ANNUAL & FINAL REPORT

EXPLORATION LICENCE 24471

EXPLORER PROJECT – TENNANT CREEK

FOR THE PERIOD 16/8/2013 to 15/8/2014

by

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GDA94 - Zone 53

Target Commodities: Gold and Copper

1:250000 Tennant Creek, Bonney Well

1:100000 Kelly, Tennant Creek, Chaluba, Bonney

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SUMMARY

The Explorer Project is located approximately 40 kilometres south of Tennant Creek in the central part of the Northern Territory.

EL24471 was granted to Tennant Creek Gold Pty Ltd (TNG) for six years on 16/8/2005, an application of renewal was submitted to the DME in August 2013. TNG entered into a joint venture agreement with Western Desert Resources Ltd (WDR) over this and a number of other tenements in the area on 27/2/2008. WDR has earned an 80% interest in the project by undertaking exploration on the included tenements.

The EL is considered to be prospective for gold and copper mineralisation associated with ironstones similar to that found in the Tennant Creek goldfield.

The area is located on the western margin of the Tennant Creek Inlier. The central part of the Inlier is comprised of the Tennant Creek Province of Palaeoproterozoic age. The Warramunga Formation hosts the gold-copper-bismuth mineralisation of the Tennant Creek goldfield and is the principal target horizon for mineralisation on EL24471.

WDR took over management of the project in 2008 and has reduced the size of the tenement from 1354km² to 307km² through standard partial reductions. Exploration has included gravity surveying, magnetic modelling, surface geochemical sampling and diamond drilling.

The reporting periods for 2011-2012 and 2012-2013 overlapped with a drilling program focussed on the BIF Hill prospect that commenced in July and finished in August 2012, with four diamond cored holes totalling 1542.9 m. Best results were from sulphide clots in quartz veins (1655 ppm Cu) and with brecciated siltstone (3140 ppm Cu).

No exploration work was conducted over the final reporting period due to WDR’s business focus on developing its iron ore operations, combined with disappointing results on the project to date. The decision to relinquish the lease came when it was clear there would be no further funding, despite recognised potential of the area to host a Tennant Creek style deposit.
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1 INTRODUCTION

1.1 BACKGROUND

The Exploration Licence was granted in 2005 for six years, an application of renewal was submitted to the DME in August 2013. It is located south of Tennant Creek in an area of poor outcrop. The tenement forms part of the Rover joint venture between TNG Ltd and Western Desert Resources Ltd (WDR) in which WDR is the operator.

1.2 LOCATION AND ACCESS

The Explorer Project is located approximately 40 kilometres south of Tennant Creek in the central part of the Northern Territory (Figure 1). The EL covers an area of 307 square kilometres (98 sub blocks).

Access to, and within, the area is by the sealed Stuart Highway south from Tennant Creek, and then by unsealed station tracks leading west from the Stuart Highway. The Alice Springs to Darwin Railway also crosses the area.

1.3 CLIMATE

The area has an arid, tropical climate with long, hot summers and short, mild winters. Rainfall can occur throughout the year but the majority of falls occur in summer with the annual rainfall being about 400mm.

1.4 TOPOGRAPHY AND VEGETATION

There are two main landforms in the region: dissected uplands (remnant Ashburton Surface) and the surrounding plains (Tennant Creek Surface). The tenement is mainly flat with some residual mesas formed by outcrops of Flynn Group and Wiso Basin.

The area supports mallee, acacia and snappy gum trees with spinifex being the dominant grass species.

2 TENURE

2.1 MINING/MINERAL RIGHTS

EL 24471 was granted to Tennant Creek Gold Pty Ltd (TNG) for six years on 16/8/2005. TNG entered into a joint venture agreement with Western Desert Resources Ltd (WDR) over this and a number of other tenements in the area on 27/2/2008. WDR has earned 80% interest in the project by undertaking exploration on the included tenements.

The EL was reduced at the end of year 5 and an application for renewal was submitted at the end of year 8 for a further two years. At the end of Year 9 the licence was relinquished in full. The licence area is shown in Figure 1.
2.2 LAND TENURE

The licence is located within the boundaries of Perpetual Pastoral Lease 1142 – Tennant Creek Station. A compensation agreement was signed for activities in 2012.

2.3 NATIVE TITLE

There are no known native title claims over the exploration licence. An exploration agreement is in place with the Central Land Council (CLC).

2.4 ABORIGINAL SACRED SITES

The reduction of the tenement in August 2008 included the areas that contained three registered sacred sites. There are now no known sacred sites within the current boundary of EL 24471. A CLC clearance certificate (No. 2012-050) was obtained prior to ground disturbing works during the current reporting period which restricted works to within 50m of the nominated tracks.

Figure 1: Location of EL 24471 – Explorer Project
3 GEOLOGY

3.1 REGIONAL GEOLOGY

The area is located on the western margin of the Tennant Creek Inlier (Donnellan et al 1999). The central part of the Inlier is comprised of the Tennant Creek Province of Palaeoproterozoic age. This consists of a flysch sequence, the Warramunga Formation, which has been intruded by granitoids. The sedimentary sequence is overlain by extrusive volcanic rocks and associated sediments of the Flynn Subgroup.

The Warramunga Formation hosts the gold-copper-bismuth mineralisation of the Tennant Creek goldfield. The mineralisation is associated with ironstone.

The Middle Cambrian Wiso Basin covers the basement rocks west of the Tennant Creek Inlier. This is a sedimentary sequence consisting of the Montejinni Limestone and the Hooker Creek Formation (sandstone and siltstone).

![Figure 2: Local Geology (NTGS 250K geological sheets)](image-url)
3.2 LOCAL GEOLOGY

Due to a thick cover of younger sediments over most of the tenement area, the local geology is interpreted from rare outcrop, limited drill testing and geophysical surveys (airborne magnetic).

![Airborne magnetic image](image)

**Figure 3: Airborne magnetic image**

The hackly texture in the magnetic image in the central and southern portions of the EL is probably related to the felsic volcanic and volcanogenic sedimentary rocks of the Flynn Subgroup. More subdued magnetic rocks in the central part of the tenement and also in the northern block may be underlain by Warramunga Formation. Rocks of the Cambrian Wiso Basin cover the western part of the EL and are approximately 30-50m thick at the western boundary.
4 PREVIOUS EXPLORATION

4.1 MINING HISTORY

No mining has been carried within the area covered by the tenement.

4.2 EXPLORATION BY PREVIOUS COMPANIES

**Geopeko (1966-67)**

- Aeromagnetic survey.
- Nobelex (1972-76)
- Aeromagnetic survey.
- Ground magnetic follow up.
- Two diamond holes and one percussion hole at the prospect known as “BIF Hill”. ADL426 intersected 9.1m @ 0.31g/t near surface.

**Geopeko (1975-79)**

- Aeromagnetic survey.
- Ground magnetic follow up of Explorers 190, 191 and 192.
- K/Ar dating of the granite body close to the Stuart Highway and Explorer 42 at 1510 million years.
- Occidental Minerals/AOM (1980-81)
  - Aeromagnetic survey.
  - Follow up of 16 airborne magnetic anomalies with ground magnetic and gravity surveys.
  - One diamond hole drilled on anomaly T3, hole T3-2 was drilled to 285m and intersected volcanic rocks of the Flynn Subgroup.

**Geopeko/Shell (1981-84)**

- Aeromagnetic survey flown over areas not previously covered.
- 21 airborne targets followed up with ground magnetic surveys.
- targets tested by RAB drilling with no significant results.
- Two experimental lines of input EM over Explorer 42.
- Review of Explorer 42 data.
- Second diamond hole drilled at Explorer 42 with no anomalous gold or base metal values.

**Roebuck Resources (1993-95)**

- Literature review.
- LAG and rock chip sampling – no significant results.
- Low level detailed airborne magnetic survey flown.
- Regional gravity survey completed.
- Regolith mapping undertaken.
- Regional RAB drilling to determine depth of cover and bedrock lithology undertaken.
- RC and diamond drilling on a number of magnetic targets – no significant results.
- Giants Reef Mining/Emmerson Resources (2001-06)
- Reinterpretation of airborne magnetic and a gravity survey.
- 1 diamond hole and 7 RC holes completed – minor Au/As zone in the diamond hole (2m at 0.5g/t Au and 1.2% As from 380m).

**Tennant Creek Gold (NT) Pty Ltd (2005-07)**

- Gravity and ground magnetic surveys were carried out over a number of airborne magnetic targets defined from reinterpretation of previous surveys.
- RC drilling was carried out on two anomalies with no significant results.
Figure 4: Historical drilling and target locations
4.3 PREVIOUS EXPLORATION BY WESTERN DESERT RESOURCES

Western Desert Resources took over management of the project in 2008. A literature review was completed to determine what previous exploration had been completed within the EL. It was determined that the previous drilling which had been done on anomaly Explorer 42 had not completely tested the target. A deep diamond hole was proposed to complete the investigation of the magnetic anomaly (Roberts, 2008).

Hole E3DD05 was drilled in mid 2008 to a depth of 446.5m. The hole intersected a sequence of interbedded siltstones and banded iron formation (BIF) probably from the Warramunga Formation. The BIF units contained significant amounts of magnetite which explained the magnetic anomaly. The more magnetic sections of BIF were sampled and assayed for gold with no significant results. There was little evidence of any chloritic alteration or copper mineralisation in the core.

A detailed gravity survey was completed over the northwest corner of the EL in 2009 at “GW302” prospect. The aim of this work was to define in greater detail a gravity anomaly which had been tested by a deep diamond hole (BBRD002) by Giants Reef Mining in 2001 (Walters, 2006). Interpretation of the data (Asis International) led to the recommendation of two drill holes.

In 2010, a review of the previous exploration activities conducted in the area was carried out following the recognition of phosphatic sediments in the Middle Cambrian Montejinni Limestone in an adjoining tenement. It was found that Giants Reef Mining had drilled a number of holes in the northern portion of the EL and had found anomalous phosphate values. A reconnaissance program of rock chip sampling ensued in July 2010. The aim of this work was to determine if phosphatic sediments of the Wiso Basin cropped out in the EL and to sample them. Twelve samples were taken (Figure 5) and assayed for a multi element suite by ICP-MS, with no significant results.

In 2011, exploration activities were largely based on geophysical data acquisition. Three prospects were chosen for detailed gravity coverage, based on the regional magnetic response. A total of 1845 gravity stations were measured at the BIF Hill (or GW502), T6 and Explorer 302 prospects with a station spacing of between 120-150m. A heliTEM electromagnetic/magnetic survey was flown for a total of 377 line km over a broader area encompassing WDR’s adjacent leases. Of this survey, approximately 137 line km were flown over EL24471. The purpose of the survey was to determine the existence and locations of bedrock conductors and for a better understanding of the subsurface geology within the survey areas.

In 2012, geophysical modelling was completed using the 2010 gravity survey data, four drilling targets were recommended on the basis of this and the magnetic data. Field checking of the outcrop at BIF Hill was carried out. Historical mapping was rectified and incorporated with the geophysical datasets as drilling was carried out in order to improve understanding of the local geology. Four diamond drill holes were initially sited. Two of these holes were scissor holes into the main dense body, which is clearly outcropping banded iron formation. The other two holes were planned on the same N-S section, but on a more subtle gravity signature to the north. As drilling proceeded, the fourth of these planned holes was repositioned to intersect the best of the modelled magnetic targets. The reporting periods for 2011-2012 and 2012-2013 overlapped with a drilling program focussed on the BIF Hill.
prospect that commenced in July and finished in August 2012, with four diamond cored holes totalling 1542.9 m.

The surveyed locations are provided in Table 1 below.

**Table 1: Drilling Summary**

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Drilling typically consisted of a short 6m PQ collar cased off with PVC, then HQ3 within the weathered zone, and NQ3 within the fresh zone. Water returns were generally good below about 100m depth.

An exploration index map showing exploration on the remaining portion EL24471 is provided in Figure 5. Three partial relinquishments occurred, during 2008, 2009 and 2010. The two partial relinquishment in 2009 and 2010 were over areas where no work was conducted. The partial relinquishment report in 2010 contains areas where drilling, sampling and various geophysical surveys were undertaken. Readers are referred to that report for details of that exploration.
4.3.1 Results

BIF Hill is characterised by outcropping banded hematitic ironstone, with red and black layers interpreted to represent iron-mineralised claystone and siltstone respectively. Drilling intersected the ironstone at various depths, with upper portions being hematitic while becoming magnetic with depth. As well as the pre-drilling gravity and magnetic modelling (Figure 6) as previously reported, magnetic remanence modelling (using the latest CSIRO modelling software) utilising magnetic susceptibility reading taken on the 2012 core was carried out in real-time while drilling was in progress. The modelling, surface exposure and drilling indicate an east-northeast trending syncline to be the dominant structural feature at BIF Hill. This work led to the drilling of the fourth hole at BIF Hill and suggested that only that hole (12BH004) targeted the core of the magnetic source. Outcrop suggested that the core source of magnetism possibly coincided with a steeply plunging fold hinge, a subsidiary parasitic fold on the larger syncline (Figure 7).
The magnetite mineralisation prefers shallow dipping flexure zones relative to the overall steeper dipping stratigraphy. Dark grey to black magnetite has mineralised siltstone beds while red hematite has mineralised claystone beds. These iron zones are up to several metres thick and have a narrow (e.g. 10 cm) selvedge zone of sericite with disseminated pyrite. No sulphides were seen within the ironstones. There are broader zones up to several metres thick of very fine disseminated pyrite in chlorite altered siltstone/claystone. The most significant occurrence of sulphides was the rare occurrence of clots of chalcopyrite-bornite in white quartz or quartz-chlorite-potassium feldspar or red hematite(?) veins. Assays showed no significant gold values with rare elevated copper values, the latter associated with the afore mentioned sulphide clots in quartz veins (1655 ppm Cu) and with brecciated siltstone (3140 ppm Cu). The elevated copper result of 1655 ppm Cu is associated with elevated Ag, Bi, Co, Pb and Se.

Albeit at low levels, there is a common association between Cu, As, Co and Bi. Antimony is also variably elevated. The highest gold value was 0.135 ppm Au recorded from a quartz vein within an interval of finely fractured strongly chlorite (+/- sericite) altered mudstone with minor disseminated pyrite and trace chalcopyrite. This sample was the last (deepest) from hole 12BH002 and could indicate that that hole was just coming into a gold horizon.

![Figure 6: BIF Hill target showing TMI magnetic image with pipe model outline and originally proposed drill holes](image-url)
Figure 7: Drilling Completed 2012 -2013 on geological sketch mapping
5 EXPLORATION CARRIED OUT IN CURRENT REPORTING PERIOD

No exploration work was conducted over the final reporting period due to WDR’s business focus on developing its iron ore operations, combined with disappointing results on the project to date. The decision to relinquish the lease came when it was clear there would be no further funding to explore due to the difficult and costly to exploration for Tennant Creek style targets – especially under cover. It is nonetheless believed that the area has high potential for discovery, but success will take some persistence which is not afforded to WDR at present.
6 REFERENCES


