

# EL 10296 FRAYNES 2

# VICTORIA RIVER REGION, NT

# FINAL REPORT

# **ON EXPLORATION ACTIVITIES**

Submitted by

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# On behalf of Diamond Mines Australia Pty Ltd And

Ashton Mining Limited

(a wholly owned subsidiary of the Rio Tinto Group)

EL 10296 'Fraynes' 2 Holder: Ashton Mining Limited Grant Date: 1 February 2002 Surrender Date: 18 April 2005 1:250,000 Sheet: Limbunya SE52-07 Minerals Sought: diamonds, base metals

## SUMMARY

EL 10296 formed part of a farmin agreement between Ashton Mining Limited ("Ashton") and Diamond Mines Australia Pty Ltd ("DMA") covering numerous Rio Tinto-controlled tenements and applications in the Northern Territory. Under this agreement, DMA is conducting predominantly diamond exploration over the tenements utilising the newly-developed Falcon<sup>TM</sup> airborne gravity gradiometer system, which has been shown to be very effective in detecting kimberlite pipes.

Gravity Diamonds Ltd ("Gravity") is managing the farmin arrangement for Diamond Mines Australia and owns 100% of DMA.

During the first year of tenure, North Mining, the then holder of the licence, conducted a thorough a review of historic exploration data, including considerable surface sampling focussed on diamonds, and recommended divestment of the tenements. The timing of the divestment arrangement with DMA during year two of tenure precluded the instigation of field exploration activities on the EL during 2003.

The planned program for EL 10296 during 2004 was contingent on Gravity achieving access clearance for follow up of Falcon survey targets in the nearby Tee Dee Hill area which, like the above EL, forms part of the original Rio Tinto "Victoria Project Area". Gravity was not able to get the required access clearances and this resulted in the postponement of planned exploration on EL 10296 during the 2004 field season. No on-ground work was completed in the tenement during year 3.

A 50% reduction in the area of EL 10296 was made at the conclusion of Year 3.

Gravity handed back EL 10296 to Ashton in March 2005 because other tenements in the farmin arrangement were deemed to have much higher priority. The licence was subsequently surrendered by Ashton on 18 April 2005. There was no further work undertaken by Ashton from the time the licence was handed back in March 2005 and the date of surrender on 18 April 2005.

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#### **INTRODUCTION**

EL 10296 was granted to North Mining Ltd, a wholly owned subsidiary of the Rio Tinto Group ("Rio Tinto"), on 31 January 2002. The licence was transferred to Ashton Mining Limited on 24 July 2003. Rio Tinto was at that time in negotiation with Gravity Capital Limited (now Gravity Diamonds Limited) ("Gravity") concerning the deployment of the Falcon<sup>TM</sup> airborne gravity gradiometer system over Rio Tinto's diamond tenements in northern Australia. The Falcon<sup>TM</sup> system is a unique exploration tool developed by BHPB and it has particular application in diamond exploration.

BHPB and Gravity concluded an arrangement on Falcon<sup>™</sup> deployment in Australia during the year (ASX announcement 01/07/2003) and then formed a farmin joint venture, through its 100% owned associated company, Diamond Mines Australia Pty Ltd ("DMA") with Rio Tinto Exploration, concerning the diamond and base metal exploration over a large number of Rio Tinto-controlled tenements in the Northern Territory) (ASX announcement 25/07/2003).

On the basis of these agreements, Gravity (on behalf of DMA) commenced diamond exploration in the Northern Territory during July 2003.

In essence, the agreements provide for DMA to deploy the Falcon<sup>™</sup> system and earn an interest in any discovery. BHP Billiton retains a right to buy into DMA's interest in any discovery. Gravity is managing all exploration for DMA.

The flying program carried out in 2003 was focussed on areas of strongly anomalous diamond indicator mineral sampling results, obtained from Rio Tinto and surveys were conducted in the McArthur, Hodgson and Arnhem Land regions of the NT as well is in the Victoria River region which is the general locality of EL 10296. This EL was not covered in the Victoria River survey, the closest flying being at Tee Dee Hill some 60 kilometres to the north.

While the principal target in the area is diamonds, some interest was also directed toward base metal deposits.

## LOCATION AND ACCESS

The Fraynes project area, of which EL 10296 is a part of, is located on Limbunya (PPL 1136) pastoral lease central to the Limbunya 1:250,000 map sheet. Limbunya station lies within EL 10296. The nearest major towns are Kununurra (200km to the NW), Halls Creek (270km to the SW) and Timber Creek (200km to the NNE). Major access is via the Buchanan Highway and the secondary road that extends north to Limbunya Station homestead. Access to other areas is via station tracks.

#### **GEOLOGICAL SETTING AND ECONOMIC POTENTIAL**

The Limbunya region contains the Paleoproterozoic Birrindudu Basin, the Meso-Neoproterozoic Victoria Basin and the Cambrian Ord Basin that includes the Antrim Plateau Volcanic flood basalts. The Fraynes project area is mainly located over northern exposures of the Mesoproterozoic Birrindudu Basin. The Birrindudu Basin sediments, represented by the 1300m thick Limbunya Group, are exposed in a regional, NE-SW trending, regional anticline about 100km long and up to 75km wide. The Limbunya Group is a similar age to the Barney Creek Formation of the McArthur Basin.

The major formations of the Limbunya Group exposed within the Fraynes project area include the Campbell Springs Dolostone, Fraynes Formation and Killaloc Formation. Carbonates dominate the composition of these formations. At least three, second-order, NE-SW trending faults traverse these formations and, in places, the faults are located along formational contacts. In outcrop, the faults extend away from the regional, WNW-ESE trending Limbunya Fault located to the south. The regional Limbunya Fault might connect with other regional structures that might extend as far west as the Argyle area. The Limbunya Fault appears to have been active after the deposition of the mid Cambrian Goose Hole Group in the Ord Basin. The distribution of faulted Cretaceous sediments proximal to it suggests that it was active during, and/or after, the Cretaceous.

The regional anticline that inverts and exposes the Birrindudu Basin sedimentary sequence is cored by two, very small inliers of Inverway Metamorphics located about 10km SE of the Fraynes project area.

Marginal to the broad anticline of inverted Birrindudu Basin sediments are the little deformed sedimentary sequences of the Victoria Basin sediments. The Victoria Basin sequences, represented by Wattie Group and Auvergne Group on the Limbunya 1:250,000 map sheet, are exposed mainly to the north of the Birrindudu Basin. The Wickham Formation, which forms the base of the Wattie Group, is exposed in the NW corner of the Fraynes project area. Some 185km to the NW of the Fraynes Project, the 179Ma Timber Creek kimberlites are hosted by the lower Bullita Group which stratigraphically overlies the Wattie Group in that part of the Victoria Basin.

Unconformably overlying the Proterozoic metamorphic and platform sequences are the lower Cambrian Antrim Plateau Volcanics flood basalts of the Wiso Basin. Outlying erosional remnants of the regionally extensive flood basalts are scattered around the Fraynes project area. The basalts are characterized by a NW-SE trending fracture pattern. In places this structural trend appears to have influenced the location and shape of the eroded outlying remnants of the basalts. The widespread outliers of Cambrian basalt suggest that erosion of Proterozoic sequences has been minimal following the Neoproterozoic.

Remnants outcrops of Cretaceous sandstones and conglomerates are preserved adjacent to the Limbunya Fault south of the Fraynes project area. These sediments may represent the deepest part (and last to be eroded) of the Cretaceous basin in the region.

Tertiary laterite and black soil are the most widespread and dominant Cenozoic regolith types. Quaternary alluvial deposits are largely confined to the margins of rivers and creeks. The EL is located in a tectonically favourable region between the Argyle diamond mine and the diamondiferous Timber Creek kimberlite pipe. Previous regional reconnaissance exploration for diamonds on the Limbunya 1:250,000 map sheet located clusters of surficial macro and microdiamonds and other indicator mineral occurrences and, although the source of these remains enigmatic, the region is considered prospective for diamonds. The area is also regarded as favourable for sediment-hosted base metal deposits.

## **PREVIOUS EXPLORATION**

Geopeko (which became North Mining) explored for base metals in the Limbunya region during the early 1990's. A limited amount of drilling centered on the Limbunya Fault had produced some weakly anomalous base metal values associated with various stratigraphic units of around 1640Ma age. None of the earlier drill holes are located within the Fraynes project area.

Ashton Mining had previously collected a total of 49 reconnaissance stream gravel samples exploring for diamonds from the area now covered by the Fraynes project EL's. The sampling provided fairly complete coverage of the project area at intervals of around 3-5km. Only one sample returned a chromite grain. This sample is located in the far west of the tenement block on the western margin of the interpreted 40km diameter ring-structure described elsewhere in this report. No kimberlitic diatremes/dykes were identified.

The Fraynes tenement block wraps around the northern margin of EL 22305 (also currently owned by RTE) centrally located over the 40km diameter ring-structure. Within EL 22305 there is a cluster of indicator minerals that displays a strong spatial association with the interpreted ring-structure. The single Fraynes chromite occurrence forms part of this cluster. There is also:-

- A cluster of indicator minerals within RTE tenements to the north of the Fraynes project area; and
- An even larger cluster of diamonds and other indicator minerals within RTE tenements to the east of the area.

The source of the indicator mineral occurrences in the region remains enigmatic. RTE's past research on chromite geochemical compositions indicates that not all chromite grains in the region can be explained as being sourced from Cambrian basalts. The geomorphological evolution of the terrain is believed to have had a very strong influence on the present location of the indicator mineral occurrences.

During year 1 of tenure Rio Tinto reviewed and compiled the regional geology, geophysics, geomorphology and historical exploration data for the Fraynes project area including EL 10296. The review included neighboring tenement blocks owned by RTE and confirmed the prospectivity of the Fraynes project area for diamond-bearing kimberlite/ lamproite diatremes and to a lesser extent base metal deposits.

## WORK COMPLETED BY GRAVITY

During year 2 of EL 10296, Gravity completed an assessment of the compilation work carried by Rio Tinto and concluded that the area was not of sufficient priority to warrant a Falcon<sup>TM</sup> survey in the initial stages of the DMA-Rio Tinto farm-in arrangement. No field work was carried out and the area was to be reviewed when results from Tee Dee Hill Falcon<sup>TM</sup> survey, which was completed some 60 kilometres to the north, were finalised.

Planned work for EL 10296 during 2004 was contingent on Gravity achieving access clearance for follow up of Falcon survey targets in the Tee Dee Hill area which, like EL 10296, formed part of the original Rio Tinto "Victoria Project Area". Gravity was not able to get the required access clearances and this resulted in the postponement of the planned exploration on EL 10296 during the 2004 field season. Hence no on-ground work was completed on the licence during year 3.

Gravity handed back EL 10296 to Ashton in March 2005 because it deemed the area to be of lower priority than others in the Rio-DMA farmin arrangement, and the licence was subsequently surrendered on 18 April 2005. There was no further work undertaken by Ashton from the time the licence was handed back in March 2005 and the date of surrender on 18 April 2005.

## ENVIRONMENT AND REHABILITATION

No requirement for rehabilitation arose during the term of the licence.



