Tenement holder:  Tianda Resources (Australia) Pty Ltd
Operator:  Terra Search Pty Ltd
12/120 Briggs St
Welshpool
WA 6106
Title:   Annual Report for EL 25681 Roper River
Period:   18 September 2009 to 17 September 2010
Commodities:  Uranium, base metals, iron ore
Authors:  geological                           expenditure
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Date:   17 September 2010
Mapsheets:  Katherine 1:250,000  Urapunga 1:250,000
            Mataranka 1:100,000
Datum:   GDA 94 zone 53
Executive Summary

Exploration License EL 25681 is located on the banks of the Roper River and is entirely with Goondooloo Station. It has been explored by Tianda Resources (Australia) Pty Ltd for uranium and iron ore since being granted in September 2007.

The outcrop lithology in the tenement is comprised mostly of Proterozoic Roper River Group sediments, being sandstone and siltstone of the Velkerri, Moroak Sandstone and Kyalla Members of the McMinn Formation. The Sherwin Ironstone Member is sometimes found between the Moroak and Kyalla Members, and was the focus of the iron ore search.

During July 2010, geologists of both Tianda Resources (Australia) Pty Ltd and the consultancy, Terra Search Pty Ltd, worked on the tenement. Exploration was conducted with the assistance of Google Earth imagery, seeking out hilltops that might be ferruginized. Nine geochemical samples, fifty geological observation points and sixteen outcrops of Sherwin Ironstone Member were taken. All locations were recorded on Garmin GPSs using GDA94 projection. Data files were exported from the GPSs and processed and displayed with Mapinfo.

The sixteen outcrops of Sherwin Ironstone Member varied in area from less than 0.1Ha to a maximum of 2.4 Ha, with a median of 0.1Ha. They were all located on or near the tops of hills comprised of Moroak Sandstone Member and were between 0.5 and 2 metres thick, with a total area of about 9 hectares.

ICP-OES analysis of the nine rockchip specimens gave values in the range of 11.9% Fe (in ferruginised sandstone) up to a maximum of 43.9% in oolitic ironstone. The median grade was 34.2%.

As both the tonnage and grade of iron ore within the tenement is far below economic cutoff, it is recommended that the tenement be relinquished.
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1 Introduction

The Roper River tenement, EL 25681, was briefly explored for uranium during July 2008. Ground truthing of the airborne radiometric anomalies gave disappointing results. However, it has more recently become of interest as a play for iron ore deposits of the Roper River Group sediments. In particular, it might have some of the Sherwin Iron Member, a formation common throughout the Roper River area.

The tenement contains gently-dipping Proterozoic sediments of the Roper River Group, comprised within the tenement of Velkerri Formation siltstone, overlain by Moroak Sandstone. These formations stand out as prominent ridges, with the lower ground usually comprised of black Quaternary soils. On the northern margin of the tenement is found a Proterozoic dolerite sill.

Ten kilometres north of the tenement boundary, the Katherine 250k geological map shows patches of Sherwin Iron Member (Prz) overlying the Moroak Sandstone (Prk). The investigation of July 2010 was to determine if similar patches of the iron member existed within EL 25681, but had not been observed during the Geological Survey mapping.

Inspection of images of the tenement revealed a number of likely areas where the Sherwin Iron Member might be found. These were on possible hilltops mapped as Moroak Sandstone. As the stratigraphy was gently-dipping, (either to the southwest in the southern part of the tenement, or northwest in the northern part) the iron formation could be expected on the flanks of hills, rather than the top.

2 Location and access

![Figure 1 EL.25681 Roper River access and anomalies](image-url)
Located on Goondooloo Station, this exploration license was granted on August 23rd, 2007 for six years.

Goondooloo Station is owned by Tony and Pam Davis, who also own Moroak Station. Their postal address is:

Moroak Station
Roper River Highway
Mataranka 0852 phone (08) 8975 4888

Access to Moroak Station is via the sealed Roper Highway from Mataranka. There is a prominent sign about 60km from Mataranka, crossing the Roper River via a bridge and a number of concrete floodways. It is 18km on dirt road from the Roper Highway to the station homestead. It is about another 40 kilometres on station tracks from the Moroak Homestead to the (abandoned) Goondooloo Homestead.

Access to the potential areas was obtained along station tracks, though sometimes over challenging terrain. The main route, from Moroak Station to the east, had been recently graded. The station tracks followed fencelines, which on the western margin have very few gates.

Moroak Station has a maintained airstrip and also offers premium accommodation for visitors. Gooodooloo Homestead is abandoned and uninhabitable, but has a toilet and shower in an outbuilding. This station also has an airstrip which has fallen into disuse.

Reasonable motel accommodation is available in Mataranka, as is fuel. For provisions, however, it is necessary to travel to Katherine, some 105km NW of Mataranka.

3 Tenement Status

EL 25681 has its boundaries as shown on Figure 2. It was granted to Tianda Resources on the 23 August 2007 for a period of 6 years. In 2009, 24 subblocks were relinquished. It now altogether 27 graticular blocks, covering a total of 75.245 square kilometres.

The tenement is due for another relinquishment within the near future.

The current subblock list is:

2322 cdehiknopstuxyz  
2394 cdhino  
2323 lnmqrv

Figure 2 Tenement boundaries and graticular subblock map
4 Geology

The geology of EL 25681 is dominated by sediments of the Roper Group, specifically the Velkerri Formation \( \text{Prv} \) (mostly siltstone), Moroak Sandstone \( \text{Prk} \) (crossbedded and rippled), the Sherwin Ironstone Member \( \text{Prz} \), and the Kyalla Member \( \text{Pry} \) (micaceous siltstone to coarse sandstone). The 250k mapsheet legend is reproduced below…

![Figure 3 Stratigraphy in EL 25681](image)

The Moroak Sandstone crops out as prominent ridges on the tenement and elsewhere. Crossbedding and ripplemarks are easily and widely observed. In the northern part of the tenement, the strata dip to the northwest, while in the south, they dip to the southwest. This is due to an anticline crossing the tenement in an approximately east-west orientation.

![Figure 4 1:250k outcrop geology in EL 25681](image)
At the northern limit of the tenement, a dolerite sill intrudes between the Moroak Sandstone and the overlying Kyalla Member. Ten kilometres north of the tenement, the Sherwin Ironstone Member was mapped on top of the Moroak Sandstone, but none was mapped within the tenement.

5 Exploration Completed
During early July, Tianda geologists visited each of EL 25681 Roper River and 25692 High Black Range for a day. They were seeking to establish the presence of the Sherwin Ironstone Member on the tenements. The task was remarkably easy, with ironstone formations being discovered exactly where they were anticipated, and on the first try. A longer, return visit was planned for later in the month.

5.1 Exploration Model
The Sherwin Ironstone Member is a hematite-cemented sandstone or oolite, precipitated in lagoon conditions which were facies-equivalent to either the Moroak Sandstone or Kyalla Formation. As such, the Iron Member is not necessarily a layer-cake stratum, but can exist
side-by-side the other formations. Nevertheless, it is expected to be within the upper the Moroak Sandstone section, or the base of the Kyalla Formation.

The exploration technique was simple: to explore the highest hills which were mapped as Moroak Sandstone. When driving along station access tracks, it was simple enough to stop and then climb to the top of a sandstone outcrop, then look for ironstones.

5.2 Field Work Undertaken

Judged from Google Earth image characteristics, a number of (mainly) hilltops were chosen for field investigation. These were visited on July 4th 2010, with a base in Mataranka, then again on July 14th and 15th (camping on the tenement).

On July 4th, three separate hilltops were visited. In each case, significant walks were required to inspect the locations. In the first two instances, hilltop Sherwin Ironstone was encountered. The first of these was a substantial lens of about a hectare; the second was a much smaller occurrence. Both were GPS mapped by Charles Poynton and sampled by Drs Chen and Wang. The third hilltop had some ferruginized Moroak Sandstone, considered too insignificant to justify mapping.

The return visit on July 14th and 15th was made immediately after a trip to the nearby EL25692. A Terra Search Pty Ltd geologist was accompanied by a field assistant and the two quickly visited as many hilltops as possible. Though the Sherwin Ironstone Member was mapped, sampled and had magnetic susceptibility determinations performed, no attempt was made to map any other outcrop boundaries. The reasons for this were simple: such mapping would be time-consuming and would not make any commercially useful contribution.

Figure 6 outcrops of Sherwin Ironstone Member at about 8369500N near western boundary of tenement
Furthermore, these boundaries had already been mapped by NTGS staff in the past. What they had failed to observe were the ironstones on the (inaccessible) hilltops.

On July 14th, ten Prz Sherwin Ironstone outcrops were mapped and sampled. 31 geological observation points were recorded on the GPS as well. As the outcrops were usually long, sinuous and obvious, they were mapped by each member of the crew walking along one side and meeting at the opposite end. The following day, July 15th, saw the discovery of another three ferruginized outcrops (most likely Moroak Sandstone) and recording of another 33 geological observation points. Unfortunately, the areas investigated in the far south and far north of the tenement were not as fruitful as the central area. Altogether, nine samples were taken and submitted for ICP analysis.

Apart from the geological observations, some trouble was taken to record access tracks and gate locations. This is important, particularly as some of the routes which are most obvious on the images are not practicable due to creeks and steep rocky inclines, or fencelines lacking gates to get through them.

Figure 7 outcrops of Sherwin Ironstone Member at about 8366000N - 8367000N near western boundary of tenement
Figure 6 shows a cluster of often-sinuous ironstone outcrops running along a ridge at around 8369500N. The ironstone was comprised of hematite-cemented sandstone in the largest, southernmost outcrop, and oolitic hematite in the other smaller outcrops to the north. Several samples were taken from the more interesting of these outcrops. The larger (1.0Ha), southern outcrop ran 28% Fe, while the smaller oolitic hematite outcrops contained 39 – 44% Fe. They are, however, tiny (0.1 – 0.4Ha) and thin (<1m thick) and the total tonnage would be negligible. The considerable environmental damage that would be done to attractive woodland would not be justified by the small value of iron ore that could be produced.

The ironstone outcrops shown in Figure 7 were found on the tops and flanks of Moroak Sandstone hills 2 – 3km further south. These were generally small and thin. The largest outcrop (number 3, of 1.0 Ha) was only about a metre thick and gave ICP results of 11.9% Fe. A higher grade (39%) was obtained on the northernmost outcrop (#15), but this was less than 0.1Ha and maybe 0.5m thick.

The ironstones mapped in Figure 8 were found in the far southwest of the tenement. All three were ferruginous sandstone, probably of the uppermost Moroak Sandstone Member. The lithological boundaries of all three were vague and often in quite dense scrub. The outcrops were (compared to others in the tenement) quite large, with #2 being 1.9Ha, #18 of 2.7Ha and
#19 of 1.7Ha. However, they are thin (0.5 – 1m) and the southernmost assayed at only 13.7% Fe. Even RR19 on outcrop #19 assayed at only 34%.

Two other locations were chosen for investigation. These were both in the northern half of the tenement and their locations – Area A, Area B and Area C - are indicated on map in Figure 6. The areas highlighted in purple were those to be considered and all were understood to be on hilltops comprised of Moroak Sandstone.

Area A was found to be a mesa with a horizontal cap of Moroak Sandstone. There was no sign of ferruginization, let alone the Sherwin Ironstone. It was also much higher than the nearby Area B, where no hill was visible. It was presumed that no ironstone was likely at Area B.

Area C, in the northwest, was a challenge for access. Long fences without gates were the principal difficulty. For instance, the track to the north from Goondooloo Homestead had no gates, particularly where it passed otherwise open hilltop ground covered in Moroak Sandstone. But it proved possible to drive along an unappealing fenceline to Area C and then
walk a loop. A tiny patch of ferruginized sandstone was noted, but no extensive ironstones were observed.

In retrospect, the entire Moroak Sandstone ridge to the south and east of Area C should have been investigated. Minor Sherwin Ironstone was observed there in 2008 and again in early July.

6 Tonnage and Grade

The table below shows estimates of the tonnages in each of the numbered outcrops. The outcrop numbers, perimeters and areas were all computed by the GPS used in acquisition. The thicknesses are estimates, while the %Fe is from ICP analysis.

Not all outcrops were sampled for analysis. This was because either the outcrop was very small, or observed to be weakly mineralized.

Perusing the table, it becomes apparent that only a few tiny pods of outcrop have attractive grades. The bulk of the tonnage (60000) is attributed to two outcrops, both of which assay at less than 40% Fe. Only 4500 tonnes assay at greater than 40% Fe, and none at all over 50%.

**EL25681**

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TOTAL 72000
7 Conclusions and Recommendations

EL 25681 contains a number of previously unmapped occurrences of the Sherwin Iron Member. These were all found overlying the Moroak Sandstone Member, on hilltops. Many of them were too small to be represented on a 1:250,000 map sheet and all were in vegetated and inaccessible locations which would have escaped traditional regional mapping techniques.

Despite selection of the best-looking samples for ICP analysis, the assays were often disappointing and never very encouraging. Furthermore, the tonnage involved is miniscule, particularly in comparison to operating iron ore mines in Australia. Existing mines would have daily production exceeding the total resource in the tenement.

It is recommended that the tenement be relinquished.
# Appendix

## EL 25681 2010 rockchip sampling locations and assays

**Labwest Minerals Analysis Pty Ltd**  
**job number ALW000293**

**Date reported** 27/08/2010  
**HF+HCl+HNO3 digest in microwave oven, inductively coupled plasma**

**Assay_description** MMA01-U  
**optical emission and mass spectrometry determination**

| Sample_ID | mga_E metres | mga_N metres | elev metres | Ag_MS ppm | As_MS ppm | Ba_MS ppm | Ca_OES ppm | Co_MS ppm | Cu_MS ppm | Fe_OES ppm | K_OES ppm | Li_OES ppm | Mo_MS ppm | Ni_MS ppm | P_OES ppm | Pb_MS ppm | S_OES ppm | Se_MS ppm | Th_MS ppm | Ti_OES ppm | U_MS ppm | V_OES ppm | Y_MS ppm | Zn_MS ppm |
|-----------|--------------|--------------|-------------|-----------|-----------|-----------|------------|-----------|-----------|------------|-----------|------------|-----------|----------|-----------|-----------|------------|-----------|------------|-----------|----------|-----------|
| RR 11     | 334742       | 8366220      | 156         | 0.03      | 15.4      | 87.3      | 427        | 26.7      | 21.5      | 119329     | 162       | 2.0        | 4.7       | 16        | 773       | 13.8      | 490       | 0.24      | 2.33      | 231       | 2.91      | 59        | 7.35      | 31.0      |
| RR 12     | 334254       | 8369865      | 141         | 0.06      | 92.7      | 226.8     | 590        | 40.8      | 34.0      | 439336     | 254       | 4.4        | 5.0       | 31        | 1697      | 29.0      | 646       | 0.50      | 5.37      | 271       | 7.44      | 161       | 15.91     | 148.7     |
| RR 13     | 335277       | 8369153      | 140         | 0.03      | 9.1       | 139.6     | 295        | 7.5       | 55.4      | 280930     | 240       | 1.8        | 4.3       | 8         | 1287      | 34.0      | 439336    | 0.24      | 2.33      | 231       | 2.91      | 159       | 15.91     | 148.7     |
| RR 14     | 335008       | 8369526      | 148         | 0.04      | 30.5      | 180.5     | 684        | 12.2      | 50.6      | 407978     | 393       | 2.5        | 2.5       | 14        | 1231      | 21.5      | 289       | 0.87      | 7.19      | 292       | 6.94      | 121       | 15.73     | 40.8      |
| RR 15     | 334852       | 8369702      | 144         | 0.05      | 41.5      | 123.7     | 692        | 25.9      | 34.5      | 390872     | 356       | 2.1        | 2.2       | 11        | 1877      | 4.4       | 377       | 0.87      | 7.19      | 292       | 6.94      | 10        | 12.81     | 47.6      |
| RR 16     | 334748       | 8369805      | 150         | 0.06      | 23.0      | 152.5     | 615        | 14.8      | 57.1      | 137328     | 224       | 4.4        | 1.0       | 13        | 1231      | 21.5      | 289       | 0.87      | 7.19      | 292       | 6.94      | 18        | 10.13     | 33.0      |
| RR 17     | 334784       | 8367232      | 114         | 0.06      | 21.7      | 71.9      | 531        | 21.0      | 22.6      | 341581     | 279       | 1.4        | 2.8       | 8         | 1321      | 19.3      | 300       | 0.55      | 5.44      | 456       | 6.00      | 161       | 15.91     | 148.7     |
| RR 18     | 334417       | 8363473      | 114         | 0.03      | 5.8       | 47.3      | 287        | 19.0      | 22.6      | 341581     | 279       | 1.4        | 2.8       | 8         | 1075      | 6.8       | 193       | 0.39      | 4.14      | 327       | 4.02      | 121       | 15.73     | 40.8      |
| RR 19     | 334768       | 8364824      | 112         | 0.05      | 18.1      | 37.2      | 229        | 25.9      | 34.5      | 393978     | 335       | 1.5        | 3.7       | 10        | 1321      | 19.3      | 300       | 0.55      | 5.44      | 456       | 6.00      | 172       | 10.12     | 42.0      |

**Note:** All values are in ppm (parts per million).