fan and braided stream deposits derived locally from the basement rocks. Rounded boulders of Nicholson Granite around 30 cm diameter are common in the basal conglomerates.

The fluvial sedimentation was followed by subaerial and possibly shallow-water felsic and mafic volcanism around 1680 Ma to form the Seigal Volcanics. After a short period of erosion, the volcanics were covered by near-shore marine and lagoonal dolomite, sandstone and siltstone of the McDermott Formation. The sea withdrew and there was a short hiatus in sedimentation; then sea level rose and sandstones and minor conglomerates of the Sly Creek Sandstone were laid down unconformably on the Seigal Volcanics and McDermott Formation. The Sly Creek Sandstone is overlain by poorly exposed sedimentary rocks of the Aquarium Formation and extrusives of the Settlement Creek Volcanics, which mark the top of the Tawallah Group in the Westmoreland area. The youngest internal SHRIMP zircon ages obtained for the Tawallah Group are 1713±7 Ma for the Tanumbirini Rhyolite and 1708±5 Ma for the Nyanantu Formation near the top of the group (Page and Sweet, 1998).

Major tectonism, involving thrusting, folding, faulting, mafic dyke emplacement and regional metamorphism affected the entire region between 1620 and 1550 Ma. Two main phases of deformation, D1 and D2, have been recognised. The first resulted in extensive thrusting and nappe formation, while the second was characterised by tight folding about northerly trending, steeply dipping to vertical axial planes. A later phase of deformation, D3, resulted in the formation of NNW and NNE-trending shear zones around 1480 Ma. Most of the mineral deposits in the region were probably formed during the deformation events in this period.

Some time after tectonism at 1450 Ma but before 1200 Ma, shallow-water sediments of the South Nicholson Group were deposited in the South Nicholson Basin. Some post-metamorphic NNE-trending mafic dykes were intruded around 1115 Ma. Vertical and lateral movements took place along the major faults of the region during the late Proterozoic, and gentle basin-and-dome folding affected the South Nicholson Group and underlying units.

#### **Local Geology**

The oldest rocks exposed in the tenement are flow-banded rhyolitic lavas and tuffs of the Billicumidji Rhyolite Member of the Cliffdale Volcanics (Murphy Inlier). These Palaeoproterozoic volcanics outcrop in two NE trending anticlinal windows and they are intruded by acid dykes. The volcanics have been dated at 1770 Ga (Ahmad and Wygralak, 1989).

The Cliffdale Volcanics are overlain unconformably by the 1400-1800 metres thick Westmoreland Conglomerate of the Tawallah Group (McArthur Basin). This formation consists of pebbly sandstone, sandstone and conglomerate. It dips gently (5-10°) to the northwest, except close to some faults where buckling has occurred. The formation has been divided into four sedimentary units, each representing a fining-upwards sedimentation cycle.

The basal unit of the Westmoreland Conglomerate was deposited unconformably on the Cliffdale Volcanics and consists of breccias and conglomerates grading upwards into sandstones and quartzite. The coarse units immediately above the unconformity are about 12 metres thick and contain large fragments and cobbles of volcanic rock.

The lower part of unit 2 consists of pebbly sandstones overlain by two cobble conglomerate beds, each about 40 metres thick, separated by sandstone. The sequence above the conglomerates consists of coarse sandstone. The overall thickness of unit 2 is about 500-800 metres.

Unit 3 is well exposed and in places forms a prominent scarp cliff e.g. El Hussen area. The basal part of this unit consists of cobble and boulder conglomerate interbedded with sandstone and pebbly sandstone. This sequence is followed by medium to coarse feldspathic sandstone which is overlain by the El Hussen Conglomerate (informal name). The latter consists of pebble, cobble and boulder conglomerates about 40-100 metres thick.

The uppermost unit of the Westmoreland Conglomerate, unit 4, is estimated to have a thickness of 200-250 metres and is the preferred sedimentary host for uranium mineralisation in the area. The unit consists of sandstones with some pebble beds and conglomerates. A distinctive conglomerate has been mapped in Queensland and the NT by Queensland Mines Ltd and Kratos Uranium N.L. and it occurs about 60 metres from the top of the unit. The Metre Conglomerate (informal name), it is about 1 metre thick, is a clast-supported cobble conglomerate with a distinctive white porcellaneous sandstone matrix. The rest of unit 4 consists of sandstone with some pebble beds. The uppermost 5 metres of the unit contains concretionary hematite nodules and is heavily hematised at the top. Anomalous radioactivity has been found in this hematitic zone.

The Seigal Volcanics conformably overlie the Westmoreland Conglomerate. In some areas the base of the volcanics is marked by a thin (1-2 metres) siltstone bed which may be radiometrically anomalous. The volcanics are about 1600 metres thick and consist of basic lavas with many thin bands of siltstone and fine sandstone. About halfway up the succession there is a marker sandstone (Carolina Sandstone Member) which is 20

metres thick. The lavas occur as flows which are generally less than 20 metres thick. The upper parts of the flows are amygdaloidal and the vesicles contain quartz, chalcedony, hematite and celadonite. The dolerite dykes which intrude the underlying rocks are thought to be feeders of the volcanics.

Flat-lying rocks of Mesozoic age occur as dissected plateaux and isolated mesa capping older rocks. These are the Mullaman Beds and they consist of basal conglomerate, sandstone and siltstone with a thickness of up to 70 metres.

#### Mineralisation

Uranium, uranium-gold and copper mineralisation occurs in the area.

Uranium was mined at the Cobar 2 and Eva mines in the 1950's; both these prospects are outside the current tenement. At the Eva (Pandanus Creek) Mine, pitchblende and secondary uranium minerals occurred in shears zones within strongly altered acid volcanics overlain unconformably by the Westmoreland Conglomerate (Sweet, 1981). Pitchblende was found in vertical shears and faults within the Seigal Volcanics close to their contact with underlying Westmoreland Conglomerate at the Cobar 2 mine.

Ahmad (1987) has classified the uranium occurrences in the tenement area into the following types:

#### Type A

These prospects lie at the volcanic (Seigal or Cliffdale) – Westmoreland Conglomerate contact. The volcanics and/or the conglomerate are mineralised. The contact can be a normal stratigraphic succession or a reverse fault as the conglomerate underlies the volcanics. Examples of this type include El Hussen, Duccios and Jim Beam.

#### Type B

In this type the uranium mineralisation occurs as sub-horizontal lenses in the Westmoreland Conglomerate, adjacent to basic dykes which can also be mineralised. This type contains the most important uranium deposits in the Westmoreland region. The dykes are up to 10 metres in width and occupy northeast trending fault zones. Three fault-associated dyke systems have been identified in the region. Two (Redtree and El Nashfa) are located in Queensland and are host to uranium deposits containing over 10,000 tonnes of U3O8 (Hills and Thakur, 1975). The Northeast Westmoreland dyke zone is situated within Arafura's tenement and contains three prospects (Mageera, Intermediate and Oogoodoo).

#### Type C

Type C occurrences are found in the Cliffdale Volcanics and there are no prospects of this type within the EL 29898.

#### Type D

This type is associated with fractures in the basal part of the Seigal Volcanics. The contact with the underlying Westmoreland Conglomerate may be 100 to 200 metres below these occurrences. The Horsepocket prospect is an example of this type.

## HISTORIC EXPLORATION

The area has been subjected to three periods of intensive exploration (Ahmad and Wygralak, 1989):

1956-1960: An intensive phase of uranium exploration following the discovery of the

Rum Jungle and the South Alligator River uranium deposits.

1968-1971: Exploration mainly for uranium but also for copper in the Redbank area.

1978-: Most exploration has been directed towards uranium, gold and diamonds.

### **EXPLORATION BY LAGOON CREEK RESOURCES**

The following is exploration that has been undertaken on the relinquished sub-blocks by LCR.

## **Airborne Geophysics**

Lagoon Creek Resources completed a state-of-the-art, low level, high resolution airborne magnetics and radiometrics survey over its Northern Australian project area in 2005. Acquisition of the survey commenced on 10th August 2005 and was completed on 2nd October 2005 by UTS Geophysics of Perth, utilising a Cessna 210 fixed wing survey aircraft. The survey was flown at 100m NS line spacing with 1000m spacing EW tie lines, at a nominated sensor height of 60m. The survey covered an approximate area of 1,950km², totalling 21,504 line kilometres.

The survey was flown using the AMG84 coordinate system (a Universal Transverse Mercator projection) derived from the Australian Geodetic Datum and was contained within zone 53 with a central meridian of 135 degrees.

The survey also covered the areas relinquished in this report.

The airborne geophysical files covering the relinquished areas are included with this report.

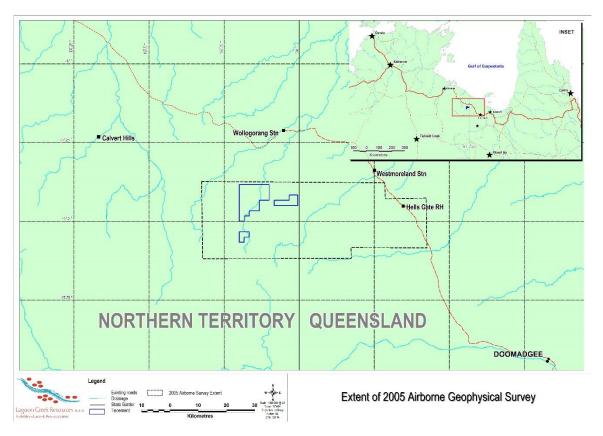


Figure 6: Extent of 2005 Airborne Survey

#### **Stream Sediment Sampling**

LCR undertook a regional stream sediment survey of the tenement in association with neighbouring tenements between July and August 2007. In total 3 samples at 54 locations were collected on the ground being relinquished. The samples were collected from gravel beds and all were sieved through 2-3mm aluminium sieves to remove the coarse grained material. 2 samples from each location were submitted at ALS laboratories for multi-element aqua regia digestion ME-MS41 and bulk cyanide leach Au-CN12 analysis.

Assays revealed the highest uranium concentration of 2.78ppm in sample 1048A. The highest gold concentration was 7.5ppb from sample 1043B.

The stream sediment assay results for the relinquished areas are included with this report.

#### **On-Ground Radiometrics and Soil Sampling**

From reviewing a combination of published technical reports, and airborne radiometric and magnetic geophysical data, 2 uranium target areas (Targets 10 & 11), within the ground being relinquished, were devised. The proposed sampling targeted significant faults which may have acted as fluid pathways, favouring uranium deposition within the Westmoreland Conglomerate below the Seigal Volcanics.

Between May and September 2009, the first phase of on-ground exploration work comprised ground scintillometer points at 25m intervals using a GF Instruments Gamma Surveyor. In total, 2,405 scintillometer readings were taken.

A peak uranium scintillometer reading of 12.3ppm, at sample point 837 within Target 10.

The second phase of exploration work comprised soil sampling the two target areas based on the Phase 1 exploration works. In total, 81 soil samples were taken between September and October 2009. The soil samples were submitted to ALS laboratories for multi-element ME-ICP61 analysis.

The results of the laboratory analysis revealed all of the samples had uranium concentrations below the minimum detectable level of 10ppm.

The soil sample assay and ground scintillometer results for the relinquished areas are included with this report.

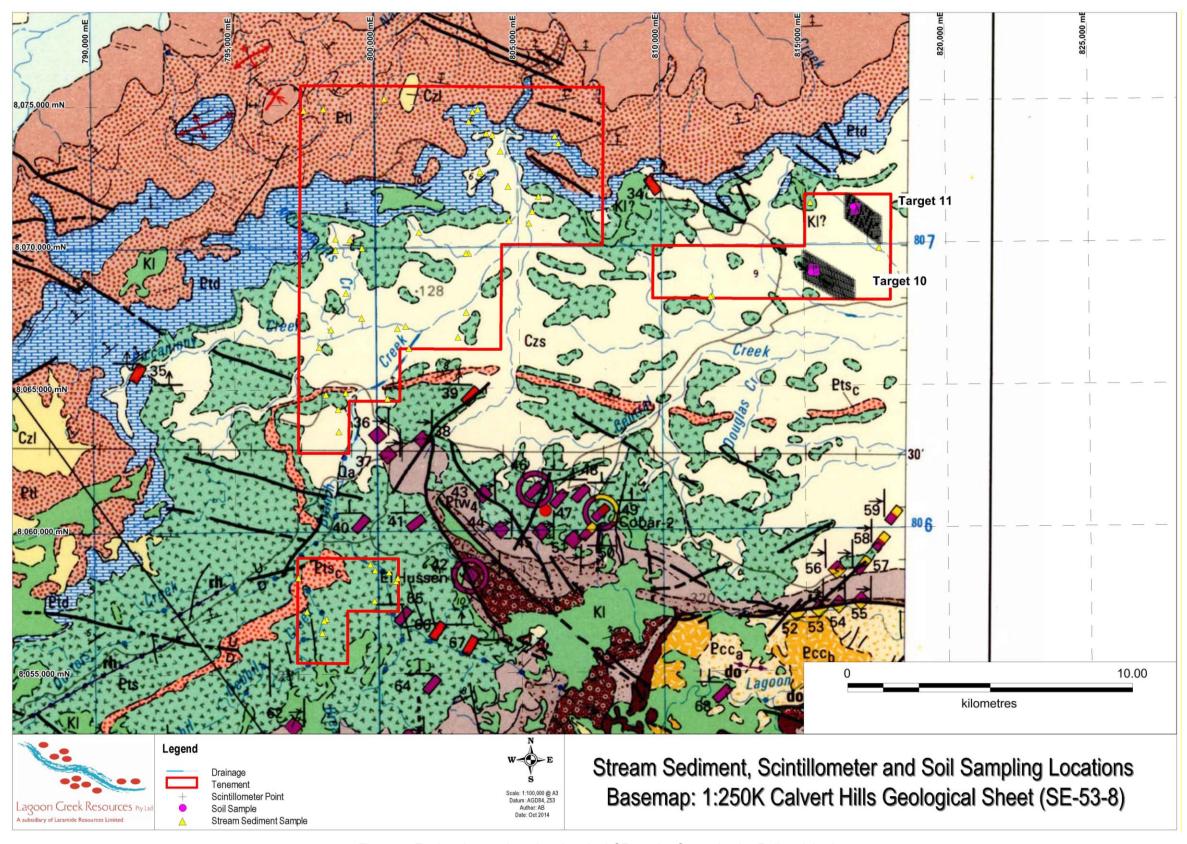


Figure 7: Exploration work undertaken by LCR on the Ground to be Relinquished

## **CONCLUSION AND RECOMMENDATIONS**

Exploration undertaken by LCR has focussed on the potential for economic uranium mineralisation associated with near flat lying fine grained sedimentary units in the upper part of the Westmoreland Conglomerate and in near vertical structural zones crosscutting the Conglomerate associated with intruded mafic dykes. Despite undertaking regional sampling and more localised sampling of geological structures there has been no anomalous uranium or gold detected. Any further mineral exploration may require reassessment of the geological model for the area.

#### REFERENCES

Ahmad, M., 1987. Uranium-gold occurrences of the Murphy Inlier and surrounding region. Northern Territory Geological Survey, Technical Report GS1987-002.

Ahmad, M., and Wygralak A.S., 1989. Calvert Hills, Northern Territory. 1:250 000 metallogenic map series explanatory notes, SE 53-08. Northern Territory Geological Survey, Darwin.

Ahmad, M. & Wygralak, A.S., 1990. Murphy Inlier and environs - Regional geology and mineralisation. in Hughes, F.E. (Editor): Geology of the Mineral Deposits of Australia and Papua New Guinea, The Australian Institute of Mining and Metallurgy, pp 819-826.

Battey, G.C., 1956. Westmoreland Authority to Prospect, Final Report. Open File Report 3370 to the Qld Dept Mines. Mount Isa Mines Ltd. 24pp.

Beckitt G., 2003. Exploration for unconformity uranium in Arnhem Land (NT). Exploration Geophysics Vol.34, pp137-142.

Brooks, J.H., 1960. The Uranium Deposits of Northwest Queensland. Geol.Surv.Qld. Publication 297.

Budd, A.R., Wyborn, L.A.I., & Bastrakova, I., 2001. The Metallogenic Potential of Australian Proterozoic Granites. GeoScience Australia Record 2001/12.

Carter, E.K., Brooks, J.H., Fraser, R.B. 1958. Westmoreland, Queensland. 4-mile geological series sheet SE54-5. First Edition. Bureau of Mineral Resources, Australia.

Compston, W., & Arriens, P.A., 1968. The Precambrian Geochronology of Australia. Can.J.Earth Sci., Vol.5, pp 561-583.

Culpeper, L.G., Denaro, T.J., Burrows, P.E., Morwood, D.A. 1999. Mines and Mineralisation of the Westmoreland 1:250 000 Sheet area, Northwest Queensland. Queensland Geological Record, 1999/6, 38p.

Dahlkamp F.J., 1978. Classification of uranium deposits. Mineralium Deposita Vol.13, pp 83-104.

Dahlkamp F.J., 1993. Uranium Ore Deposits. Springer-Verlag, Berlin. 460p.

Distler, V.V., Mitrofanov, G.L., Nemerov, V.K., Kovalenker, V.A., Mokhov, A.V., Semeikina, M.A., & Yudovskaya, M.A., 1996. Modes of Occurrence of Platinum Group Elements and Their Origin in the Sukhoi Log Deposit, Russia. Geology of Ore Deposits, Vol. 38, No.6.

Etheridge, M.A., Rutland, R.W.R. & Wyborn, L.A.I., 1987. Orogenesis and tectonic process in the early to middle Proterozoic of northern Australia. in: Kroener, A. (Ed.), Proterozoic lithospheric evolution. American Geophysical Union, Geodynamics Series, Vol.17, pp131-147.

Etheridge, M., & Wall, V., 1994. Tectonic and structural evolution of the Australian Proterozoic: in 12th Australian Geological Convention. Geological Society of Australia, Abstracts, Vol.37, pp102-103.

Fraser, W.J., 1980. Doctors Creek NT, EL 1873. Report for the Year Ending 20th October 1979. Company Report CR80-39 to NT Dept Mines & Energy.

Fuchs, H.D., & Schindlmayr, W.E., 1981. The Westmoreland uranium deposit Queensland Australia. in Uranium Exploration Case Histories. International Atomic Energy Agency, Vienna. pp 59-73.

Gingrich J.E., & Fisher J.C., 1976. Uranium exploration using the Track-Etch method: in Exploration for Uranium Ore Deposits. International Atomic Energy Agency, Vienna, 213-227.

Grimes, K.G., Sweet, I.P. 1979. Westmoreland, Queensland, 1:250,000 geological series explanatory notes. Sheet SE/54-05, 2nd edition. Bureau of Mineral Resources, Australia & Geological Survey of Qld. 31pp.

Hills, J.H., & Thakur, V.K., 1975. Westmoreland uranium deposits Queensland. in Economic Geology of Australia and Papua New Guinea. 1. Metals (ed. Knight C.L.). Australasian Institute of Mining & Metallurgy, Monograph 5. pp 343-347.

Hochman, M.B.M., and Ypma, P.J.M., 1984. Thermoluminescence applied to uranium exploration and genesis of the Westmoreland uranium deposit - Implications for the Northern Territory: in Darwin Conference, 1984. Australasian Institute of Mining and Metallurgy, Melbourne, pp215-224.

Jones, D G, 2005, Technical Report on Mineral Exploration Tenements in Australia Held by Laramide Resources Ltd. Mining Associates (Economic Geologists) report to satisfy Part 4 Section 4.1 of Canada's National Instrument 43-101 Standards of Disclosure for Mineral Projects.

Kesler, S.E., 1994. Mineral Resources, Economics and the Environment. Macmillan, New York, 394p.

Lally, J.H., 2004. Uranium Deposits of the Northern Territory (preliminary version). NT Geol.Surv. Report 19, 69p.

Lord, J.J., 1955. Report on an Inspection of Uranium Discoveries in the Calvert Hills Area, N.T. Bur. Min. Res. Australia. Record 1955/115.

McMullan S.R., Matthews R.B., & Robertshaw P., 1989. Exploration Geophysics for Athabasca uranium deposits. in Garland G.D. (Editor) Proceedings of 'Exploration '87, Third Decennial International Conference on Geophysical and Geochemical Exploration for Minerals and Groundwater'. Ontario Geological Survey, Special Volume 3.

Mitchell, J.E., 1976. Precambrian Geology of the Westmoreland Region, Northern Australia. Part II: Cliffdale Volcanics. Bureau of Mineral Resources, Australia Record 1976/34.

Morgan, B.D., 1965. Uranium Ore Deposit of Pandanus Creek: in Geology of Australian Ore Deposits (Ed. J McAndrew), pp 210-211. The AusIMM, Melbourne.

Morgan, B.D., & Campi, D., 1986. The Pandanus Creek uranium mine Northern Territory Australia: in Vein Type Uranium Deposits. International Atomic Energy Agency, Vienna; Tech.Doc 361, pp 77-84.

Newton, H.J., and McGrath, M.G., 1958. The occurrences of uranium in the Milestone Authority to prospect Wollogorang District, Northern Territory. in Proceedings of the Australasian Institute of Mining and Metallurgy, Stillwell Anniversary Volume, pp 169-175.

Page, R.W., and Sweet, I.P., 1998. Geochronology of basin phases in the western Mount Isa Inlier, and correlation with the McArthur Basin. Australian Journal of Earth Sciences 45, pp 219–232.

Pietsch, G., and Tucker, D., 1972. Report on the prospecting, EL No. 122, Northern Territory. Noranda Australia Ltd. Report No. 188. Northern Territory Geological Survey, Open File Company Report CR1973-0087.

Plumb, K.A., 1979. Structure and tectonic style of the Precambrian shields and platforms of northern Australia. Tectonophysics, Vol.58, pp291-325.

Plumb K.A., 1994. Structural evolution of the McArthur Basin, NT: in Hallenstein, C.P. (Ed.), 1994 AuslMM annual conference, Australian mining looks North; the challenges and choices. Australasian Institute of Mining and Metallurgy, Publication Series, Vol.94/5, pp139-145.

Pohl, D.C., 1970. Geology of the uranium prospects of the Westmoreland area, Northwestern Queensland. BA(Hons) thesis, Macquarie University.

Queensland Mines Ltd., 1969. Authority to Prospect 444m (Westmoreland) Annual Report for 1968. Open File Report No.CR2841, Geol.Surv.Qld. 40p.

Rawlings, D.J., Korsch, R.J., Goleby, B.R., Gibson, G.M., Johnstone, D.W. and Barlow, M., 2004. The 2002 Southern McArthur Basin Seismic Reflection Survey. Geoscience Australia, Record 2004/17, 78p.

Rheinberger, G.M., Hallenstein, C., & Stegman, C.L., 1998. Westmoreland uranium deposits: in Geology of Australian and Papua New Guinean Mineral Deposits (editors Berkman D.A. & Mackenzie D.H.). The Australasian Institute of Mining & Metallurgy, Melbourne, pp807-814.

Rogers, J., 1996. Geology and tectonic setting of the Tawallah Group, southern McArthur Basin, Northern Territory. CODES, University of Tasmania, PhD Thesis.

Schindlmayr, W.E., & Beerbaum, B., 1986. Structure-related uranium mineralisation in the Westmoreland district Northern Australia: in Vein Type Uranium Deposits (editor Fuchs H.D.). International Atomic Energy Agency, Vienna; Tech.Doc. 361, pp85-100.

Scott, D.L., Jackson, J., Page, R., Tarlowski, C. and Leven, J. 1997. Basement Studies: current status of models and dataset integration. Australian Geological Survey Organisation, Record, 1997/12.

Scott, D.L., Rawlings, D.J., Page, R.W., Tarlowski, C.Z., M. Idnurm, Jackson, M.J. & Southgate, P.N., 2000. Basement framework and geodynamic evolution of the Palaeoproterozoic superbasins of north-central Australia: an integrated review of geochemical, geochronological and geophysical data. Australian Journal of Earth Sciences (2000) Vol.47, pp341–380.

Stewart, J.R., 1990. Final report 1988 to 1990, Pandanus Creek area. Kratos Exploration Pty Ltd. Northern Territory Geological Survey, Open File Company Report CR1990-0385.

Sweet, I.P., & Slater, P.J., 1975. Precambrian Geology of the Westmoreland Region, Northern Australia. Part I: Regional Setting and Cover Rocks. Bureau of Mineral Resources, Australia Record 1976/34.

Sweet, I.P. 1981. Definitions of new stratigraphic units in the Seigal and Hedleys Creek 1:100 000 Sheet areas, Northern Territory and Queensland. Bureau of Mineral Resources, Australia. Report 225.

Sweet, I.P., Mock, C.M., & Mitchell, J.E., 1981. 1:100 000 Geological Map Commentary: Seigal NT and Hedleys Creek Qld. Bureau of Mineral Resources, Australia. 32p.

Syvret, J.N., 1957 Report on the "Redtree" Mineralisation. Open File Report 140 to the Qld Dept Mines. Mount Isa Mines Ltd. 26pp.

Wyborn, L.A.I., Hensley C., & Budd, A.R. 1997. The Metallogenic Potential of Australian Proterozoic Granites: Mount Isa Inlier. Australian Geological Survey Organisation Pub.No.2.

Yates, K.R., Roberts, J.M., Mikolajack, A.S., Rhodes, J.M. 1962. Calvert Hills Northern Territory 1:250 000 geological series map sheet SE 53-8. First Edition. Bureau of Mineral Resources, Australia.