FINAL EXPLORATION REPORT
EL23543

"BURNSIDE"

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July 2005
SUMMARY

EL23543 is located 140km SE of Darwin, NT and its southernmost sector is 3km north of the historic Brocks Creek rail siding on the Adelaide-Darwin railway.

The tenement is subject to the Burnside Joint Venture, managed by Burnside Operations P/L comprising Territory Goldfields NL and Buffalo Creek Mines NL. The latter are subsidiaries of Northern Gold NL and Harmony Gold (Australia) P/L respectively.

The tenement encompasses the north, eastern and southern contact zone of the elliptical Burnside Batholith as well as thermally and tectonically altered metasedimentary and intrusive rocks of the South Alligator Group. This group is low in the Pine Creek Geosyncline sequence and the contact zone is known from previous explorers to contain several gold anomalies and prospects.

The tenement was live for a two year period before all blocks were absorbed into SEL24532. This SEL, in part replacing late SEL9591, was granted on May 30th 2005 at which date EL23543 was automatically cancelled.

Northern Gold NL, and since April 2002 the Burnside JV, have been actively exploring the Burnside region since the late 1980’s. Work to date has been focused on establishing open pit resources through RC drilling at Yam Creek, Mottram’s, Chinese South Extension, Fountain Head and Woolwonga. Underground development and diamond drilling has been carried out at the Zapopan Mine and at Cosmo Howley diamond core drilling, at the time of writing, extended the underground resource to 1 million ounces.

During its two year life span exploration on grass roots stage tenements such as EL23543 was subordinate to that on the more gold endowed JV tenements in the Burnside Region. Effort had been mainly expended on extending mineable gold deposits, particularly with the purchase of the Union Reefs gold treatment plant in August 2004. Exploration during its two year life comprised remote sensing interpretation, technical reporting and review of previous exploration work. The area of the tenement had been previously explored by Newcrest Mining Limited using soil sampling to define drilling targets. Several gold anomalies had been reported.

Keywords: Pine Creek Geosyncline, Burnside Granite, South Alligator Group, gold exploration, gold anomalies.
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1.0 INTRODUCTION

EL23543 (Burnside) was applied for following the surrender of EL7543 by AngloGold. The tenement covers the thermally altered contact zone of the Burnside batholith.

Previous exploration by Newcrest and Acacia showed that the area contained several gold anomalies. The tenement has just completed its second anniversary since grant.

Since April 2002 the Burnside Joint Venturers comprising Buffalo Creek Mines NL and Territory Goldfields NL had explored other mineral assets in the immediate area including Woolwonga, Yam Creek, and Cosmo Howley and developed the Zapopan underground mine in 2003. The Rising Tide deposit lies just south of the southern boundary of EL23543 and has been subject to mining studies.

This final report sets out exploration work carried out in the two year period prior to cancellation of the tenement on 30th May 2005.

2.0 TENURE DETAILS

EL23543 was granted on 24th March 2003 and was due to expires on 23rd March 2009. It comprised 24 blocks that covered approximately 77 sq. km. In late 2004 an application was made to incorporate all 24 blocks into new SEL 24532.

Its southern boundary was contiguous with MLN1139 (Brocks Creek) and elsewhere it was surrounded by late SEL9591.

It was registered in the names of Territory Goldfields NL and Buffalo Creek Mines NL in equal shares. It was unencumbered by third party tenements but the Palm Springs-Darwin gas pipeline crosses the northern sector.

3.0 LOCATION AND ACCESS

EL23543 is situated 140km SE of Darwin NT and its southern most sector lies 3km north of Brocks Creek siding on the Darwin-Alice Springs railway. and is close to the Zapopan underground mine development and the Rising Tide open pit gold deposit owned by the Burnside Joint Venture.

Access to the tenement is via the Stuart Highway, thence north via the Fountain Head/Ban Ban Springs sealed road. A road serving Brocks Creek mill heads west on the north side of the Adelaide-Darwin Railway line. Tracks head north from Brocks Creek towards the EL. Other parts of the tenement may be accessed via Ban Ban Springs Station service tracks. Further details may be seen on Figs. 1, 2, and 3.

The tenement falls on the Pine Creek 1:250,000 sheet and on the Ban Ban 1:50,000 sheet. The tenement also is within the Ban Ban Springs pastoral lease.
4.0 GEOLOGICAL SETTING

4.1 Regional Geology
EL 23543 is situated within the Pine Creek Geosyncline, 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 formations of the South Alligator Group.

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 batholiths into the sequence in the period ~1.84-1.80Ga. 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 Geosyncline lithologies. Recent scree deposits sometimes with proto-laterite cement occupy the lower hill slopes while fluvialite sands, gravels and black soil deposits mask the river/creek flats areas.

Regionally 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. Dated at ~1740Ga (Sener 2004) the gold events post dated the Pine Creek Orogeny and Cullen intrusive events and has favoured suitable litho-structural sites in the biotite-hornfels contact facies.

4.2 Local Geology
The tenement encloses much of the contact zone of the late to post orogenic Burnside granitoid batholith. The batholith is roughly elliptical in plan, slightly elongate NE-SW. It is a fine to medium grained biotite granite, locally porphyritic. In detail, particularly on the S and SE sides the contact is serrated and moderately transgressive where it has exploited structural weaknesses in the host sequence.
It contacts a conformable sequence of Mt Partridge Group and South Alligator Group clastic sediments. These comprise Wildman Siltstone, Koolpin Formation, Gerowie Tuff, Mt Bonnie Formation and sills of semi-concordant Zamu Dolerite.

The Lower South Alligator Group sequence generally dips radially away from the granite contact. In detail it underwent greenschist facies metamorphism, folding and faulting prior to the granite intrusion. The latter imparted thermal metamorphic effects, including biotite to andalusite spotting, tomalinisation as well as recrystallisation and hornfelsing. Late stage faulting attending intrusion has offset the sequence.

The oldest exposed part of the sequence is Wildman Siltstone, a laminated silt formation that in the area south of Cosmo Howley has concordant bands of tourmalinite. This is exposed on the SE flank of the pluton west of Ban Ban Springs Station.

The conformably overlying Koolpin Formation is generally a dark mudstone-siltstone sequence with cherty bands and nodules, locally with crude magnetic iron formation.

Gerowie Tuff overlies Koolpin Fm. and this comprises cherty potassic tuffite beds rapidly alternating with grey shale-silt.

Mt Bonnie Formation is a deeper water, higher energy unit reflecting the onset of turbiditic facies deposition of the overlying turbidite-dominant Burrell Creek Formation that forms the base of the Finnis River Group. Mt Bonnie rocks include dark silts, cherty bands and mudstones alternating with greywacke.

Zamu Dolerite has been injected as semi concordant thick and thin sills into all units at irregular stratigraphic intervals. See Fig 4.

4.3 Mineralisation and Prospectivity

The area surrounding the Burnside Batholith has a long association with gold mining, though most of the economic occurrences have typically been located at sites more distal (average 9km) from the contact. Exceptions are the Rising Tide deposit that lies only 500m south of the pluton, and the Brocks Creek-Zapopan line that lies 3-4km further south. Host rocks for economic mineralisation range from Koolpin Formation to Upper Mt Bonnie Fm and includes the contact zones of Zamu Dolerite sills.

Structurally, gold tends to occur in anticlinal axial locations, generally where the axial zone has been subjected to NE limb overturning, axial failure and reverse faulting. Gold tends to be associated with quartz-sulphide veining in zones of dilation and long-lived re activated brittle-ductile zones of failure. Sulphides are
typically pyrite with arsenopyrite, and rare chalcopyrite, sphalerite and galena. Alteration is silica-carbonate-sulphide with chloritisation and biotitisation.

Copper mineralisation is sporadic, associated with veined and altered zones in Koolpin Fm or Zamu Dolerite. One such occurrence lies 3km N of Ban Ban Spring and patchy copper is reported to be associated with late faults cutting the Rising Tide deposit.

5.0 PREVIOUS EXPLORATION

The tenement was previously explored as EL7543 by Newcrest Mining Ltd and Acacia Resources Limited. AngloGold subsequently acquired the Australian assets of Acacia and surrendered the tenement. The Burnside JV successfully applied for the ground in mid 2002.

Prior to passing management of the tenement to Acacia Resources, Newcrest Mining carried out exploration including detailed fact mapping of EL7543 and soil geochemistry. Records of their work done within the tenement are not all to hand. To earn equity in the ground Acacia carried out extensive gridding and geochemical work using hand sampling as well as mechanical auger. This enhanced and defined several distinct gold anomalies including from NW to SE clockwise, Medusa, Chimera, Crossroads, Powerline, Britannia North and Lymberover. Geochemical extensions to the Rising Tide deposit environment were also located. (see Fig. 2).

The area around Chimera centred on 761000mE 8524000mN had the largest spread of anomalous values extending for up to 1km NNE to SSW. Allowing for reasonably thin soil cover, the other anomalies appear to be of lesser significance. Rock chip values gave peak values of 568ppb Au, 2590ppm Zn, and 2010ppm Pb. The peak gold response coincided with 515ppm As while base metals coincided with dolerite.

In 1998 Acacia Resources carried out ultradetailed airborne magnetic and radiometric surveys covering the southernmost sector of the EL adjacent to the Rising Tide deposit. This component was flown by UTS and comprised 110 line/km.

6.0 EXPLORATION DURING TENURE

In 2003-2004 the Burnside Joint Venture carried out a remote sensing analysis of the tenement focusing on lineaments that may contribute to gold prospectivity. Both SPOT imagery and airborne magnetic data were used in conjunction. See Figs. 3, 4, 5.

In 2004-2005 the Joint Venture undertook regional reviews and reporting in the area of the tenement. No ground-based surveys were undertaken, in part due to the
inclusion of the whole tenement in the application for SEL24352, and in part due to heavy focus on diamond drilling at Cosmo Howley and other advanced stage gold prospects. The SEL was granted on 30\textsuperscript{th} May 2005 at which time EL23543 was cancelled.
7.0 REFERENCES


Acacia Resources Limited, Burnside JV, EL7543 Quarterly Report, Sept. 1996.


Outline of Burnside JV

Burnside Operations P/L
EL23543
Location Plan
Scale 1:250,000  Fig. 1
Burnside Operations P/L
EL23543 (part)
Magnetic Image
with Interpreted Lineaments
Scale 1:50,000  Fig. 5