

**KETTLE ROSE PTY LTD**

**ACN 119 016 330**

**VICTORIA RIVER DOWNS PROJECT  
NORTHERN TERRITORY**

**EXPLORATION LICENCE 25538  
FINAL REPORT**

**FOR THE PERIOD**

**19 JULY 2007 TO 22 JUNE 2009**

**BY  
B.WHITE**

**DUE DATE: 22 SEPTEMBER 2009**

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**Distribution:**

Dept Resource Development, Primary Industry, Fisheries and Resources, Darwin  
Kettle Rose Pty Ltd, Melbourne

## TENEMENT REPORT INDEX

<b>COMPANY / OPERATOR:</b>	Kettle Rose Pty. Ltd.
<b>PROJECT:</b>	Victoria River Downs
<b>TENEMENT:</b>	EL25538
<b>REPORTING PERIOD:</b>	19 July 2007 to 22 June 2009
<b>AUTHOR:</b>	B.White
<b>DUE DATE:</b>	22 September 2009
<b>STATE:</b>	Northern Territory
<b>LATITUDE:</b>	16°00'00"S to 16°01'30"S
<b>LONGITUDE:</b>	130°44'00"E to 130°50'00"E
<b>MGA mN:</b>	8,227,300mN to 8,230,500mN
<b>MGA mE:</b>	685,300mE to 697,200mE
<b>1:250,000 SHEET:</b>	SD5216 Delamere, SE5204 Victoria River Downs
<b>1:100,000 SHEET:</b>	5065 Humbert, 5066 Stokes
<b>MINERAL DISTRICT:</b>	Victoria River Downs
<b>COMMODITY:</b>	Au, diamonds, base metals
<b>KEY WORDS:</b>	

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## **1. SUMMARY OF EXPLORATION ACTIVITIES**

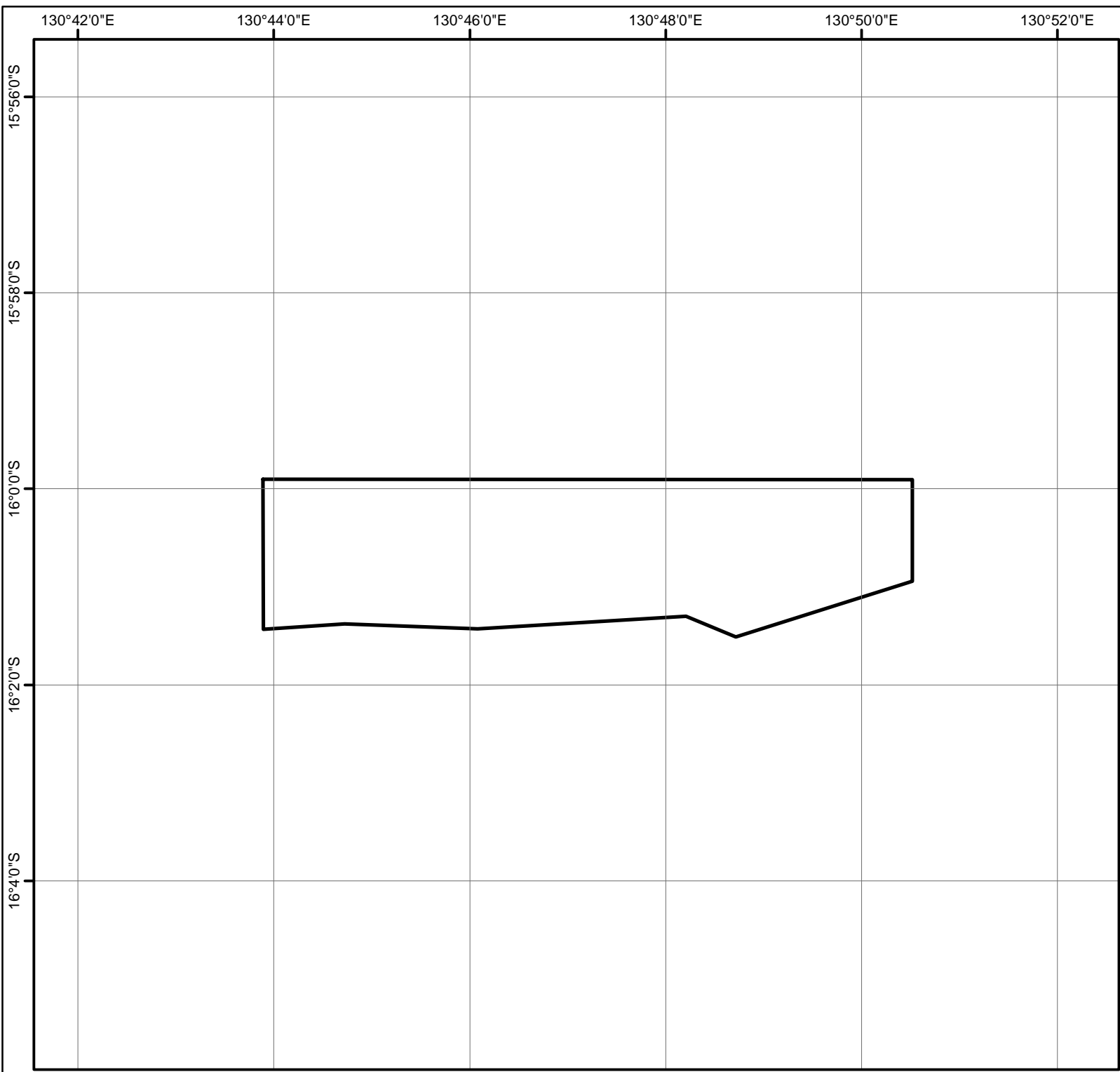
This report describes the exploration activities conducted over EL25538 between the 19th of July, 2007 to the 22nd of June, 2009. Over the life of the tenement, exploration was limited to an open file literature review, data compilation and a target generation exercise. No field based exploration was conducted during the life of the tenement. Exploration efforts were hindered by a lack of suitable staff and the remote location of the tenement.

## **2. TENEMENT STATUS**


Exploration Licence 25538 was granted to Kettle Rose Pty. Ltd. on the 19th of July, 2007. Conclusions drawn from the literature review suggest that the tenement has little potential to host base metal or diamond deposits. A recommendation was therefore made to relinquish the ground, and the tenement was surrendered on the 22nd of June, 2009.


## **3. LOCATION AND ACCESS**

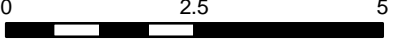
Exploration Licence 25538 is located approximately four hundred kilometres South of Darwin and fifty kilometres South East of Timber Creek. Timber Creek is a small town that is home to about seventy people and is situated two hundred and eighty kilometres south west of Katherine along the Victoria Highway. The tenement can be accessed by vehicle from Darwin via Katherine, three hundred kilometres to the South along the Stuart Highway, then to Timber Creek along with Victoria Highway. The Buchanan Highway intersects the Victoria Highway approximately one hundred and thirty kilometres west of Willeroo. The Buchanan Highway provides the most direct means of access to the tenement area via vehicle. While the Stuart and Victoria Highways are sealed and provide easy access to all vehicle types, the Buchanan Highway is unsealed and in reasonable condition. The Buchanan Highway is not frequently used, and may be in poor condition in some areas. Additional fuel, water and supplies are essential when travelling through this area as fuel stations are scarce. Navigation in the area is also hampered by flooding during the wet season when many roads become unnavigable. The tenement itself is located immediately North of the Buchanan Highway, however the terrain is predominately plateaux that rise more than one hundred metres above the level of the highway, as such vehicular access to the area will be severely restricted. The extremely rugged terrain means that exploration in this area may only be practical with helicopter support.



**Legend**

 Tenement boundary

  
GDA94

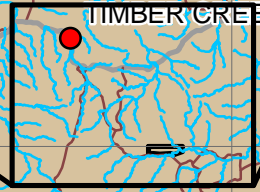
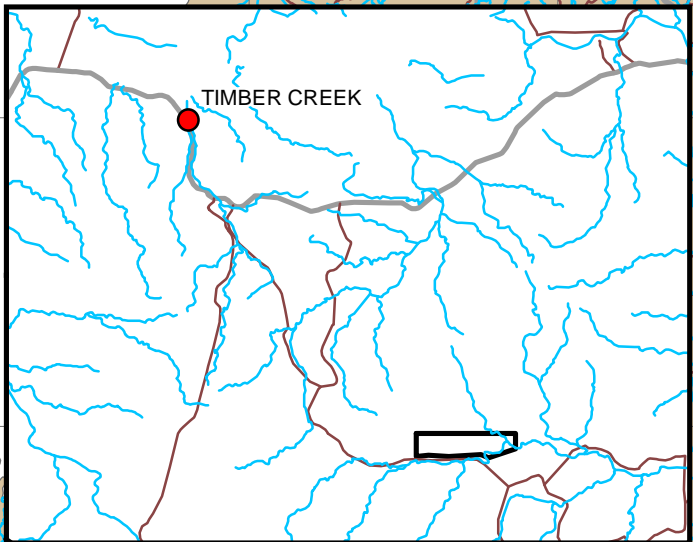
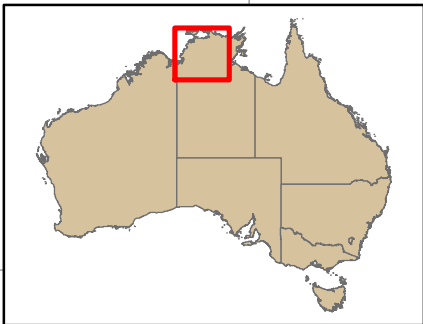
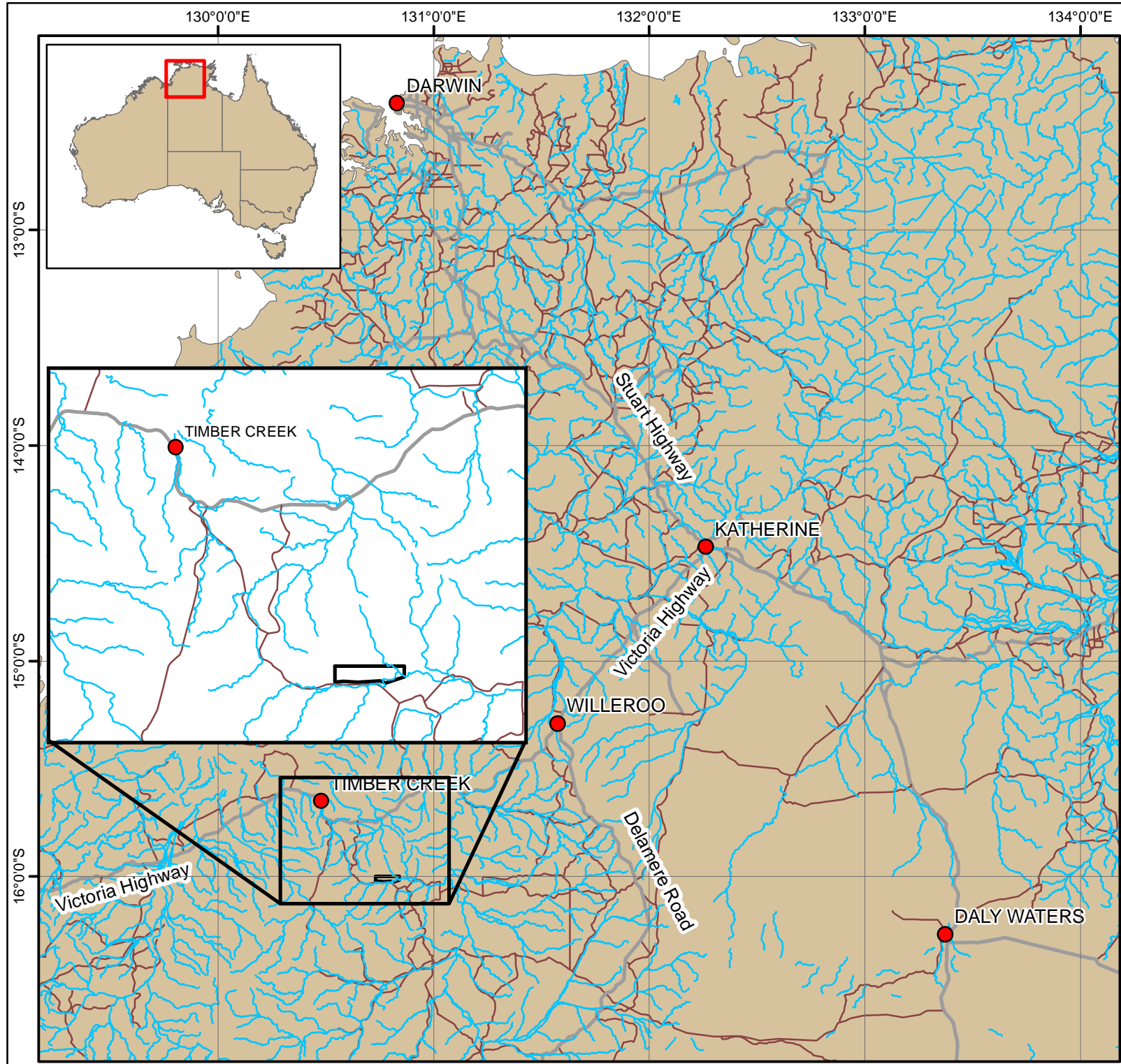
  
0 2.5 5  
Kilometres

Kettle Rose Pty. Ltd






**EL25538**  
**Exploration Index**


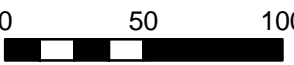
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**Legend**

-  Tenement boundary
-  Population centres
-  water courses
-  Unpaved roads
-  Paved roads

  
 GDA94  
  
 Kilometres

**Kettle Rose Pty. Ltd**

**EL25538  
Location Plan**

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## 4. GEOLOGY

### 4.1 REGIONAL GEOLOGY

The following description of geology has been adapted from Beier, P.R., Dunster, J.N., Cutovinos, A., and Pietsch, B.A. (2002)

Exploration Licence 25538 is situated within the Victoria Basin in the Northern Territory. The Victoria Basin is underlain by the Birrindudu Basin and overlain by the Wolfe Creek Basin. The basin comprises sedimentary rocks of the Wattie, Bullita, Tjunna and Auvergne Groups. The age of deposition is poorly constrained by geochronology. Stratigraphic correlation with other Proterozoic successions in the Northern Territory and Western Australia provides an approximate age of deposition for the basin.

The Wattie and Bullita Groups may correlate with the Nathan Group of the McArthur Basin, suggesting a deposition age of 1.61-1.57Ga. A minimum depositional age of 1.46Ga has been inferred from the emplacement of kimberlite into the Bullita Group, however a younger emplacement age of  $179 \pm 2$ Ma has been reported and the older date probably represents a deep lithospheric magmatic event.

The depositional age of the Tjunna Group is also poorly constrained at 1.43-1.35Ga although deposition may have continued until 1.19Ga.

A deposition age of 810-750Ma has been suggested for the Auvergne Group. A poorly constrained age of  $838 \pm 80$ Ma has been given for rocks of the Angalarri Sandstone which overlies the basal Jasper Gorge Sandstone. A possible correlation between the Jasper Gorge Sandstone-Angalarri Sandstone and the Ahern Formation-Helicopter Siltstone of the east Kimberley region suggests that the Auvergne Group may correlate with the approximately 800Ma Supersequence 1 of the Centralian Superbasin.

The Wattie Group is a predominately siliciclastic succession containing minor carbonate intervals and rare tuffite. Divided into seven formations, the lower units are best exposed in scarps and low relief ridges, the remaining units are found in valley floors or are poorly exposed as pavements on terraced slopes. The thickness of the Wattie Group exceeds three hundred metres, and regional thickness variations characterise the stratigraphy of the group.

The Bullita Group consists of five formations with a combined thickness of more than nine hundred metres, and a high carbonate content distinguishes the unit from the conformably underlying Wattie Group.

The Tjunna Group is an unconformity bounded unit comprising two formations of sandstone and mudstone assemblages that are locally difficult to differentiate in outcrop due to the similarity of the shale facies in each formation. The Tjunna Group is typically poorly exposed as scree over subcrop, or within slopes adjacent to areas capped by the Jasper Gorge Sandstone of the Auvergne Group. Locally the Tjunna Group forms ridges and mesas as well as low relief plateaux.

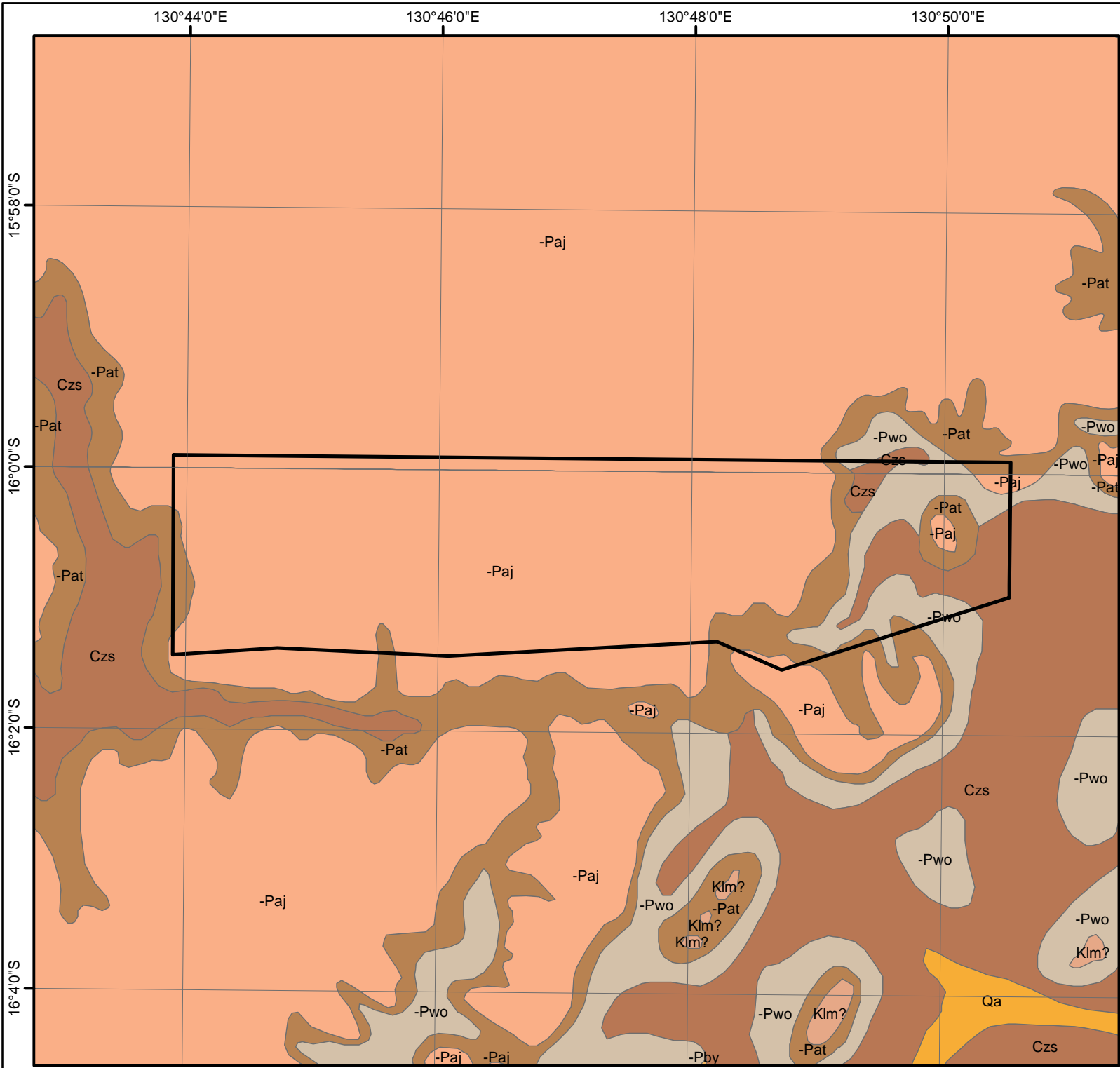
The Auvergne Group comprises seven formations, although only the Jasper Gorge Sandstone outcrops in the area surrounding the tenement. The thickness of the group is approximately nine hundred and fifty metres. The Auvergne Group overlies the Wallie, Bullita and Tjunna Groups with a low angle unconformity and is unconformably overlain by the Antrim Plateau Volcanics.

## **4.2 LOCAL GEOLOGY**

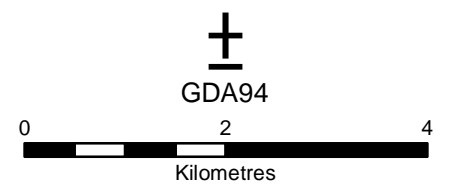
Situated just North of Jasper Gorge, the geology of the tenement is dominated by units of the Wondoan Hill and Stubb Formations and the Jasper Gorge Sandstone (Figure 3).

The Wondoan Hill Formation is the oldest exposed unit in the tenement. The formation is poorly exposed as subcrop in the flanks of slopes that are capped by the Jasper Gorge Sandstone and locally form low relief rounded ridges and isolated mesas and buttes. The unit is best exposed near Jasper Gorge. The unit is approximately one hundred and forty five metres thick, thinning southward and forms plateaux near the Wickham and Victoria Rivers and Gordon Creek where the unit thins to approximately thirty metres. The Wondoan Hill Formation overlies the Bullita Group with a low angle unconformity. The formation is conformable with the overlying Stubb Formation, and is unconformably overlain by the Jasper Gorge Sandstone. The composition of the Wondoan Hill Formation can vary widely; in Jasper Gorge, the basal unit is a massive glauconitic sandstone containing minor specular haematite bands. Interbedded sandstone, siltstone and shale predominate up section, and commonly contain slump bedding features and ripple marks. Near Wondoan Hill, the unit is exposed as blocky plateau forming sandstones. In the vicinity of Victoria River the unit contains three prominent sandstone units. In the Gordon Creek region, the unit forms plateaux of fine to medium sandstone underlain by shale, siltstone and thin glauconitic sandstone units. The presence of glauconite suggests the unit was deposited under marine conditions, and the siltstone and shale lithofacies indicate a lower energy, deep water conditions.





- Legend**
- Tenement boundary
  - Paj Massive and blocky medium friable quartz sandstone; minor siltstone, pebbly sandstone
  - Pat Interbedded dark grey shale and siltstone; massive quartz sandstone interbeds near top
  - Pbs Massive and blocky grey fine and medium crystalline dolomite; minor dolomitic siltstone and sandstone, chert
  - Pby Interbedded reddish brown and greyish green dolomitic siltstone; grey dolomitic sandstone and dolomite
  - Pwo Glauconitic quartz sandstone, white claystone and siltstone, brown mudstone
  - Czs Sand, soil, colluvium, travertine
  - Klm? White buff and pink claystone and siltstone, glauconitic sandstone with burrows, ferruginous siltstone and sandstone, ferruginous conglomerate with plant fossils
  - Qa Gravel, sand, silt: alluvium



Kettle Rose Pty. Ltd

**EL25538  
Geology**

Date: 08/07/09	Author: BW	Figure: 3
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The Stubb Formation is poorly exposed in the area, forming high scarps that are overlain by the resistant Jasper Gorge Sandstone and adjacent buttes. The unit is best exposed near George Creek where it forms recessive plains, low ridges capped by sandstone and flaggy rubble over low relief undulose hills. The Stubb Formation conformably overlies the Wondoan Hill Formation and is underlain unconformably by the Jasper Gorge Sandstone. The formation is a succession of interbedded micaceous claystone, siltstone, and minor mudstone and sandstone. Where the unit is better exposed, the thickness can exceed two hundred metres. In exposures within Jasper Gorge, the unit is characterised by pitted, thin to medium bedded micaceous sandstone interbedded with siltstone. Pitting is believed to be caused by weathering of glauconite grains. Sedimentary structures within the unit include ripples, megaripples, trough and microhummocky cross stratification, flute casts, sole marks, and rare desiccation cracks on bedding surfaces. Resistant layers of medium to thickly bedded medium sandstone are present at the top of the formation, and are variably friable and indurated. In places the sandstone contains thin haematite bands, mudclasts and ripples while the siltstone and shale may contain gutter and load casts, syneresis cracks and runzel marks. The Stubb Formation was initially deposited in a low energy, moderate to deep water environment. The presence of localised hummocky cross stratification suggests that the depositional environment included storm generated deposits. The depositional environment gradually shallowed followed by rapid sedimentation under marine shelf conditions.

The Jasper Gorge Sandstone forms extensive plateaux and mesa caps. The unit is best exposed in cliff sections that are up to eighty metres thick within Jasper Gorge within Gregory National Park. In places the sandstone is differentially weathered and friable and is poorly preserved as blocks and flaggy rubble. The Jasper Gorge Sandstone is predominately a medium orthoquartzite containing rare granular lags. The unit also contains subordinate conglomerate and rare lenses of siltstone and mudstone. Trough and low angle cross stratification, scour surfaces, mudclasts, scattered quartzite and chert pebbles are common in the vicinity of Gibbie Creek. The depositional environment was probably near shore, shallow marine conditions during a regional transgressive event.

Cainozoic sediments are limited to gullies and low lying areas. Small areas of superficial soils are found in the east of the tenement, and comprise residual soil and sand, eluvium and minor calcrete. Residual soils include sandy soil and colluvium that has developed over or adjacent to Proterozoic sandstone, and loamy soil on carbonate units. Colluvium includes scree and talus that has deposited on the sides and base of steep slopes, and is formed by mechanical weathering of the bedrock.

## **5. EXPLORATION**

Over the life of the tenement, a literature review was conducted to identify potential targets for base metal mineralisation and diamonds. Historical data was compiled to gain a better understanding of the geological setting of the region and the potential to host mineral deposits. No field based exploration was conducted during the life of the tenement. Exploration efforts were hindered by a lack of suitable staff and the remote location of the tenement.

## **6. CONCLUSION**

Exploration efforts in this area are hindered by the remote location of the tenement and the limited timeframe available due to the wet season. A reliance on helicopter support makes exploration in this area prohibitively expensive. Exploration targets would need to have a high potential to host significant mineralisation that would warrant a stand-alone mining operation. No such targets were identified and the focus of exploration shifted towards other tenements possessing a higher potential to host mineralisation combined with a reduced cost of exploration. A recommendation was made to relinquish the ground, and the tenement was surrendered on the 22nd of June, 2009.

## **7. BIBLIOGRAPHY**

**Beier, P.R., Dunster, J.N., Cutovinos, A. and Pietsch, B.A. 2002.** *Victoria River Downs, Northern Territory (Second Edition). Sheet SE 52-4. 1:250,000 geological map series explanatory notes.* Northern Territory Department of Business, Industry, and Resource Development. Northern Territory Geological Survey, Darwin