



# **ANNUAL EXPLORATION REPORT**

***EL 24058***

***Yam Creek East***

**YEAR ENDING 9 AUGUST 2010**

**Pine Creek 1:250,000 SD5208**

**Pine Creek 1:100,000 5270**

**TENEMENT HOLDERS: CROCODILE GOLD AUSTRALIA**

**Distribution:**

- **DOR Darwin, NT**
- **Crocodile Gold Australia P/L, Humpty Doo**
- **Crocodile Gold Australia P/L, Brocks Creek**

**Report Number: PC/BJV/10-30**

**Zia U. Bajwah  
September 2010**

## **SUMMARY**

Exploration Licence (EL) 24058 is located about 150 km SE of Darwin, NT and 20km ESE of Burnside's Brocks Creek mine office. It lies just east of the Yam Creek-North Point mining centre. The tenement was granted on 10 August 2004, expiring on 9 August 2010. It comprises one graticular block that comprises approximately 3.33 km<sup>2</sup>. On 6 November 2009, Crocodile Gold Australia acquired the tenement after purchasing assets owned by GBS Gold Australia (liquidated).

EL 24058 comprises a portion of South Alligator Group sediments that lie on the north western flank of the Burrundie Dome, a regional anticlinal structure. The Margaret Syncline containing Mt Bonnie Formation rocks lies to the west and separates the older Burrundie Dome from the Yam Creek sequence.

During the year under review, Crocodile Gold Australia took over control of the tenement and commenced in-depth of the review of the project area. The tenement has very prospective geology and may contain significant gold or base metal resources similar to that of adjacent gold deposits such as North Point or Iron Blow deposits. Other activities include reconnaissance visits, tenement management and report writing.

In 2010-11 reporting year, project area will be explored for gold and base metals mineralisation. For this purpose, area identified during this review will undergo soil/rock chip sampling along with geological mapping. In addition, project area will be flown by high resolution geophysical survey. If encouraging results received, some RAB/RC drilling may also take place.

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## **1.0 INTRODUCTION**

EL 24058 is a small tenement, situated about 6 km east of Yam Creek project area, which comprises North Point and Princess Louise gold deposits. This report deals with exploration activity carried out during the second year of this tenement, ending 9 August 2010.

## **2.0 TENEMENT DETAILS**

EL 24058 was granted on 10 August 2004 and expires on 9 August 2010. A renewal application has been lodged with NT Dept of Resources. It comprises one graticular block that comprises approximately 3.33 km<sup>2</sup>. Tenements Holders were the Buffalo Creek Mines Pty Ltd (50%) and Territory Goldfields Pty Ltd (50%) and are the Burnside Joint Venture entities. The Burnside Joint Venture is managed by Burnside Operations Pty Ltd which was wholly owned subsidiary of GBS Gold Australia Pty Ltd. Underlying Cadastre is held by Douglas Pastoral Lease (NT Portion 2683).

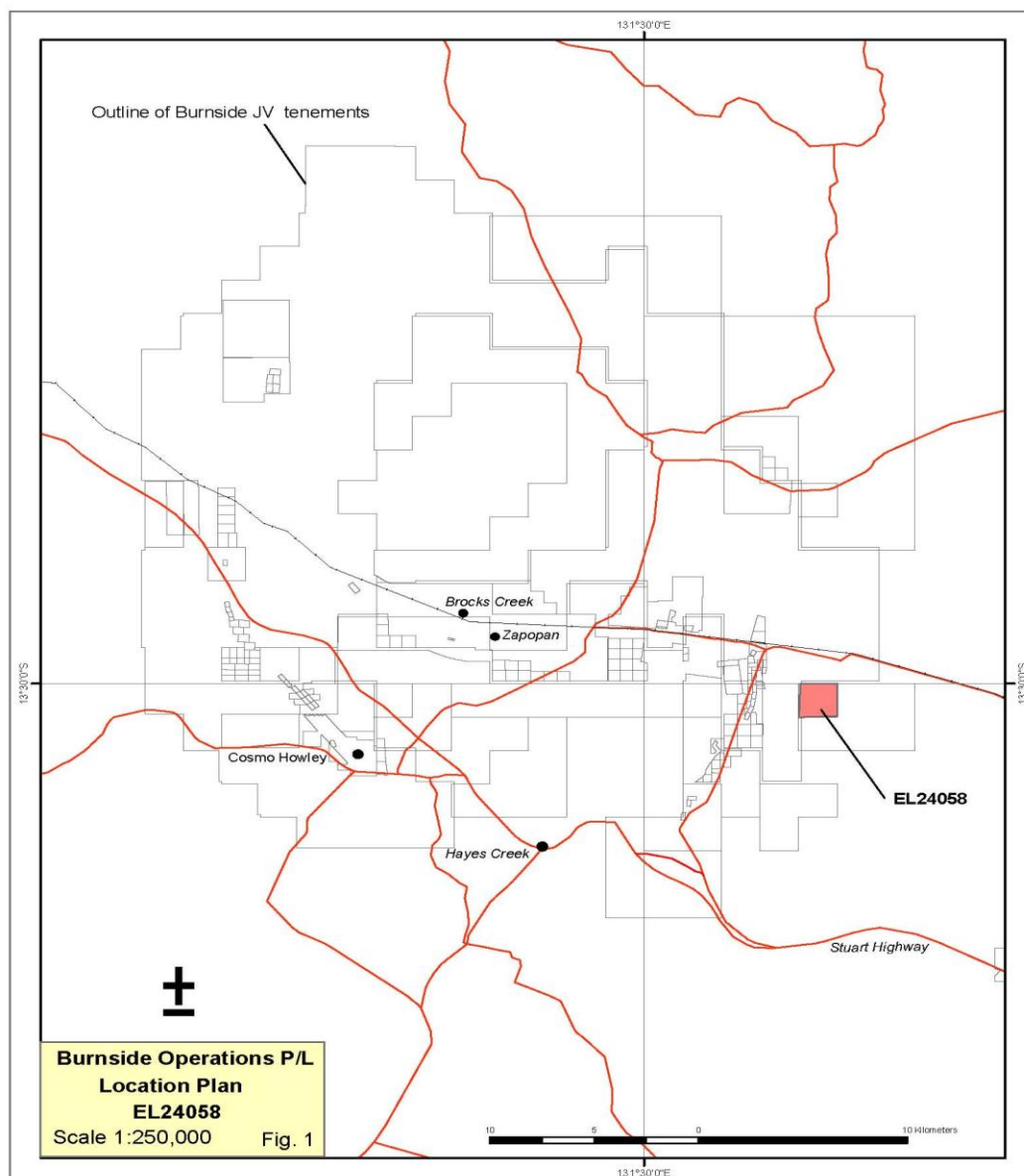
GBS Gold Australia went into voluntary receivership on 15 September 2008 and all assets including EL 24058 were placed under care and maintenance. In June 2009, Crocodile Gold Australia announced to purchase assets held by GBS Gold Australia (liquidated). After meeting statutory and regulatory requirements, these assets were transferred to Crocodile Gold Australia on 6 November 2009.

## **3.0 LOCATION AND ACCESS**

EL 24058 is situated 150km SE of Darwin NT and 5km SE of the Grove Hill Pub on the Darwin-Adelaide railway. Location of tenement is given in Figure 1.

Access to the tenement is via the Stuart Highway, thence north via the Grove Hill unsealed road that passes west of the tenement. Access can be gained via bush tracks that peel off north from the Mt Bonnie access road, towards Iron Blow.

Figure 1: EL 24058 Tenement Location



The headwaters of the Margaret River and Saunders Creek pass through the tenement and flow northwards. The topography comprises undulating hills and ridges of low to moderate relief.

The tenement falls on the Pine Creek 1:250,000 sheet and on the Pine Creek 1:100,000 sheet.

## **4.0 GEOLOGICAL SETTING**

### **4.1 Regional Geology**

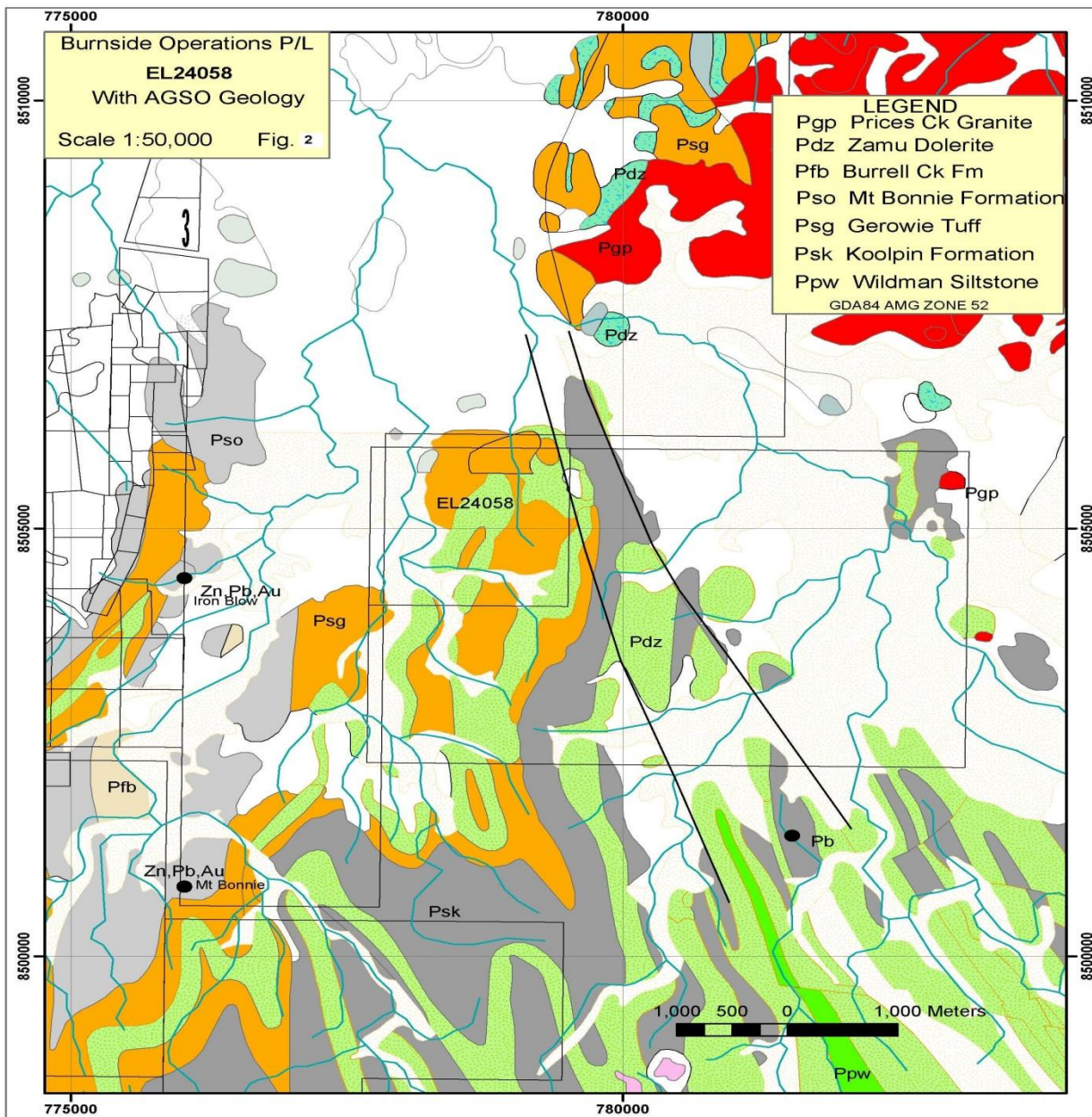
EL 24058 is situated within the Pine Creek Orogen, a tightly folded sequence of Palaeoproterozoic rocks, 10 to 14km in thickness, laid down on a rifted granitic Archaean basement during the interval ~2.2-1.87Ga. The sequence is dominated by pelitic and psammitic (continental shelf shallow marine) sediments with locally significant inter-layered cherty tuff units. Pre-orogenic mafic sills of the Zamu Dolerite event (~1.87Ga) intruded the lower formations of the South Alligator Group.

During the Top End Orogeny (Nimbuwah Event ~1.87-1.78Ga) the sequence was tightly folded, faulted and pervasively altered with metamorphic grade averaging greenschist facies with phyllite in sheared zones.

The Cullen intrusive event introduced a suite of fractionated calc-alkaline granitic batholiths into the sequence in the period ~1.87-1.78Ga. These high temperature I-type intrusives induced strong contact metamorphic aureoles ranging up to (garnet) amphibolite facies, and created regionally extensive biotite and andalusite hornfels facies. General geology of the project area is shown in Figure 2.

Less deformed meso and Neo-proterozoic clastic rocks and volcanics have an unconformable relationship to the older sequences. Flat lying Palaeozoic and Mesozoic strata along with Cainozoic sediments and proto-laterite cementation overlie parts of the Pine Creek Orogenic lithologies. Recent scree deposits sometimes with proto-laterite cement occupy the lower hill slopes while fluviatile sands, gravels and black soil deposits mask the river/creek flats areas.

Figure 2: EL 24058 with AGSO Geology



There is a tendency for gold mineralisation to be focused in anticlinal settings within strata of the South Alligator Group and lower parts of the Finnis River Group. This sequence evolved from initial low energy shallow basinal sedimentation to higher energy deeper water flysch facies.

## **4.2 Local Geology**

EL 24058 comprises a portion of South Alligator Group sediments that lie on the north western flank of the Burrundie Dome, a regional anticlinal structure. The Margaret Syncline containing Mt Bonnie Formation rocks lies to the west and separates the older Burrundie Dome from the Yam Creek sequence.

According to the AGSO geology plan South Alligator Group is mainly represented by Gerowie Tuff Formation and concordant sills of Zamu Dolerite (Figure 2). Both have been tightly folded on northerly plunging axes during the Pine Creek Orogeny. Faulting is extensive under the stress of the converging Hayes Creek Fault system (striking NE) to the west, and faulting to the east of the tenement that strikes NNW. Within the tenement the folded sequence has been broken up into blocks and wedges under the influence of the major faults.

## **5.0 GOLD MINERALISATION**

The region has been prospected for gold and has most likely been the subject of soil, stream and rock chip sampling by previous explorers. The structural setting, that includes an anticlinal component, appears favourable for gold though the good exposure makes it less likely to be present.

The Iron Blow Cu-Pb-Zn-Au deposit lies within Mt Bonnie Formation rocks about 2km west of the tenement. The Pickfords Pb deposit and the Mt Bonnie base metal and gold deposits lie 4km south east and south west of the tenement respectively. Otherwise mineralisation is not known within or in the vicinity of the block.

## **6.0 PREVIOUS EXPLORATION ACTIVITY**

See Muir 2006 for summary table of historic data.

Previous explorers within and around EL24058 included Geopeko, Anaconda, Norminco, Northern Territory Gold Mines, Dominion Gold, Cyprus, Calvert River Manganese, Kalmet Resources, CSR and RM Biddlecombe.

The area was originally mapped by the BMR as part of the Burrundie 1:63,360 geological sheet (Walpole and White 1959), the Pine Creek 100,000 geological sheets (Stuart –Smith and Needham 1981) and the Pine Creek 1:250,000 geological sheet (Malone 1962).

A summary of work completed within tenements that have overlapped EL24058.

**EL9956:** No exploration over EL24058. Review of work.

**EL3138:** No exploration other than regional mapping and a radiometric survey over EL24058, although difficult to discern from reports supplied. BLEG sampling over EL3138 between 1985 – 1990 by CSR. EL24058 was relinquished during second year.

**EL4817:** CSR conducted a geochemical and geophysical survey across the region. Four stream sediment samples were taken within EL24058 as part of a programme covering EL4817. The results are as follows

Sample No	Au (ppb)	Ag (ppb)	Cu (ppm)
217893	1.16	15.3	30
217894	1.01	34.5	35
217896	0.81	17.0	50
217897	1.28	25.5	45

**TABLE 1:** EL4817 Bulk Stream Sample Results by CSR 1985/86

**EL6078:** Aeromagnetic interpretation of EL6078 outlined two anomalies in the south west of the licence. These did not cover EL24058. The anomalies were not followed up.

**EL7913:** Extensive soil sampling plan was undertaken in the south of the region outlining an anomaly of 400m x 800m. No work was completed over EL24058. Literature review also states that alluvial diggings proximal to EL24058 extend over 300m 'along or just above the contact between the ferruginous carbonaceous mudstones of the Upper Koolpin Formation and the uppermost sill of the Zamu Dolerite in the Koolpin Formation. Two kilometers to the west hard rock workings exist on a 10-15 centimetre thick quartz reef. This is within the Gerowie Tuff below the Zamu Dolerite.'

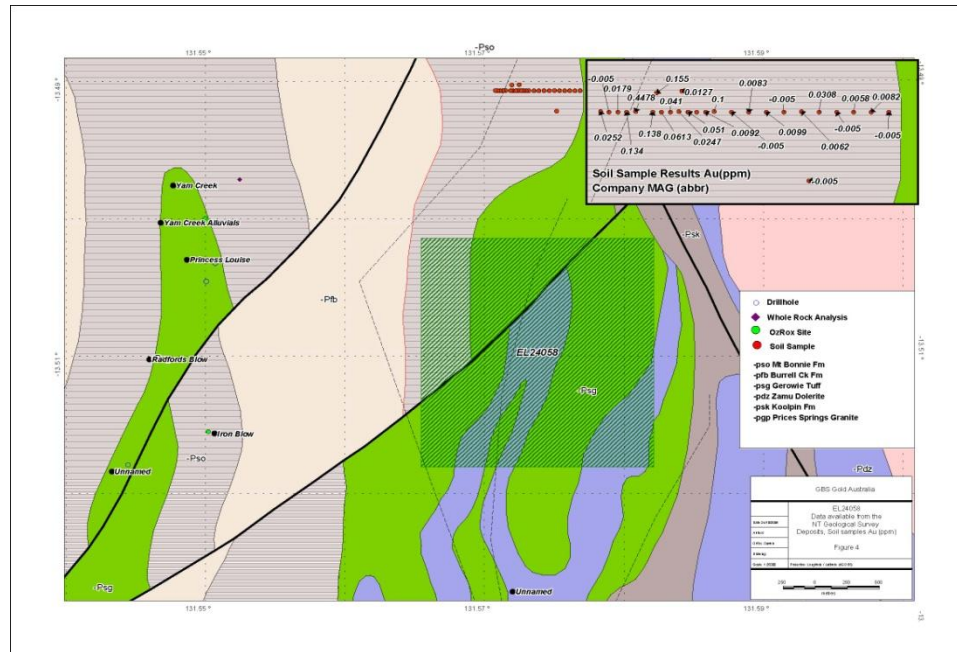
**EL9201:** Several Rockchips and soil samples were taken and streams were panned (with est 20-200ppb Au) by GR Biddlecombe. These did not coincide with EL24058. He notes that there are small alluvial workings in the area (NE of Block) and two kilometers to the west there are minor hard rock workings reported in 10-15 centimetre quartz veins.

**Exploration for the period 10th August 2004 to 9th August 2005:** The SPOT image for the Burnside region was subjected to fracture pattern analysis and compared to the location of known prospects in the region of EL24058.

**Exploration for the period 10th August 2005 to 9th August 2007:** was minimal due to the acquisition of the Burnside Joint Venture by GBS Gold Australia Pty Ltd. Work within the region has concentrated on the recommencement of mining in the Brocks Creek district.

Available geological and geochemical data are shown in Figure 3.

**Figure 3: EL 24058 data available from the NT Geological Survey**



During 2006-07, 141 soil samples were taken and analysed for Au, As, Cu Pb and Zn. Almost all samples assayed were low in gold concentration except sample no EX0137 which gave a value of 1.33 ppm Au. The sample is also high in As, Cu, Pb and Zn. In addition, there are 27 samples which have Au values above 20 ppb.

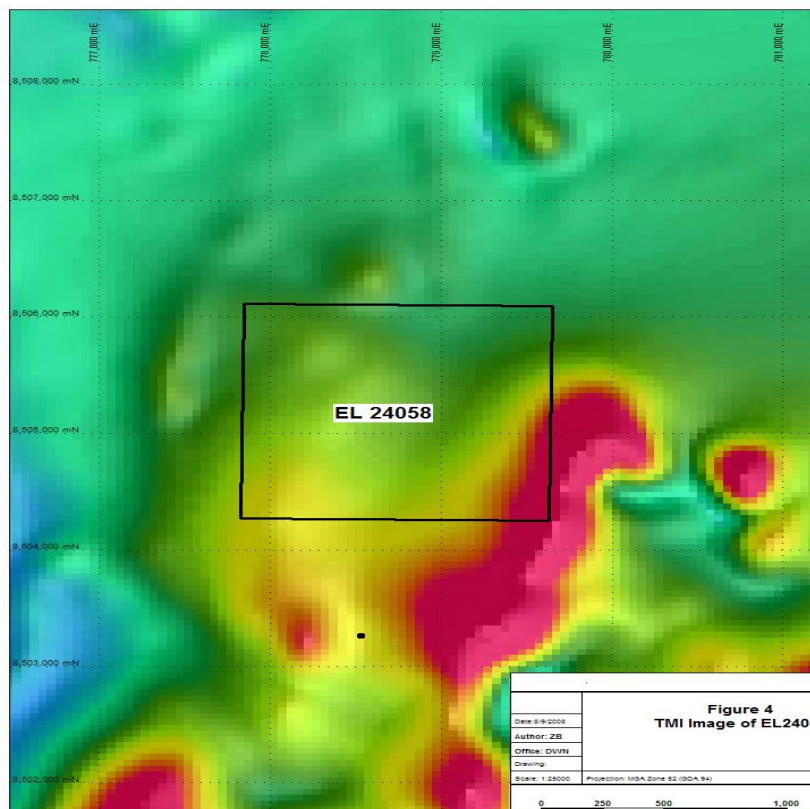
## 7.0 EXPLORATION YEAR ENDING 9 AUGUST 2010

During part of the reporting period, the tenement remained under care and maintenance. Under the instructions from Several Administrators, a technical review, tenement ranking and valuation was undertaken in order to prepare assets for sale. In June 2009, Crocodile Gold Australia announced to purchase all assets held by GBS Gold Australia (liquidated). After meeting all statutory and regulatory requirements, these assets included EL 9608 were transferred to new owner. Crocodile Gold Australia immediately commenced exploration, mining and processing activities in the region. Mining started from Brocks Creek underground and Chinese South

(Extension) open pit; hauling ore to Union Reefs gold mill for treatment. Work is underway to re-commence mining and processing at Toms Gully gold project, which is expected to come on-line in late 2010. So far, over \$140.00 million has been spent, of which, approximately \$15.0 million has been directed towards drilling in order to prove up resource base, which is vital for mining and processing operations in the region.

Crocodile Gold regards EL 24058 highly due to its strategic significance in providing mill feed in the long run. The tenement has very prospective geology and may contain significant gold or base metal resources similar to that of adjacent gold deposits such as North Point or Iron Blow deposits. During the reporting period, only a technical review of the tenement was undertaken and work completed during the reporting period included:

**Figure 4: TMI image of the project area**



- Reconnaissance visit
- Technical review of the tenement
- Planning for up-coming field season
- Report writing and tenement management activities.

This program costed a sum of \$ 7350.00 and details are given in attached Appendix 1.

## **8.0 FORWARD PROGRAMME year ending 9 August 2011**

In 2010-11 reporting year, project area will be explored for gold and base metals mineralisation. For this purpose, area identified during this review will undergo soil/rock chip sampling along with geological mapping. In addition, project area will be flown by high resolution geophysical survey. If encouraging results received, some RAB/RC drilling may also take place. A minimum budget of \$10000.00 is proposed for this program.

## **9.0 REFERENCES**

DREVERMAN, PC., CYPRUS GOLD AUSTRALIA CORPORATION (1990). Relinquishment Report Ending 1990. Depot Creek.

GOULEVITCH, J., CALVERT RIVER MANGANESE, NORMINCO. (1995). Exploration conducted at Dawes Reef, EL7913 in 1994. CR1995-0277.

MUIR, M. (2006) 2<sup>nd</sup> Annual Exploration Report EL24058, Yam Creek East, Year Ending 9<sup>th</sup> August 2006. GBS GOLD Pty Ltd.

SHAW, J. (2005) Annual Exploration Report EL24058, Yam Creek East, Year ending 9<sup>th</sup> August 2005. For Burnside Joint Venture.