



## **GBS GOLD AUSTRALIA PTY LTD**

### **ANNUAL EXPLORATION REPORT ERL97 WESTERN ARM YEAR ENDING 18 SEPTEMBER 2007**

**Pine Creek 1:250,000 SD5208  
Batchelor 1:100,000 5171**

#### **Distribution:**

- **DPIFM Darwin NT**
- **GBS Gold Australia P/L Perth**
- **Burnside Operations P/L Brocks Creek NT**
- **Union Reef Mine Site Pine Creek NT**

**GBS Report No. PC/BJV/07/43**

**Zia U. Bajwah  
October 2007**

## **SUMMARY**

Exploration Retention Licence (ERL) 97 is a part of the Burnside Joint Venture which GBS Gold Australia Pty Ltd acquired in 2005. The Western Arm deposit within ERL 97 is part of the resource inventory of gold resources that GBS Gold is reviewing. The licence covers 650 hectares and lies between latitudes 13°24' south and 13°26' south and longitudes 131°17' east and 131°18' east.

The geology of the area is dominated by the rocks of the South Alligator Group and the conformably overlying Finnis River Group. An important structural feature of the area is the Howley Anticline which is a doubly plunging upright, asymmetric, tight, non-cylindrical fold that plunges north-west in the vicinity of the Cosmo Howley Mine and to the south, at approximately 12°, in the Bridge Creek area. The project area is dominated by the rocks of the Mt Bonnie Formation and Burrell Creek Formation that are often covered by laterite and black soil plains throughout the tenement. Resource modelling indicates that the Western Arm gold deposit contains a resource of 2,696,440 tonnes at 1.48 g/t.

Due to low gold price in the last a few years, the Western Arm Gold deposit has ranked low against other deposits such as Fountain Head, Rising Tide and Zapopan. However, company regards it a strategic resource which will be brought into production at future date. In the reporting period, exploration activities conducted are technical review, reconnaissance visit, report writing and tenement administration. Proposed exploration activities for the next reporting period will include geological mapping, soil/rock chip sampling and air core drilling.

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## **1.0 INTRODUCTION**

Exploration Retention Licence (ERL) 97 is a part of the Burnside Joint Venture which GBS Gold Australia Pty Ltd acquired in 2005. The Western Arm deposit within ERL 97 is part of the resource inventory of gold resources that GBS Gold is reviewing. In this report work carried out in the year ending 18 September 2007 is presented.

## **2.0 LOCATION AND ACCESS**

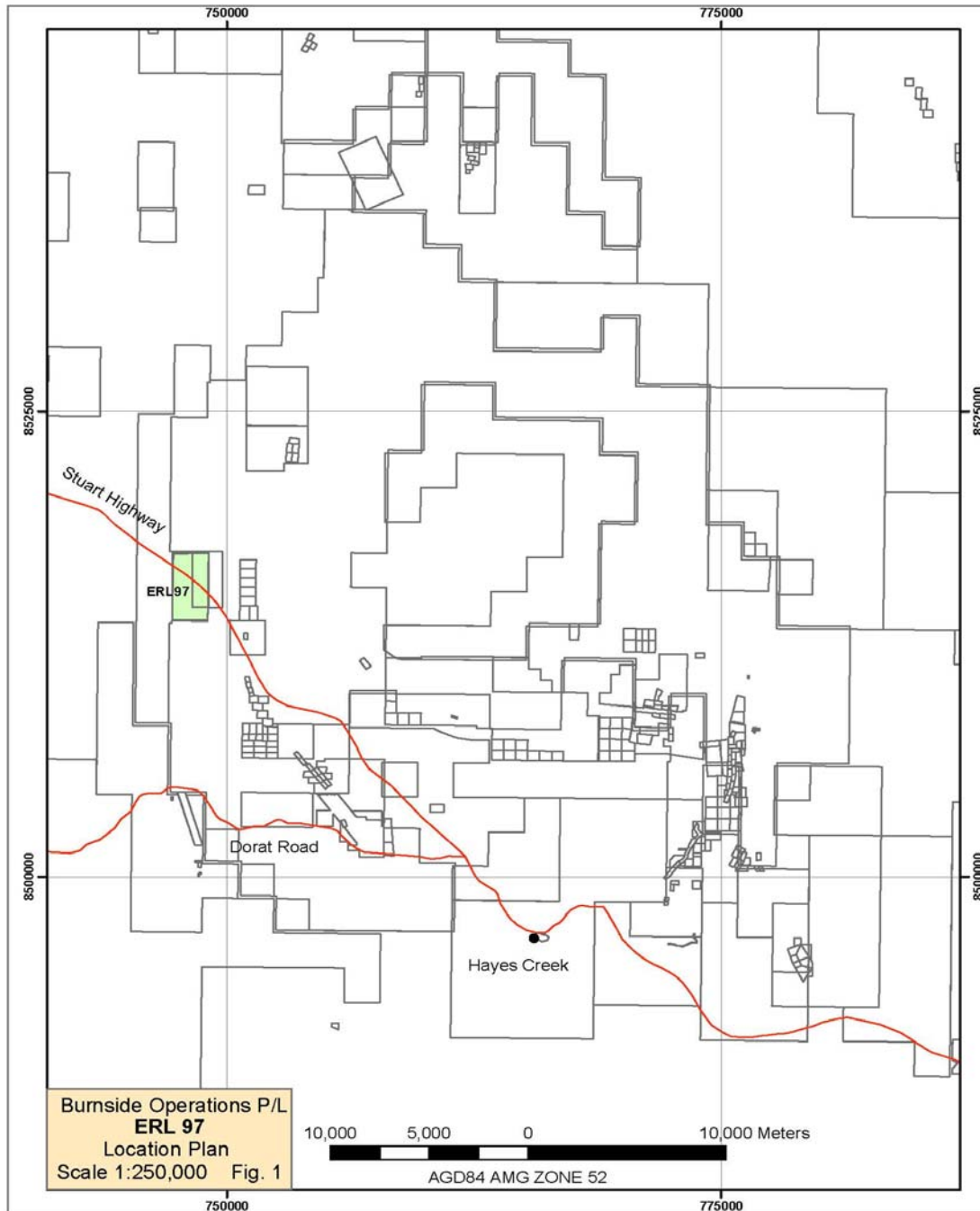
ERL 97 is located approximately some 120 km south of Darwin and 25 km southeast of Adelaide River, within the Cullen Mineral Field, on the Batchelor (1:100 000) sheet, shown in Figure 1. The Stuart Highway passes through the tenement providing good access.

## **3.0 TENEMENT DETAILS**

The licence covers 650 hectares and lies between latitudes 13°24' south and 13°26' south and longitudes 131°17' east and 131°18' east. It is situated within Pastoral Lease No. 903, Douglas, held by Tovehead Pty. Ltd. Previously held by Northern Gold N.L. as part of EL 4737, ERL 97 was granted to Northern Gold N.L. on 19 September, 1989, for a period of five years. Renewals were granted on the 31 October, 1994, and again on the 13 September 1999, the latter expiring on the 19 September 2004. A further application for renewal has been granted and expires on 19 September 2009. The name 'Western Arm' relates to the shape of late EL 4737 at the discovery location. During 2005, GBS Gold Pty Ltd successfully made a takeover of Northern Gold NL and has purchased Harmony Gold (through subsidiary Buffalo Creek Mines) 50% share of the Burnside Project as of 1<sup>st</sup> April 2006.

Mineral lease applications, MLN 1135A and MLN 1144A, have been submitted and are pending. MLN 1135A covers the eastern third of ERL 97 and is centred on the Western Arm deposit. MLN 1144A is contiguous with and to the east of MLN 1135A, and covers part of SEL 25748.

**Figure 1: Tenement Location Map**



## **4.0 GEOLOGICAL SETTING**

### **4.1 Regional Geology**

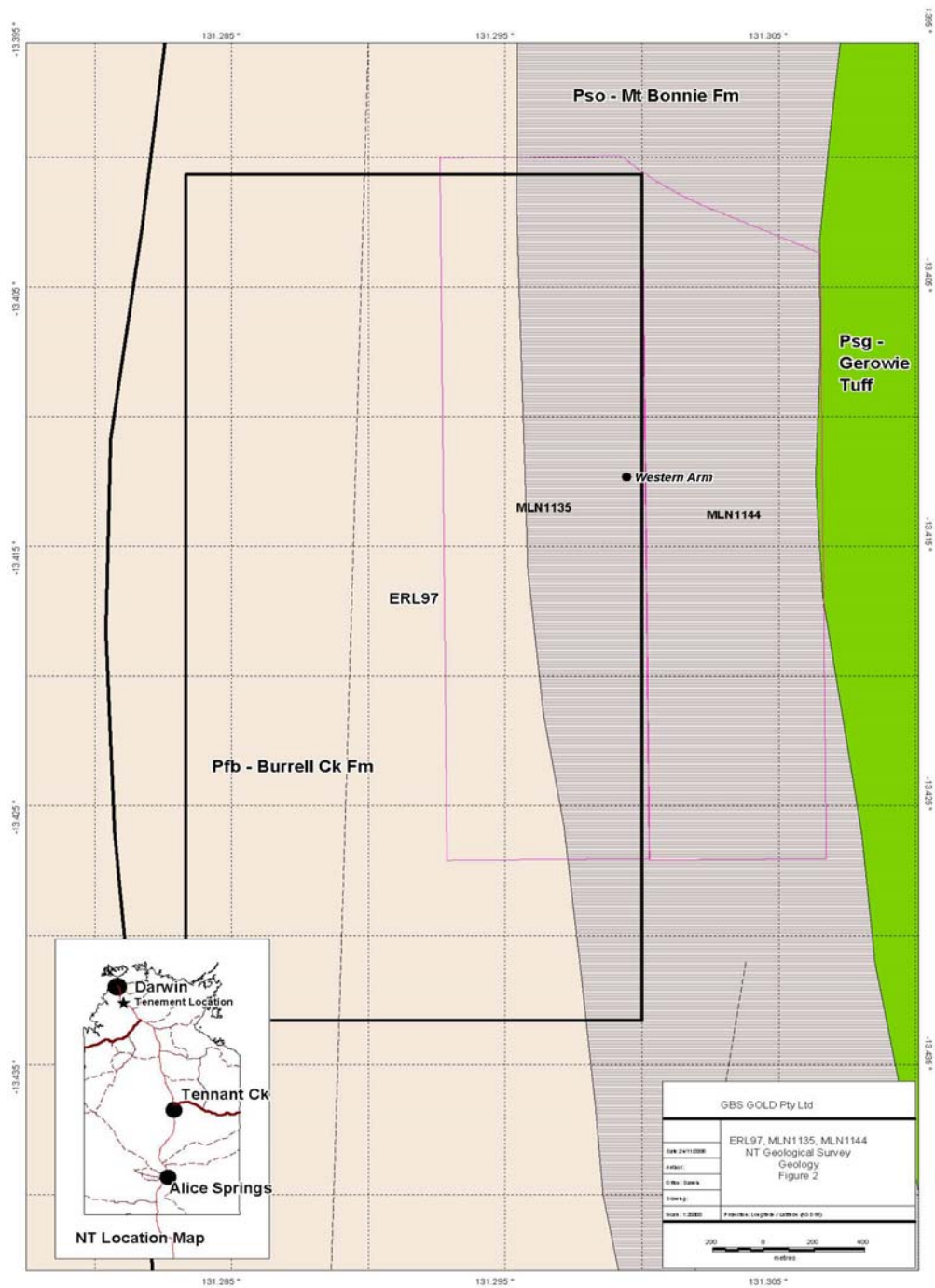
ER L97 is situated within the Pine Creek Orogen, a tightly folded sequence of Palaeoproterozoic rocks, 10 km to 14 km in thickness, laid down on a rifted granitic Archaean basement during the interval ~2.2-1.87Ga. The sequence is dominated by pelitic and psammitic (continental shelf shallow marine) sediments with minor interlayered tuff units. Pre-orogenic mafic sills of the Zamu Dolerite event (~1.87Ga) intruded the lower formations of the South Alligator Group and part of the Mt Partridge Group.

During the Top End Orogeny (Nimbuwah Event ~1.80-1.85Ga) the sequence was tightly folded and pervasively altered. Metamorphic grade averages greenschist facies to phyllite. The Cullen intrusive event introduced a suite of fractionated calc-alkaline granitic batholiths into the sequence in the period ~1.7-1.85Ga. These high temperature I-type intrusives induced strong contact metamorphic aureoles ranging up to (garnet) amphibolite facies, and created more extensive biotite and cordierite-andalusite hornfels facies. Open-folded Meso- and Neoproterozoic clastic rocks and volcanics have an unconformable relationship to the older sequences. Flat lying Cambro-Ordovician sandstone and limestone of the Daly River Basin along with hill-cappings of Mesozoic arenites overlie the basement. Cainozoic sediments and proto-laterite overlie parts of the Pine Creek Geosyncline lithologies. Recent scree deposits occupy the lower hill slopes while fluvial sands, gravels and red and black soil deposits mask the river flood plain areas.

### **4.2 Local Geology**

ERL 97 lies west of the axis of the Howley Anticline, approximately 12 km along strike from the Cosmo Howley Gold Mine. The Howley Anticline is a macroscopic fold structure, which has been traced from the Cosmo Howley Gold Mine in the south to Mount Paqualin in the north, a distance of 30 km. The geology of the area is dominated by units from the South Alligator Group and the conformably overlying Finnis River Group. The Howley Anticline is described as a doubly plunging upright, asymmetric,

**Figure 2: Geological Setting of the Project Area**



tight, non-cylindrical fold, which plunges north-west in the vicinity of the Cosmo Howley Mine and to the south, at approximately 12°, in the Bridge Creek area. In mineralised zones the fault is cut by a series of NE striking anastomosing brittle-ductile shear/fracture swarms with associated quartz veining as well as reverse faults that generally dip westerly.

At Western Arm, the prospect appears to lie on a parasitic fold on the western limb of the Howley Anticline. The sequence is poorly exposed and comprises rocks of the Mt Bonnie Formation, the upper member of the South Alligator Group. Rock types described include low-medium energy siltstone-mudstone-greywacke lithologies. An interpretation of the SPOT image shows a likely relationship to a NE striking fracture swarm that aligns with the Ios gold deposit on the Howley Anticline. Outcrop is obscured by thin proto-laterite and black soil plains throughout the tenement.

### **4.3 Gold Mineralisation**

Gold mineralisation in ERL 97 appears to have been localised by a sheared anticlinal fold that strikes northerly. Core drilling and costeaning has shown that gold generally occurs in a variety of settings. It occurs as quartz veins parallel to shear fabrics, in stock-work zones that occur as tension fractures formed synchronously with shearing, and veins, parallel to either bedding or the regional axial planar cleavage. Alternatively it may occur as disseminations within sheared alteration zones (Slade et al. 1995).

Tension fractures hosting gold mineralisation in shear zones are commonly re-folded, boudinaged and overprinted by further shearing suggesting that mineralisation was synchronous with shearing and postdated F3 folding. A structural analysis on the orientation of ore shoots and controls on mineralisation at Western Arm was undertaken using data collected from orientated diamond drill core and costean mapping. It was concluded that the mineralisation is associated with two sets of quartz veining that dip steeply to the west and east. These orientations appear to be related to west dipping, bedding parallel, quartz veining associated with bedding parallel thrusting and east



dipping duplex structures linking the west dipping thrusts. These form a complex stock-work zone of quartz veining with sub horizontal higher grade shoots .

A variety of vein types are present at Western Arm. These include stock-work zones, bedding parallel laminated veins, K-felspar rich veins and massive white veins, which appear to have different gold grades. Modelling by Bill Makar in 2005 estimated that a global resource of 630,000t @ 1.7g Au/t is present over a strike extent of nearly 3km. Within this resource, mineralised entities identified at a higher cut off and constrained by 20m deep pit shells amounted to 11,000t @ 2.8g Au/t. This was judged uneconomic at the date of estimation. A lithological control on gold distribution appears to be present with haematitised shale or mudstone being the preferred host.

As mentioned in ‘Local Geology’ it is postulated that the deposit is localised by focused swarms of north easterly fractures crossing the anticlinal axis and aligning with the Ios deposit on the Howley Anticline. The resource interpretation by Bill Makar (2005) identified a NE component that dipped moderately SE. The Bridge Creek mineralisation coincides with a similar NE striking fracture swarm visible on SPOT imagery.

## **5.0 PREVIOUS EXPLORATION ACTIVITY**

Northern Gold N.L. previously held the area now covered by ERL 97 as part of EL 4737 and several phases of exploration have been completed. Comprehensive soil sampling, mapping and RC drilling were carried out over the licence. These activities including drilling are fully documented in the annual reports for EL 4737. Work completed since then includes MMI geochemical soil sampling, satellite imagery and GIS interpretations, geophysical data acquisition and interpretation, and optimisation studies. This work is documented in the 1990 to 1996 annual reports (Partington *et al.* 1990; Cooper *et al.* 1991; Cooper *et al.* 1992; Cooper *et al.* 1993; Stokes, 1994, Slade *et al.* 1995 and Socic, 1996). A significant gold resource had been identified by Northern Gold N.L. on ERL 97 (Western Arm Deposit) and this is at a mature state of exploration. Resource development work included the production of flitch plans that have been interpreted and digitised. Mineral resource modelling and pit optimisation studies were also completed

prior to the excavation of a small trial pit. The pit was dug to expose details of structural controls and vein distributions to improve the quality of ore block interpretations.

During 1996/97 Northern Gold N.L. acquired and interpreted airborne magnetic data. Digital terrain modelling, MMI geochemical sampling and resource estimates were also completed. The resource estimate using a cut of 0.70 g/t is shown below

<b>Category</b>	<b>Tonnes g/t Au</b>	<b>Grade g/t</b>	<b>Oz Au</b>
Measured	821,090	1.66	43,950
Indicated	833,390	1.38	36,977
Inferred	1,041,960	1.42	46,635
<b>Total</b>	<b>2,696,440</b>	<b>1.48</b>	<b>128,562</b>

Western Arm resource estimate (1996/7)

During 1997/98, Northern Gold N.L. completed rehabilitation and a Public Environmental Report over ERL 97. Northern Gold N.L. also completed rehabilitation programs over ERL 97 during the 1997/98 field season. No field exploration was completed, between 1998 to 2000.

During 2000/01 Northern Gold N.L. compiled and validated the Western Arm data in preparation for updated resource estimations. No exploration work was carried out during the year ending 18<sup>th</sup> September 2002.

By mid 2003 the Burnside Joint Venture had completed the decline development at Zapopan and commenced extensive diamond drilling programs both underground at Zapopan and at the Cosmo Howley “deeps” targets. Modelling of these updated resources was also initiated. Work on ERL97 was on hold pending the outcome of economic studies on the more advanced resources.

During 2004-05 reporting period, work was limited to economic studies that re assessed the impact of the purchase of the Union Reefs mill. A review by a geological consultant confirmed the deposit is low grade, of complex geometry and is now more distant from

available treatment facilities. On the other hand the Union Reefs mill has advantages of capacity and low unit treatment costs and higher gold prices may change the equation.

While evaluation of the prime gold resources at Zapopan and Cosmo Howley is in progress, and pending grant of the mineral lease applications over Western Arm, the expenditure levels are expected to remain modest.

During the year ending 18 September 2006 work within ERL 97 was deferred to deposits of higher ranking in the short term. GBS Gold has commenced operations of the dual mill 2.5Mtpa Union Reefs CIL Gold Plant. The two initial open pit ore sources are at the Fountain Head and Rising Tide Deposits, with the high grade ore to be sourced from the Brocks Creek underground Mine (Zapopan). Work was also minimal due to the acquisition of the Burnside Joint Venture by GBS Gold Australia Pty Ltd as of the 1<sup>st</sup> of April 2006.

## **6.0 EXPLORATION YEAR ENDING 18 SEPTEMBER 2007**

In the last a few years, the Western Arm deposit was resource model and evaluated its development against the market conditions prevailed at that time. Due to low gold price, further development of the deposit has not been possible till today. In the meantime attention was focused on those gold deposits which ranked more favorable and therefore, Zapopan, Fountain and Rising Tide were considered more appropriate for development and mining. GBS Gold Australia acquired the Burnside Joint Venture in 2005 and immediately started to development those three deposits to feed the gold mill located at Union Reefs, where ore treatment re-commenced in August 2006. In the meantime, attention is focused to develop and mine Cosmo Deep project which will include Howley line of gold deposits such as Cosmo Howley, Chinese Howley and Mottrams together with Maud Creek.

Since the beginning of 2007, gold price has improved significantly, which provides impetus to develop and mine low grade gold deposits such as Western Arm. Due to its close proximity to Cosmo Deep project, it is highly likely that Western Arm gold deposit will be ranked higher for further exploration and development. In the meantime, the ERL

97 project was reviewed and potential for further development was realised at future date.

In the reporting period, exploration activities are given below:

- Technical review
- Reconnaissance visit
- Report writing
- Tenement administration

This exploration activity costed \$6285.00.

## **7.0 FORWARD PROGRAM YEAR ENDING 18 SEPTEMBER 2008**

The Western Arm gold prospect is considered to be strategic in the GBS Gold resources inventory and will provide feed stock to the Union Reefs processing mill at future data. This is due to focusing of company resources on the development of Cosmo Deep and Maud Creek Projects, and maintaining the production rate from the Fountain Head, Rising Tide and Zapopan mines. Meanwhile ERL 97 will be kept under review and ranking exercise. However, in the year 2007-08, SEL 25748 which surrounds ERL 97 on three sides, will be explored thoroughly. This may lead to conduct exploration activity on the project area. This will include geological mapping, soil/rock chip sampling and air core drilling. A minimum budget of \$6000.00 is set a side for this exercise.

## **8.0 REFERENCES**

- COOPER, W. C., PARTINGTON, G. & STOKES, M. A., (1991). ERL 97, Annual Report to 18<sup>th</sup> September 1991. Unpublished report by Northern Gold N.L. for the Northern Territory Department of Mines and Energy.
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- SHAW, J.A. (2002) ERL 97 Annual Exploration Report to 18<sup>th</sup> September 2002, to DBIRD Darwin.
- SHAW, J.A. (2003) ERL 97 Annual Exploration Report to 18<sup>th</sup> September 2003, to DBIRD Darwin.
- SHAW, J.A. (2005) ERL 97 Annual Exploration Report to 18<sup>th</sup> September 2005, to DBIRD Darwin.
- SLADE, T. J., FARRELLY, C. T. & THOMSON, D., (1995). ERL 97, Annual Report to 18<sup>th</sup> September 1995. Unpublished report by Northern Gold N.L. for the Northern Territory Department of Mines and Energy.
- SOCIC, N., (1996). ERL 97 1995/96 Annual Report, 19/09/95 to 18/09/96. Unpublished report by Northern Gold N.L. for the Northern Territory Department of Mines and Energy.

## APPENDIX 1: Expenditure Statement for ERL 97

### NORTHERN TERRITORY EXPLORATION EXPENDITURE FOR MINERAL TENEMENT

#### **Section 1. Tenement type, number and operation name: (One licence only per form even if combined reporting has been approved)**

Type	ERL
Number	97
Operation Name (optional)	Burnside Operations

#### **Section 2. Period covered by this return:**

Twelve-month period:		If Final Report:	
From	19 September 2006	From	
To	18 September 2007	To	
Covenant for the reporting period:		\$5000.00	

#### **Section 3. Give title of accompanying technical report:**

Title of Technical Report	ANNUAL EXPLORATION REPORT, ERL 97 "WESTERN ARM" YEAR ENDING 18 <sup>TH</sup> SEPTEMBER 2007
Author	Zia U. Bajwah

#### **Section 4. Locality of operation:**

Geological Province	Pine Creek Orogen
Geographic Location	Western Arm

**Section 5. Work program for the next twelve months:**

**Activities proposed** (please mark with an "X"):

- |   |  |
|---|--|
| <input checked="checked" type="checkbox"/> Drilling and/or costeaning         |  |
| <input type="checkbox"/> Literature review                                    | <input type="checkbox"/> Airborne geophysics |
| <input checked="checked" type="checkbox"/> Geological mapping                 | <input type="checkbox"/> Ground geophysics   |
| <input checked="checked" type="checkbox"/> Rock/soil/stream sediment sampling | <input type="checkbox"/> Other:              |

**Estimated Cost:** \$6000.00

**Section 6. Summary of operations and expenditure:**

Please include salaries, wages, consultants fees, field expenses, fuel and transport, administration and overheads under the appropriate headings below. Mark the work done for the appropriate subsections with an "X" or similar, except where indicated. Complete the right-hand columns to indicate the data supplied with the Technical Report.

**Do not include the following as expenditure (if relevant, these may be discussed in Section 7):**

- |                          |                  |                                  |
|--------------------------|------------------|----------------------------------|
| • Insurance              | • Transfer costs | • Land Access Compensation       |
| • Company Prospectus     | • Title Search   | • Meetings with Land Councils    |
| • Rent & Department Fees | • Legal costs    | • Payments to Traditional Owners |
| • Bond                   | • Advertising    | • Fines                          |

Exploration Work type	Work Done (mark with an "X" or provide details)	Expenditure	Data and Format Supplied in the Technical Report		
			Digital	Hard copy	
<b>Office Studies</b>		1240.00			
Literature search					
Database compilation	x				
Computer modelling					
Reprocessing of data					
General research	x		1870.00		
Report preparation	x		1655.00		
Other (specify) Admin			730.00		
Subtotal		\$5495.00			
<b>Airborne Exploration Surveys (state line kms)</b>					
Aeromagnetics	kms				
Radiometrics	kms				
Electromagnetics	kms				
Gravity	kms				
Digital terrain modelling	kms				
Other (specify)	kms				
Subtotal		\$			
<b>Remote Sensing</b>					
Aerial photography					
LANDSAT					
SPOT					
MSS					
Other (specify)					
Subtotal		\$			
<b>Ground Exploration Surveys</b>		790.00			
<b>Geological Mapping</b>					
Regional					
Reconnaissance	x				
Prospect					
Underground					
Costean					
<b>Ground Geophysics</b>					
Radiometrics					
Magnetics					
Gravity					
Digital terrain modelling					



Exploration Work type	Work Done (mark with an "X" or provide details)	Expenditure	Data and Format Supplied in the Technical Report	
			Digital	Hard copy
Electromagnetics				
SP/AP/EP				
IP				
AMT/CSAMT				
Resistivity				
Complex resistivity				
Seismic reflection				
Seismic refraction				
Well logging				
Geophysical interpretation				
Petrophysics				
Other (specify)				

<b>Geochemical Surveying and Geochronology</b>							
<i>(state number of samples)</i>							
Drill (cuttings, core, etc.)							
Stream sediment							
Soil							
Rock chip							
Laterite							
Water							
Biogeochemistry							
Isotope							
Whole rock							
Mineral analysis							
Laboratory analysis (type)							
Petrology							
Other (specify)							
<b>Ground Exploration Subtotal</b>				<b>\$790.00</b>			
<b>Drilling (state number of holes &amp; metres)</b>							
Diamond		holes	metres				
Reverse circulation (RC)		holes	metres				
Rotary air blast (RAB)		holes	metres				
Air-core		holes	metres				
Auger		holes	metres				
Other (specify)		holes	metres				
<b>Subtotal</b>				<b>\$</b>			
<b>Other Operations</b>							
Costeaming/Trenching							
Bulk sampling							
Mill process testing							
Ore reserve estimation							
Underground development (describe)							
Mineral processing							
Other (specify)							
<b>Subtotal</b>				<b>\$</b>			
<b>Access and Rehabilitation</b>							
Track maintenance							
Rehabilitation							

Monitoring		
Other (specify)		
	<b>Subtotal</b>	\$
<b>TOTAL EXPENDITURE</b>		<b>\$6285.00</b>


**Section 7. Comments on your exploration activities:**

I certify that the information contained herein, is a true statement of the operations carried out and the monies expended on the above mentioned tenement during the period specified as required under the *Northern Territory Mining Act* and the Regulations thereunder.

☐ I have attached the Technical Report

1. Name: Zia Bajwah

Position: Geologist

Signature:

Date: 17/10/2006

2. Name:

Position:

Signature:

Date: