



**EL 8819**  
**Arnold River Tenement**  
**Hodgson Diamonds Project, NT**

**FINAL REPORT**

**ON EXPLORATION ACTIVITIES**

**submitted by**

**GRAVITY DIAMONDS LIMITED**

**(ABN - 72 009 178 689)**

**Level 7, Exchange Tower**

**530 Little Collins Street, Melbourne, Victoria, 3000**

**on behalf of**

**Diamond Mines Australia Pty Ltd**

**and**

**Ashton Mining Limited**

**(a wholly owned subsidiary of the Rio Tinto Group)**

EL 8819

Holder: Ashton Mining Limited

Grant Date: 24 July 2000

Surrender Date: 11 July 2005

1:250,000 Sheet : **Hodgson Downs SD 53-14,**

Minerals Sought: Diamonds, Base metals

## SUMMARY

EL 8819, one of the Arnold River group of tenements, is centred approximately 150km northeast of Daly Waters in the Northern Territory, within the Hodgson Downs 1:250,000 map sheet. The EL was granted to Ashton Mining on 24th July 2000. Ashton Mining Ltd was taken over by Rio Tinto Limited in the 4<sup>th</sup> quarter of 2000.

EL 8819 and the other Arnold River tenements formed part of a farmin agreement between Rio Tinto Exploration Pty Ltd (“Rio Tinto”) and Diamond Mines Australia Pty Ltd (“DMA”) covering numerous Rio Tinto tenements and applications in the Northern Territory. Under this agreement, DMA is conducting predominantly diamond exploration by utilising the newly-developed Falcon™ airborne gravity gradiometer system. The Falcon™ system has been shown to be effective in detecting kimberlite pipes. Gravity Diamonds Ltd (“Gravity”) is managing the farmin arrangement for Diamond Mines Australia and owns 100% of DMA.

The Arnold River tenements are considered prospective for commercial sources of diamonds. Historic gravel sampling shows that there are unresolved chromite and diamond occurrences in an area of Bukalara Sandstone on one of the EL’s in the Arnold River group (EL 7970).

Gravity completed an assessment of the data compilation work carried out by Rio Tinto and concluded that the area covered by EL 8819 was not of sufficient priority to warrant a Falcon™ survey in the initial stages of the DMA-Rio Tinto farmin arrangement. No field work was carried out and the area was reviewed following the results from the Falcon™ survey completed some 25 kilometres to the southeast. This led to the relinquishment of twenty five (25) blocks from the licence during 2004.

Gravity handed back EL 8819 to Rio Tinto in June 2005 and the licence was subsequently surrendered on 11 July 2005. There was no further work undertaken by Rio Tinto from the time the licence was handed back in June 2005 and the date of surrender on 11 July 2005.

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1. EL 8819 Tenement Location

## 2. INTRODUCTION

EL 8819, one of the Arnold River group of tenements comprised part of Rio Tinto Exploration's (RTE) Hodgson Diamonds Project, Northern Territory, Australia. The EL was granted to Ashton Mining on 24th July 2000. Ashton Mining Ltd was taken over by Rio Tinto Limited in the 4<sup>th</sup> quarter of 2000. As a consequence of the takeover Rio Tinto Exploration Pty Ltd (RTE) acquired control of all of Ashton's granted tenements and tenement applications around Australia.

During 2002, Rio Tinto entered into negotiation with Gravity Diamonds Limited ("Gravity") concerning the deployment of the Falcon™ airborne gravity gradiometer system over Rio Tinto's diamond tenements in northern Australia. The Falcon™ system is a unique exploration tool developed by BHP Billiton and it has particular application in diamond exploration.

BHP Billiton and Gravity concluded an arrangement on Falcon™ deployment in Australia during the year (ASX announcement 01/07/2003) and then Gravity 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). EL 8819 formed part of the DMA - Rio Tinto joint venture. In essence, the agreements provide for DMA to deploy the Falcon™ 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. On the basis of these agreements, Gravity (on behalf of DMA) commenced diamond exploration in the Northern Territory during July 2003.

A flying program carried out in 2003 was planned to cover areas of anomalous diamond indicator mineral sampling results, obtained from prior exploration work. This resulted in the acquisition of Falcon™ data over a portion of one of the EL's in the Arnold River group. Data was also acquired over tenements adjacent to the Arnold River group.

## **LOCATION AND ACCESS**

EL 8819, one of the Arnold River group of tenements, is centred approximately 150km northeast of Daly Waters in the Northern Territory, within the Hodgson Downs 1:250,000 map sheet (Figure 1). Historically Ashton referred to this EL and others in the group as the Cox River tenement block.

Major access to the region is provided by the Stuart Highway that connects Alice Springs and Darwin. The highway lies along the southwest boundary of the Arnold River project area. Helicopters were used for much of the previous diamond exploration.

The Arnold River tenements overlie Alawa (Cox River) Aboriginal Trust Land (freehold) and are subject to the Cox River JV and ALRA Deed of Exploration with the owners.

## **GEOLOGICAL SETTING AND ECONOMIC POTENTIAL**

Rock types in the Cox River tenement area include sandstones and minor siltstones of the NeoProterozoic Roper Group, Cambrian Bukalara Sandstone and Lower Cretaceous sediments. Bedrock units are commonly covered by laterite, lateritic soils and Quaternary deposits.

Several North trending, pre-Cretaceous faults transect the eastern parts of the Cox River Tenement area. Sediments within EL 8819 are only gently folded, with bed dips rarely exceeding 15°. Drainage of the EL predominately occurs through tributaries of the Cox, Magaranyi and Arnold Rivers.

The Roper Group stratigraphic sequence contains low grade, stratabound, sedimentary iron occurrences but base metal occurrences are rare. The small, low grade, diamondiferous Packsaddle and Blackjack kimberlite dykes which occur in the northern part of the Hodgson Project area have intruded and are hosted by the Roper Group.

## **PREVIOUS EXPLORATION**

Two small, low grade kimberlitic dykes (Packsaddle and Blackjack) were discovered by Stockdale in the late 1980's on the north eastern margin of the Project area. These small dykes contain diamonds with low grades and shed kimberlitic chromite into drainages.

Surface sampling by both CRAE and Ashton was completed over the majority of the project area during the 1980's with some subsequent infill sampling during the 1990's. This sampling identified widespread macrodiamonds, microdiamonds and indicator minerals, mainly chromite, across the project area. The geochemistry of the chromite suggests they are derived from both kimberlitic and non-kimberlitic sources. Two areas have been explored in greater detail by CRAE/RTE and Ashton:

1. Along a single drainage within a nearby tenement which has returned Microdiamonds and abundant kimberlitic chromite.
2. A large region containing kimberlitic chromite is located along the eastern margin of the Arnold River tenement block. CRAE followed up 15 airborne magnetic anomalies in the area in the 1980's but ground magnetic traverses proved all anomalies to have a regolith source. No source rock has been identified to explain the indicator minerals.

## **WORK COMPLETED BY GRAVITY**

Gravity completed an assessment of the compilation work carried out by Rio Tinto and concluded that the area covered by EL 8819 was not of sufficient priority to warrant a Falcon™ survey in the initial stages of the DMA-Rio Tinto farmin arrangement. No field work was carried out and the area was reviewed following the results from the Falcon™ survey completed some 25 kilometres to the southeast. This led to the relinquishment of twenty five (25) blocks from the licence during 2004.

Gravity handed back EL 8819 to Rio Tinto in June 2005 and the licence was subsequently surrendered on 11 July 2005. There was no further work undertaken by Rio Tinto from the time the licence was handed back in June 2005 and the date of surrender on 11 July 2005.

## **ENVIRONMENT AND REHABILITATION**

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

