



## **Rio Tinto Exploration Pty. Limited**

ABN 76 000 057 125 / ACN 000 057 125

A member of the Rio Tinto Group

Annual Report (Combined Arrla Bay Project)  
For the Period 6 June 2009 to 5 June 2010  
EL 22744 Arrla Bay 1, EL 22708 Arrla Bay 2  
EL 24657 Arrla Bay 2a, EL 22707 Arrla Bay 3  
EL 23972 Arrla Bay 5, EL 27156 Arrla Bay 5a  
EL 27157 Arrla Bay 5b, EL24108 Arrla Bay 6  
SD5301 Alligator River, SD5302 Milingimbi  
SC5313 Coburg Peninsula  
Northern Territory

### **Exploration Report No. 28740**

Tenement Holder: Rio Tinto Exploration Pty Limited

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**LIST OF PLANS**

<b>Plan No.</b>	<b>Title</b>	<b>Scale</b>
pAI07_003	Tenement location	1:500 000
pAI07_005	Simplified Geology	1:350 000
pAI09_005	Location of EM flight lines	1:400 000

## 1. **SUMMARY**

The Arrla Bay Project consists of four granted Exploration Licences (EL) 22744, 22708, 24657 and 22707 that were applied for in 2000 by Rio Tinto Exploration Pty Limited (RTX). A further four applications EL 23972 Arrla Bay 5, EL 27156 Arrla Bay 5a, EL 27157 Arrla Bay 5b and EL24108 Arrla Bay 6 were granted in June 2009 leaving 2 applications within the grant process forming the remainder of the project. The tenements are located approximately 60km northeast of Oenpelli in north-west Arnhem Land and consequently are processed under the Aboriginal Land Rights Act 1975 (ALRA).

The tenements were originally considered prospective for lateritic bauxite, however the drilling reported in the previous annual report has greatly downgraded the potential. The tenements still have uranium and manganese potential.

Lateritised Cretaceous sediments of the Arafura Basin extend over most of the tenement area. Outcropping basement of Proterozoic granites and metamorphics also occur.

No physical exploration was completed during the reporting period included, however a detailed literature review and data compilation were started and partially completed.

At the time of reporting, the EM survey had been flown, and preliminary data had been received, however the final data had not been received from Geoscience Australia.

## 2. **CONCLUSIONS AND RECOMMENDATIONS**

Participation in the GA multi-client airborne EM survey was planned to be completed prior to the anniversary of the tenements, however the survey results have been delayed. A review of the EM survey data along with a detailed synthesis of all exploration data will be completed prior to planning further ground work.

## 3. **INTRODUCTION**

The Arrla Bay Project consists of four granted Exploration Licences (EL) 22744, 22708, 24657 and 22707 that were applied for in 2000 by RTX. A further four applications EL 23972 Arrla Bay 5, EL 27156 Arrla Bay 5a, EL 27157 Arrla Bay 5b and EL24108 Arrla Bay 6 were granted in June 2009 leaving 2 applications within the grant process forming the remainder of the project. The tenements are located approximately 60km northeast of Oenpelli in north-west Arnhem Land and were consequently processed under the Aboriginal Land Rights Act 1975 (ALRA).

EL 24657 was split out of EL 22708 following the consent process from the Northern Land Council.

Following tenement grant in 2005 (table 1), Work Programme meetings were held. Due to the inaccessibility of the proposed work area, a helicopter supported clearance survey was required. The approved work programme of aircore drilling was completed in the 2006 field season and described in report (RTX 27967). RTX participated in the GA multi-client regional EM survey by funding 889 line kilometres of infill.

Table 1: Tenement Details

Tenement No.	Tenement Name	Ownership	Application Date	Grant Date	Blocks Applied	Blocks Granted
EL22707	Arrla Bay 3	Rio Tinto Exploration Pty Limited	10/7/2000	06/06/2005	103	87
EL22708	Arrla Bay 2	Rio Tinto Exploration Pty Limited	10/7/2000	06/04/2005	27	18
EL24657	Arrla Bay 2a	Rio Tinto Exploration Pty Limited	10/7/2000	31/3/2005	3	3
EL22744	Arrla Bay 1	Rio Tinto Exploration Pty Limited	14/8/2000	31/3/2005	118	118
EL23972	Arrla Bay 5	Rio Tinto Exploration Pty Limited	14/08/2003	24/06/2009	28	28
EL 27156	Arrla Bay 5a	Rio Tinto Exploration Pty Limited	14/01/2009	16/06/2009	34	34
EL 27157	Arrla Bay 5b	Rio Tinto Exploration Pty Limited	14/01/2009	16/06/2009	2	2
EL 24108	Arrla Bay 6	Rio Tinto Exploration Pty Limited	11/12/2003	16/06/2009	152	113

#### 4. GEOMORPHOLOGY

The tenements are situated in low undulating terrain called "*sandy plains*" (Needham, 1984) that has a range of elevations from sea level to approximately 150m. The two main topographic features of interest are low smooth elevated plateaus between Jungle Creek and King River, referred to as the north plateau and the south plateau. These plateaus have mostly smooth sloping margins and an elevation of about 50m above sea level.

#### 5. GEOLOGY

The tenement area is mostly covered by lateritic weathered Cainozoic sediments of the Arafura Basin. Cretaceous units have also been mapped and are named as the 'Bathurst Island Formation', although historically they are known as the 'Mullaman beds' (Rix, 1965). These sediments consist of variable amounts of sub-labile sandstone, poorly sorted quartz sandstone and siltstone and lesser mudstones. The units are fossiliferous in parts indicating a shallow

marine origin. The units are roughly equivalent to the protore sediments upon which the Gove bauxite deposit has formed.

In the all tenement there are varying amounts of sub-cropping basement consisting mostly of Archaean to Paleo-Proterozoic granites and dolerites of the Nimbuwah Complex (see plan pAI07\_005). Within EL22744 there are outcrops of the Kombolgie Formation which provides the seal to the mineralisation at Ranger and Jabiluka unconformity style uranium deposits found 100km to the southwest.

The tenements are within the East Alligator River uranium province.

## 6. GEOPHYSICS

Airborne magnetic and radiometric data are available across the project area. The aeromagnetic data are from the Milingimbi 1992 and West Arnhem 2000 surveys that were flown at 500m and 400m line spacing and mean survey elevation of 100 and 60m, respectively. Cameco Pty Ltd (Cameco) has also flown airborne surveys over parts of the tenement. The regional airborne survey indicates the plateau of primary interest (north) has an elevated thorium anomaly indicative of laterite development. Radiometric response is less developed across the south plateau, indicating a lower degree of lateritisation, more siliceous protolith, or both.

In 2007 GA (Geoscience Australia) proposed and commissioned a wide spaced regional airborne EM survey, known as the Pine Creek (Kombolgie) Project area. RTX participated in this survey by funding two infill areas (see plan pAI09\_005). Final data from this EM survey is still to be received from GA, it is expected by the end of 2010.

The survey was flown between August and November 2008 by Geotech Airborne Pty Ltd on behalf of GA.

## 7. PREVIOUS EXPLORATION

Bauxite exploration in the region was conducted in the late 1950's to early 1970's, work focussed on the coastal areas of Arnhem Land including the Coburg Peninsula and Croker Island where small resources were found. In 1964, United Uranium NL conducted both ground and helicopter supported exploration for bauxite and manganese in the Cretaceous laterites along the coastline between Coburg and Milingimbi. No significant occurrences were discovered, however minor tubular laterite indicative of bauxite development was recorded near Maningridi in the Arrla Bay region.

The Arrla Bay Project area has been explored primarily for uranium. Tenements EL 734 and EL 5890 were explored by Cameco using airborne geophysics and ground sampling techniques such as RAB drilling and stream sediment sampling. The tenements were relinquished in 1999 as no significant mineralisation was identified.

RTX conducted wide spaced aircore drilling in the 2006 field season. This data is reported in RTX 27967.

## **8. EXPLORATION COMPLETED DURING REPORTING PERIOD**

Exploration completed during the reporting year included:

- No physical exploration was conducted during this reporting period as RTX is still awaiting final data from the airborne EM survey flown by GA before target generation can proceed.
- A detailed literature review is ongoing reviewing the previous exploration activities within the Arrla Bay Project area. The majority of the data is not digital so capture of that data is on going.

## **9. ENVIRONMENT**

No field work was conducted during the period.

## **10. EXPLORATION EXPENDITURE**

The exploration expenditures have been reported separately from the technical report.

## **11. PROPOSED EXPLORATION**

The proposed programme includes receipt of the final EM data and detailed analysis to select targets. A detailed literature review of old exploration data as well as data compilation of non-digital data will take place. Once the data capture has been completed a detailed synthesis of all data will be carried out to identify exploration targets within the Arrla Bay Project area. This will be followed by mapping and sampling to identify anomalism and a subsequent drill programme designed to test these anomalies.

## **REFERENCES**

G K Hartshorn, M J Pankhurst, K M Fry. 2007, Annual Report (Combined Arrla Bay Project) For the period Period 6 June 2006 to 5 June 2007 EL 22744 Arrla Bay 1, EL22708 Arrla Bay 2 EL24657 Arrla Bay 2a, EL22707 Arrla Bay 3, SD5301 Alligator River, SD5302 Milingimbi SC5313 Coburg Peninsula, Northern Territory.

G K Hartshorn, 2008, Annual Report (Combined Arrla Bay Project) For the period Period 6 June 2007 to 5 June 2008 EL 22744 Arrla Bay 1, EL22708 Arrla Bay 2 EL24657 Arrla Bay 2a, EL22707 Arrla Bay 3, SD5301 Alligator River, SD5302 Milingimbi SC5313 Coburg Peninsula, Northern Territory. Internal report No. 28355

Rix, P. 1965, 1 : 250 000 Geological Map Series Explanatory Notes. Milingimbi SD53-2 Northern Territory Geological Survey.

## **LOCALITY**

Alligator River	SD5301	1:250 000
Milingimbi	SD5302	1:250 000
Coburg Peninsula	SC5313	1:250 000
Junction Bay	SC5314	1:250 000

## **DESCRIPTOR**

Annual Report for the Period 6 June 2008 to 5 June 2009, EL 22744 Arrla Bay 1, EL 22708 Arrla Bay 2, EL 24657 Arrla Bay 2a, EL 22707 Arrla Bay 3, SD5301 Alligator River, SD5302 Milingimbi, SC5313 Coburg Peninsula, Northern Territory located within the Arnhem Lands Aboriginal Land Trust, Northern Territory, Australia. Exploration activities were restricted to desktop work.

## **KEYWORDS**

Alligator River, Coburg Peninsula, Milingimbi, bauxite, Cretaceous laterite, EM survey, uranium.



