



**BRIDGING REPORT**

**EXPLORATION RETENTION LICENCE 130**

***Esmeralda - Union Reefs Project***

**For Period 17 December 2010 to 16 November 2011**

Distribution:-

1. DOR Darwin, NT
2. Crocodile Gold Australia, Humpty Doo

Marcelle Watson  
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## 1 EXECUTIVE SUMMARY

ERL (Exploration Retention Licence) 130 covers strategic landholding which is located about 210 km SE of Darwin, NT, and 8km north east of Pine Creek. Crocodile Gold Australia Pty Ltd acquired the tenement in November 2009 as part of the acquisition of all assets held by GBS Gold Australia Pty Ltd (liquidated) in the Northern Territory.

Previous exploration by Cyprus Gold Corporation and Acacia Resources had outlined two significant adjacent and sub parallel gold resources (A and B), known as Esmeralda deposit which is located some 4km south of the Union Reefs mill. AngloGold estimated that the deposit at 0.7g/t cut-off, contains a combined inferred resource of 1.26Mt @ 1.62g/t Au. (66,000oz).

ERL 130 lies on the eastern margin of the north-west trending Pine Creek Shear Zone (PCSZ). Rocks of the Mt Bonnie Formation that is the uppermost formation of the South Alligator Group, and the Burrell Creek Formation which is the lowest unit of the Finnis River Group, dominate the stratigraphy of the Union Reef field. The tectonic corridor is confined to the east (Allamby Springs Granite) and west by lobes of the Cullen Batholith and rocks within this zone have been tightly folded and in high strain areas, subjected to fold limb failure. Axial planes and bedding tend to dip steep westerly. The area of ERL130 is dominated by siltstones, mudstones and greywackes of the Mt Bonnie Formation, the unit is punctuated by horizons of chert and tuffite as well as thin distinctive banded iron formation facies. Thin tourmalinites have been recorded in the area.

New satellite images were purchased for ERL130 during the reporting period

Exploration activities will include resource and orebody modelling with an aim of upgrading the Esmeralda resource from an inferred resource to indicated reserves.

## **2 INTRODUCTION**

ERL 130 is located approximately 8km north of the Pine Creek township and 4km southeast of the Union Reefs Gold Mine, and occupies one of the most prospective area of gold mineralisation in the Pine Creek Orogen. The tenement hosts the Esmeralda gold deposit.

In this report, exploration activity conducted between 17 December 2010 and 11 November 2011 is documented.

## **3 LOCATION AND ACCESS**

ERL 130 is located approximately 210 km south of Darwin and about 8km north of the township of Pine Creek in the Northern Territory. The licence area can be accessed via the Frances Creek Road, turning north off the Kakadu Highway approximately 3km east of Pine Creek. Further access for light vehicles is gained via a dirt track turning north-west adjacent to the Darwin - Amadeus Basin Gas Pipeline. The climate is hot with periodic monsoonal rains between November and May. For the remainder of the year it is warm to hot and largely dry.

The location of the ERL130 is shown in Figure 1.

## **4 TENEMENT DETAILS**

ERL 130 comprises 834 hectares and was granted to Sovereign Gold NL (a wholly owned subsidiary of Astron Resources NL) and Solomon Pacific Resources NL on 17 November 1993 for a period of 5 years. Acacia Resources, a party to the Esmeralda Joint Venture, subsequently acquired 100% of the JV tenements and, in turn, was taken over by AngloGold (Ashanti) Limited in 1999. The Burnside Joint Venture (Buffalo Creek Mines Pty Ltd and Territory Goldfields Pty Ltd) took over in 2004.

During 2005-2006, GBS Gold Pty Ltd successfully made a takeover of Northern Gold NL and purchased Harmony Gold (through subsidiary Buffalo Creek Mines) 50% share of the Burnside Project as of 1 April 2006. GBS Gold Australia went into voluntary administration on 15 September 2008. Crocodile Gold acquired ERL130 as part of the takeover from GBS Gold Australia (liquidated) in November 2009.

An application for ML27999 was submitted to the NTDoR on 26 March 2010. This new application covers the entire ERL 130. The tenement expired on 16 November 2011. A renewal application was lodged with the NTDoR on the 16 November 2011. Under the new Minerals Title Act ERL130 will be renamed ELR130.

The tenement is on Mary River West Station owned by Equest Pty Ltd.

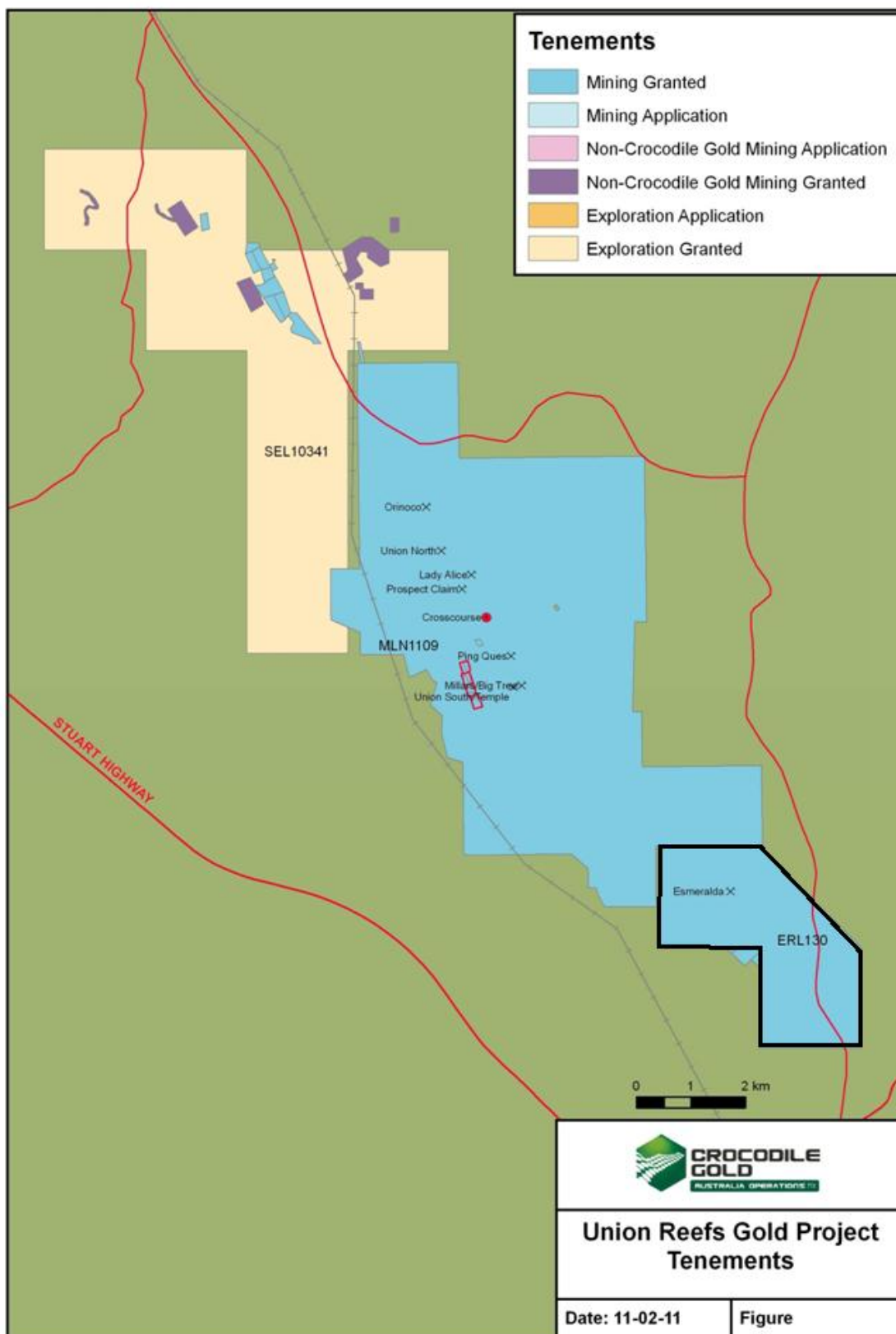


Figure 1: ERL130 Tenement Location

## 5 GEOLOGICAL SETTING

### 5.1 REGIONAL GEOLOGY

ERL130 is situated within the Pine Creek Orogen, a tightly folded sequence of Lower Proterozoic rocks, 10km 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 (Ahmad et al 1993). During the Top End Orogeny (Nimbuwah Event ~1.87-1.85Ga) 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 batholith into the sequence in the period ~1.84-1.1.78Ga. 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. Less deformed Middle and Late 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 Orogen 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.

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 Finniss River Group. This sequence evolved from initial low energy shallow basinal sedimentation to higher energy deeper water flysch facies.

Gold mineralisation appears to be related to the I-type members of the Cullen Batholith, formed as a result of fractionation and differentiation processes during magma emplacement. That ultimately led to the evolution of hydrothermal fluids responsible for gold mineralisation in the adjacent meta-sediments (Bajwah, 1994).

Figure 2 illustrates the regional geology of the ERL130.

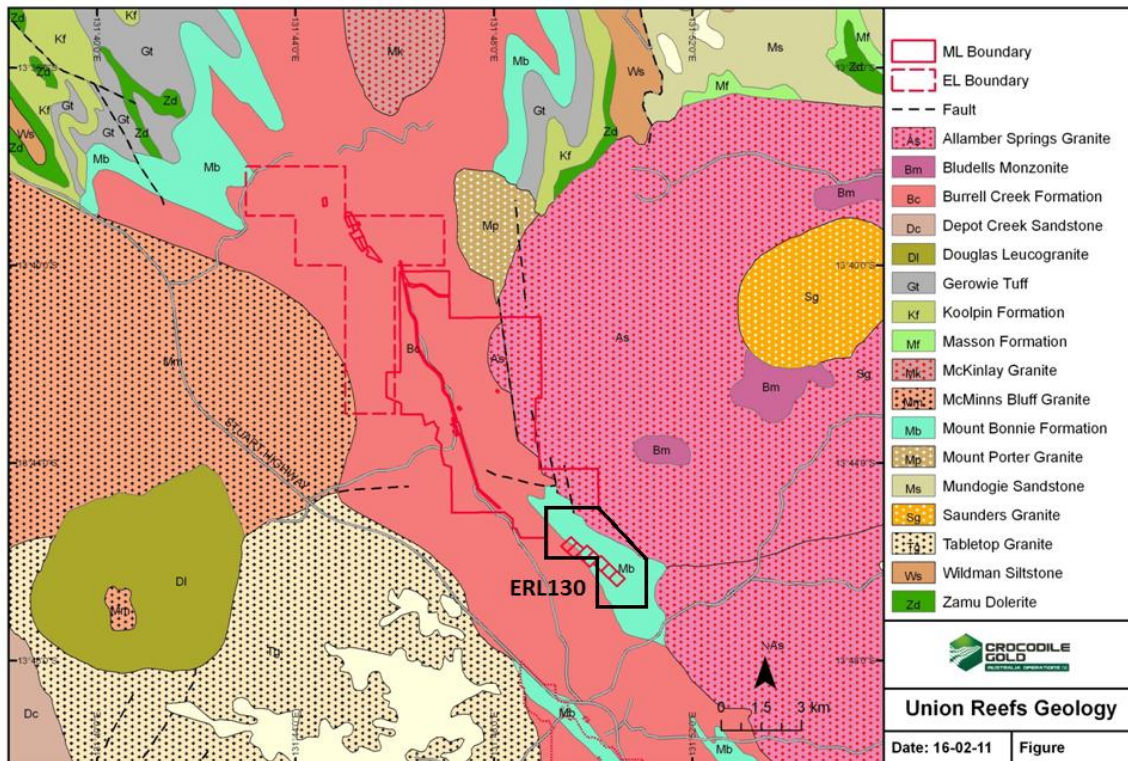


Figure 2: ERL130 Regional Geology

## 5.2 LOCAL GEOLOGY

ERL 130 lies on the eastern margin of the north-west trending Pine Creek Shear Zone (PCSZ). Rocks of the Mt Bonnie Formation that is the uppermost formation of the South Alligator Group, and the Burrell Creek Formation which is the lowest unit of the Finnis River Group, dominate the stratigraphy of the Union Reef field. The tectonic corridor is confined to the east (Allamber Springs Granite) and west by lobes of the Cullen Batholith and rocks within this zone have been tightly folded and in high strain areas, subjected to fold limb failure. Axial planes and bedding tend to dip steep westerly. The area of ERL130 is dominated by siltstones, mudstones and greywackes of the Mt Bonnie Formation, the unit is punctuated by horizons of chert and tuffite as well as thin distinctive banded iron formation facies. Thin tourmalinites have been recorded in the area.

ERL130 has been intruded by a major sub vertical intermediate dyke that sub parallels the stratigraphy. The dyke is deeply weathered and strikes  $310^{\circ}$ . It has been traced along much of the Pine Creek Tectonic corridor. This dyke event also passes through the Woolwonga deposit some 50 kilometers to the north-west. Within ERL 130 the Allamber Springs Granite of the Cullen Suite contacts the Mt Bonnie Formation and has hornfelsed and silicified the unit to slate and amphibolitic hornfels within 200m of the contact. Gold mineralisation has been focused within „Lens A and „Lens B (Esmeralda Deposit) in the sheared axial zones of two adjacent faulted antiforms that strike  $310^{\circ}$  magnetic. The deposits occupy ridges up to 40m high. The north eastern Lens (A) is within 300m of the contact and lies within the outer metamorphic aureole of the granite. It dips steeply SW, is heavily impregnated with tourmaline and silica and has been significantly silicified and brecciated. Chert facies rocks are reported to coincide with the mineralised zones which locally contain visible gold.

## **6 EXPLORATION ACTIVITY 17 DECEMBER 2010 TO 16 NOVEMBER 2011**

New satellite images were purchased for ERL130 during the reporting period.

A total of \$365 was spent on ERL130 during the reporting period.

## **7 FORWARD PROGRAM YEAR ENDING 16 NOVEMBER 2012**

If MLA27999 is not granted, a proposed budget of \$14,500 has been identified for the 2012 reporting period. Exploration activities will include resource and orebody modelling with an aim of upgrading the Esmeralda resource from an inferred resource to indicated reserves.

## 8 REFERENCES

Bajwah, Z.U., 2010. Annual Exploration Report ERL130 "Esmeralda" Union Reefs Project. Year Ending 16 December 2010. *Crocodile Gold Annual Exploration Report submitted to the NTDoR.*