



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

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A member of the Rio Tinto Group

Combined Annual Report (Cato Project)  
For the Period 14 October 2007 to 13 October 2008  
EL 4170 Cato Plateau & EL 4171 Cato River  
Gove Special SD 5304  
Northern Territory

**Exploration Report No. 28396**

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1	Grab Sample Results	CatoProject_2007_A_02_rockgeochem.txt

**LIST OF PLANS**

<b>Plan No.</b>	<b>Title</b>	<b>Scale</b>
pAI07_011	Tenement Location Plan	1:250 000
pAI07_023	Location of 2007 Aircore Drill Holes	1:100 000
WAp46452	Location of Cato Plateau on Digital Terrain Model Image	1:150 000
pAI08_010	Location of target and 2008 planned drilling	1:35 000
pAI07_025	Location of Grab Samples	1:100 000

## 1. **SUMMARY**

Exploration Licence (EL) 4170 Cato Plateau and EL4171 Cato River were applied for by BHP Minerals Pty Ltd (BHP) on 3 October 1982. EL4170 was granted on 14 October 2004, EL4171 was granted on 12 September 2005. Rio Tinto Exploration Pty Limited (RTX) signed an agreement with BHP on 27 March 2000 whereby RTX took over management and ownership of the tenements. The original EL4170 tenement application covered an area of 593.5km<sup>2</sup> of which only 57.0km<sup>2</sup> was granted. The original EL4171 tenement application covered an area of 846.0km<sup>2</sup> of which 598.2km<sup>2</sup> was granted. The remainder of the area was split off into a new application, EL24389 and put into moratorium. The tenements are located 30km west of Nhulunbuy, east Arnhem Land and consequently are processed under the Aboriginal Land Rights Act 1975 (ALRA). Combined reporting of EL4171 and EL4170 was granted on 3 August 2007, and called the 'Cato Project'. The Cato Project forms part of the larger contiguous tenement package in east Arnhem Land, which is considered prospective for bauxite.

This combined annual report describes the exploration completed during the fourth tenure year of EL4170 and the third tenure year of EL4171.

The Cato Project covers a spur of the Cato Plateau, which is a known area of bauxite of similar style to the nearby world class Gove deposit. It also covers extensions of subtle, coastal plateaus and a small isolated plateau.

Exploration is focused on testing the area for bauxite. Work completed during the period included assaying of the grab samples from 2007 work programme and track preparations for the 2008 field season drilling.

Negotiations with BHPB to modify the joint venture arrangements were completed. The key outcome of the new agreement is that Rio Tinto has the full bauxite rights and BHPB has the full manganese rights over this project. Their rights will allow for simultaneous exploration activities for manganese within EL 4170 and EL 4171. The manganese exploration will form a large part of the next field seasons expenditure. BHPB will be required to submit an annual report on activities which will be incorporated into the statutory report.

## 2. **CONCLUSIONS AND RECOMMENDATIONS**

Exploration during the previous field season showed that the western edge of the Cato plateau has a bauxitic surface but there is no material that approaches economic grade.

A review of the region has highlighted a small (3km<sup>2</sup>) isolated remnant of the Cato Plateau within EL 4170 that warrants drill testing.

## 3. **INTRODUCTION**

EL4170 Cato Plateau and EL4171 Cato River were applied for by BHP on 3 October 1982. EL4170 was granted on 14 October 2004, EL4171 was granted on 12 September 2005. RTX signed an agreement with BHP on 27 March 2000 whereby RTX took over management of the tenements. The original EL4170 tenement application covered an area of 593.5km<sup>2</sup> of which only 57.0km<sup>2</sup> was granted. The original EL4171 tenement application covered an area of 846.0km<sup>2</sup> of which 598.2km<sup>2</sup> was granted. The remainder of the area was split off into a new application, EL24389 and put into moratorium. The tenements are located 30km west of Nhulunbuy, east Arnhem Land and consequently are processed under the Aboriginal Land

Rights Act 1975 (ALRA). Combined reporting was granted on 3 August 2007, and called the 'Cato Project'. The Cato Project forms part of the larger contiguous tenement package in east Arnhem Land, which is considered prospective for bauxite.

Tenement details are included in Table 1 below. The tenement is located on Plan pAI07\_011.

**Table 1: Tenement Details**

Tenement No.	Tenement Name	Owner /ship	Application Date	Grant Date	Blocks Applied	Blocks Granted
EL4170	Cato Plateau	RTX	3/12/1982	14/10/2004	182	29
EL4171	Cato River	RTX	3/12/1982	12/09/2005	264	208

#### 4. PREVIOUS EXPLORATION

Previous exploration over this area is described in Report 13 of the Northern Territory Geological Survey (Ferenczi, 2001).

New Guinea Resources drilled 19 auger holes in the northern end of the Cato Plateau and concluded that most of the bauxite had been eroded off. In 1966 BHP drilled 89 auger holes for a total of 778m into the Cato Plateau to test the area for bauxite. Of these, only six holes are located within EL4170. The BHP data (Chestnut et al., 1966) shows that there is patchy bauxite within the plateau however the silica values are generally high and the recoverable (ABEA) alumina is low. No further work has been conducted in the area since the late 1960's.

RTX completed a series of auger holes (10 holes) in late 2004 to try and replicate the original BHP data (Hartshorn, 2005). Drilling in 2007 focused on the western edge of the Cato plateau and subtle elevated areas in the southwest of EL 4171 (Pankhurst and Hartshorn, 2007).

**Table 2: Previous Exploration Summary**

Year	Company	Tenement	Exploration Completed
1955	New Guinea Resources Prospecting Ltd	?	19 auger holes
1966	BHP Ltd	PA 1138	Bauxite exploration including the Cato Plateau area. 89 auger holes of which 6 are within the granted EI 4170 area.
2004	RTX	EL 4170	Auger drilling of small part of the Cato Plateau.
2007	RTX	EL 4171	Aircore drilling of the western edge of Cato plateau

#### 5. GEOMORPHOLOGY

The Cato Project lies within the Arafura Fall physiographic sub division between the western shore of Melville Bay, and the eastern shore of Arnhem Bay (Rawlings et al., 1997). Most of the granted tenement is low lying (<50m elevation) and includes the Cato River, and tributaries of the Cato and Giddy Rivers. A spur of the Cato Plateau extends 4km across the centre of EL4170, and another spur extends 3km into EL4171 from the east. A small isolated plateau

has steep breakaways and a flat top at an elevation of approximately 100m. In the south west of EL4171 two spurs of a subtle, coastal plateau extend northwards.

## **6. GEOLOGY**

The geology of the project area consists of Cretaceous sedimentary units (Yirrkala Fm) and younger Quaternary gravels and silts (Rawlings et al., 1997). The Yirrkala Fm consists of poorly sorted siltstone-sandstone units, which have a generally flat dip. This formation has undergone intense weathering to produce a lateritised land surface that in places is bauxitic. The laterite forms a flat topped plateau that has sharp breakaways at its margin.

The basement to the Cretaceous in the project area is either the Palaeoproterozoic Bradshaw Complex or similar age granite.

## **7. GEOPHYSICS**

The project area is covered by a regional scale aeromagnetic survey flown for the NTGS in 1990-92 (Rawlings et al., 1997). The radiometric data can be used to help distinguish the laterite-covered areas from those of both basement and Quaternary sand cover.

Digital terrain data has been acquired and processed to assess areas for plateaus that may be prospective for bauxite. The Cato Plateau is clearly defined as a gently south-westerly dipping flat surface of approximately 100km<sup>2</sup> in area (Plan WAp46452). Less than 10km<sup>2</sup> of the Cato Plateau lies within the granted exploration licences of the Cato Project.

A small isolated eroded remnant of the Cato plateau was recognised in the north of EL 4170. This small plateau area covers about 3km<sup>2</sup> and is the focus of the 2008 work programme

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

Exploration completed during the reporting year included:

- Assaying of 13 samples collected during the previous reporting period.
- Negotiations with BHPB regarding the manganese rights and simultaneous exploration activities.
- Work programme meetings and discussions with Traditional owners
- Access track preparation for drilling on EL 4170. The drilling was not conducted until after the 13<sup>th</sup> October anniversary date.

### **8.1 Drilling**

#### *Drill Targets for 2008 field season*

The 2008 field programme was focused on reviewing the previous years work and gaining access to a small plateau within EL 4170. This small plateau (pAI08\_010) is interpreted to be a part of the original Cato plateau that has been isolated by the erosion. The plateau is difficult to identify on the digital terrain model alone but it is clear on the aerial photographic image.

The 2008 field season drilling has been contracted to Yearlong Drilling who have a tractor mounted vacuum drill based at the Gove mine site. This drill is available for use only on scheduled times when not being utilised by the mine. The ability to use the same drilling contractor and techniques as the Gove mine allows for consistency of results and low mobilisation costs.

#### *Results from the 2007 drilling campaign*

The results from the 2007 drilling were not encouraging enough to conduct further work on the granted portion of the main Cato plateau. The highest alumina assay for from the aircore drilling was 36.5%. Although this area has a bauxitic appearance it is interpreted that the bulk of the bauxite profile has been eroded off (see table 3 for a summary of the 2007 drilling results).

**Table 3: Summary of Best Results from Aircore Drilling Programme**

Hole ID	Depth from (m)	Depth to (m)	Interval (m)	Al <sub>2</sub> O <sub>3</sub> (av. %)	LOI (av. %)	SiO <sub>2</sub> (av. %)	Fe <sub>2</sub> O <sub>3</sub> (av. %)
AC07CR030	1.5	6.5	5	36.01	13.23	43.53	4.78
AC07CR033	2	5	3	35.21	13.08	42.18	6.64
AC07CR035	0.5	3	2.5	36.02	13.96	41.76	5.54
AC07CR036	1	5	4	35.18	12.95	44.73	4.74
AC07CR043	2.5	3.5	1	35.3	12.9	43.3	6.34
AC07CR050	3	5	2	35.3	12.95	44.03	5.40

(Cut Off 1 metre @ 35% Al<sub>2</sub>O<sub>3</sub>)

#### *Discussion of results and implications for future exploration*

It would appear from the lithological observations that the fine grained, siltstone/claystones of the Yirrakala Fm have been variably lateritised across the plateau, forming a zoned profile.

The geochemical data suggests a weakly lateritised, kaolinite dominated profile dominates the areas drilled, which support the lithological observations.

Exploration will now focus on gaining access to the centre of the Cato Plateau.

## **8.2 Grab Sampling**

The grab sample programme tested surface laterite where it (rarely) cropped out. Thirteen grab samples were taken with locations shown on Plan pAI07\_025. The samples consist of various material types including soil, laterite duricrust and termite mound material.

The samples were analysed by XRF at ultratrace laboratories in Perth. The results are shown in Appendix 1.

There were not any significant results with the laterite samples having elevated alumina with high silica of roughly the same grade as seen in the aircore drilling. The termite mound material was generally lower alumina and higher silica and loss on ignition suggesting higher kaolin content.

## **9. ENVIRONMENT**

Discussions were held with the Traditional Owners at Yirrkala in August 2008 to discuss the planned drilling programme for EL 4170. The work programme was approved as presented. An annual environmental report was submitted with the revised Mine Management Plan.

## **10. EXPLORATION EXPENDITURE**

The exploration expenditure details attributed to the project by RTX for the fourth year of exploration are contained in the Northern Territory Exploration Expenditure for Mineral Tenement accompanying this report.

## **11. PROPOSED EXPLORATION**

Proposed expenditure for the next year will be \$50,000 comprising:

- Meetings with Traditional owners and clearance surveys
- Possible in fill vacuum drilling
- Possible mineralogical/metallurgical testing.
- Broader geological assessment of the region
- Manganese exploration that will be reported by BHPB as part of the simultaneous exploration activities.



## REFERENCES

- Chestnut W., Gunn, M. and McGregor, P., BHP Pty Ltd., 1968. Report on Exploration Within AP1138, Eastern Arnhem Land. Northern Territory Department of Mines and Energy, Open File Company Report CR1968-0011.
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- Rawlings, D.J., 1997, 1:250 000 Geological Map. Explanatory Notes. Arnhem Bay Gove SD5303-04, Northern Territory Geological Survey.
- Pankhurst M., Hartshorn G., 2007, Combined Annual Report For Period Ending 13 October , 2007, EL 4170 Cato Plateau, Gove SD5304, Northern Territory. RTX Report Number 28208.

## LOCALITY

Gove

SD 5304

1:250 000

## LIST OF DPO'S

<b>DPO</b>	<b>No. Sample</b>	<b>Sample Range</b>	<b>Laboratory</b>
206542	13	3368817 - 3368827 3368830 and 3368834	Ultratrace - Perth

## DESCRIPTOR

Combined Annual Report (Cato Project) for the Period 14 October 2007 to 13 October 2007, EL 4170 Cato Plateau, EL4171 Cato River, Gove Special SD 5304, Northern Territory. Exploration activities consisted of assaying 13 grab samples and preparation for vacuum drilling.

## KEYWORDS

Gove, bauxite, vacuum drilling, grab samples, manganese Cretaceous.

## **APPENDIX 1**

### **Aircore Drilling Results**

**CatoProject\_2007\_A\_02\_drillcollars.txt**

**CatoProject\_2007\_A\_03\_lithology.txt**

**CatoProject\_2007\_A\_04\_downholegeochem.txt**