

# Rio Tinto Exploration Pty Ltd

ABN 76 000 057 125 / ACN 000 057 125

A member of the Rio Tinto Group

Combined Annual Report  
for the Period 15 October 2013 to 14 October 2014  
EL4170 Cato Plateau & EL4171 Cato River  
Combined reporting Number GR077/09  
'Cato Project'  
Gove Special SD5304, Northern Territory

RTX Report No. 29736

Author	G. Hartshorn
Date	November 2014
Distribution	Department of Mines and Energy, NT RTX Perth Information Centre BHPB

This report and its contents are strictly confidential. All rights to the report and its contents, including, without limitation, rights to confidential information and copyright in all works whether at common law or statute (including photographs, diagrams, charts, maps and graphs) comprised in the report, remain the property of Rio Tinto Exploration Pty. Limited. No part of this report or the information contained in it may be disclosed to any person without the consent of Rio Tinto Exploration Pty. Limited. No part of this report, or the information contained in it, may be disclosed, reproduced (including being stored in any form), transmitted, published or used for any purpose without the prior written consent of Rio Tinto Exploration Pty. Limited. As per Regulation 126(3)(a) of the *Mineral Titles Regulations* the Minister is authorised to copy and distribute the report and associated data.

## BIBLIOGRAPHIC DATA SHEET

**PROJECT NAME:** Cato Project Combined report GR077/09

**TENEMENT NUMBER/S:** EL4170 and EL 4171

**TENEMENT OPERATOR:** Rio Tinto Exploration Pty Limited

**TENEMENT HOLDER:** Rio Tinto Exploration Pty Limited

**REPORT TYPE:** Annual Report

**REPORT TITLE:** Combined Annual Report For the Period Ending 14 October 2014 EL4170 Cato Plateau & EL4171 Cato River.

**REPORT PERIOD:** 15 October 2013 to 14 October 2014

**PERSONAL AUTHOR:** Greg Hartshorn

**YEAR OF PUBLICATION:** 2014

**1:250,000 MAP SHEET:** Gove SD53-04

**1:100,000 MAP SHEET:** Arnhem 6173 and Gove 6273

**TARGET COMMODITY:** Bauxite / Manganese

**KEYWORDS:** Cato, bauxite, manganese, Annual Report

**DOCUMENT DETAILS:** 13 pages, 4 figures, 2 tables

## CONTENTS

1	SUMMARY .....	4
2	INTRODUCTION .....	4
3	TENURE STATUS .....	5
4	LOCATION AND ACCESS.....	6
5	GEOLOGY.....	7
6	GEOMORPHOLOGY.....	8
7	GEOPHYSICS .....	9
8	PREVIOUS EXPLORATION.....	9
9	EXPLORATION ACTIVITIES DURING THE REPORTING PERIOD .....	10
10	FUTURE WORK.....	11
11	REFERENCES .....	12

## FIGURES

- Figure 1: Location Map
- Figure 2: EL 4171 and EL 4170 showing the 1;250,000 geology plan
- Figure 3: Cato Project showing the geomorphology on the digital terrain model
- Figure 4: Location of drilling conducted by BHPB during the period.

## TABLES

- Table 1 Tenement Details
- Table 2 Previous Work

## APPENDICIES

29736 GR077\_2014\_A\_01\_Assays.txt

## 1 SUMMARY

EL 4170 Cato Plateau and EL 4171 Cato River were applied for by BHP Minerals Pty. Ltd. (BHP) on 3<sup>rd</sup> October 1982. EL 4170 was granted on 14<sup>th</sup> October 2004, EL 4171 was granted on 12<sup>th</sup> September 2005. EL4171 was renewed until 11 September 2015. EL4170 has an expiry date of 13<sup>th</sup> October 2014 with an application for further renewal pending. Rio Tinto Exploration Pty Limited (RTX) signed an agreement with BHP on 27<sup>th</sup> March 2000 whereby RTX took over management of the tenements. This agreement was amended in 2007 to allow for BHP to conduct simultaneous activities for manganese within the licence package.

The original tenement application, ELA 4170 covered an area of 593.5 km<sup>2</sup> of which only 57.0 km<sup>2</sup> was granted. The remainder of the area was split off into a new application, EL 24389 and put into moratorium. The original ELA 4171 tenement application covered an area of 846 km<sup>2</sup> of which 598.2 km<sup>2</sup> was granted. Both tenements have undergone one relinquishment. The tenements are located 30 km west of Nhulunbuy, east Arnhem Land and consequently are processed under the Aboriginal Land Rights Act 1975 (ALRA).

Combined reporting of EL 4171 and EL 4170 was granted and the project called 'Cato Project' with reporting number GR077/09. The Cato Project forms part of the larger contiguous tenement package in east Arnhem Land, which is prospective for bauxite and manganese.

These two licences (Cato project area) covers part of the Cato plateau, which is a known occurrence of bauxite within the east Arnhem area. The Cato plateau bauxite target has the potential to contain resources similar in style to the nearby Gove deposit. BHP, through an agreement with RTX, retains the right to explore for manganese (Mn) on EL4170 and EL4171. Through their subsidiary, GEMCO, they have been conducting manganese exploration on the Cato Project area.

During the reporting period exploration was conducted by GEMCO as part of the joint venture with RTX. This work included assaying of 106 RC drill chips which were drilled last period and rehabilitation of the drill sites.

The assay results for the BHPB (GEMCO) drilling showed a maximum of 1% Mn in sandstone.

RTX did not conduct any on-ground exploration during the period.

## 2 INTRODUCTION

EL 4170 Cato Plateau and EL 4171 Cato River were applied for by BHP Minerals Pty. Ltd (BHP) on 3<sup>rd</sup> October 1982. EL 4170 was granted on 14<sup>th</sup> October 2004 and EL 4171 was granted on 12<sup>th</sup> September 2005. Currently EL 4170 is valid until the 13<sup>th</sup> October 2014

with a renewal pending and EL 4171 is valid until 11<sup>th</sup> September 2015. Rio Tinto Exploration Pty Limited (RTX) signed an agreement with BHP on 27<sup>th</sup> March 2000 whereby RTX took over management of the tenements. This agreement was amended in 2007 to allow for BHP to conduct simultaneous activities for manganese within the licence package. The original EL 4170 tenement application covered an area of 593.5 km<sup>2</sup> of which only 57.0 km<sup>2</sup> was granted. The remainder of the area was split off into a new application, EL 24389 and put into moratorium. The original EL 4171 tenement application covered an area of 846 km<sup>2</sup> of which 598.2 km<sup>2</sup> was granted.

The tenements are located 30 km west of Nhulunbuy, east Arnhem Land and consequently are processed under the Aboriginal Land Rights Act 1975 (ALRA). Combined reporting of EL 4171 and EL 4170 was granted and the project called 'Cato Project' with reporting number GR077/09.

The Cato Project forms part of the larger contiguous tenement package in east Arnhem Land, which is prospective for bauxite and manganese.

### 3 TENURE STATUS

EL 4170 Cato Plateau and EL 4171 Cato River were applied for by BHP Minerals on 3<sup>rd</sup> October 1982. EL 4170 was granted on 14<sup>th</sup> October 2004, EL 4171 was granted on 12<sup>th</sup> September 2005. In 2010, 53% (112 blocks) of EL4171 was surrendered as part of a mandatory relinquishment. 96 blocks now remain. Tenement details are listed in Table 1 below. Combined reporting of EL4171 and EL4170 was granted with number GR077/09.

**Table 1: Tenement Details**

Name	Owner	Appn Date	Grant Date	Renewal until	Area applied (km <sup>2</sup> )	Area granted (km <sup>2</sup> )	Area renewed (km <sup>2</sup> )
Cato Plateau EL 4170	RTX	3/12/1982	14/10/2004	13/10/2014 (renewal for a further 2 year term pending approval)	593.5	57.0	38.8
Cato River EL 4171	RTX	3/12/1982	12/09/2005	11/09/2015	846.0	598.2	292.3

The tenements fall wholly within Arnhem Land and is subject to the provisions of the Aboriginal Land Rights Act which is administered by the Northern Land Council.

#### 4 LOCATION AND ACCESS

The Cato Project licences are located in East Arnhem Land approximately 50km west of Nhulunbuy. The main community located close to the licences is Dhalinbuy. Access is easily gained via the Central Arnhem HWY. An entry permit is required from the NLC to access the land.

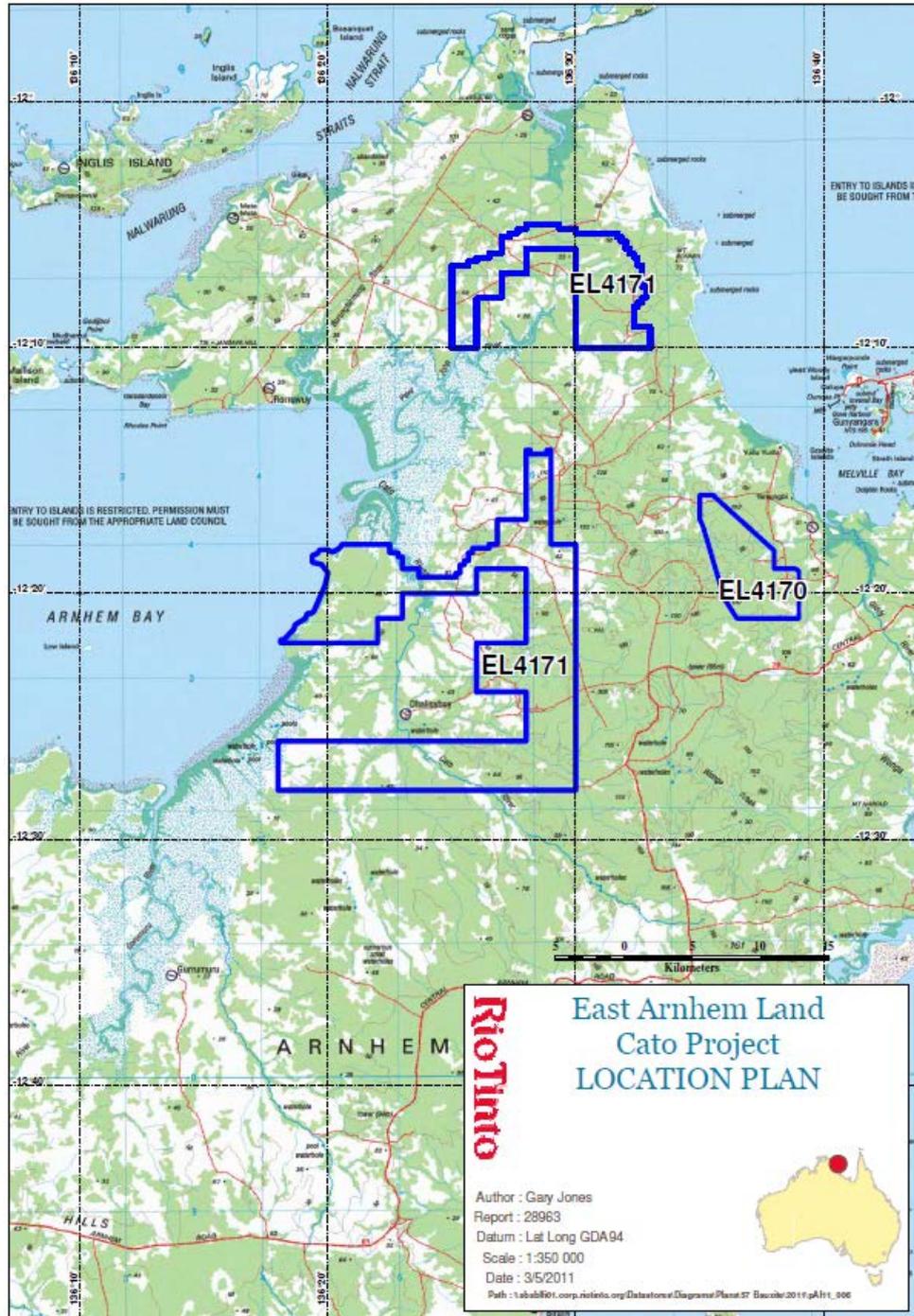


Figure 1: Tenement Location Plan

**5 GEOLOGY**

Geology of the Cato area comprises of a sequence of sedimentary sandstones and claystones belonging to the Walker River Formation (Middle Cretaceous) and the younger Yirrkala Formation (Upper Cretaceous) which unconformably overly Proterozoic basement. (Refer to SD5304 – Gove Special GSNT Geology Map).

During the Tertiary period, the Yirrkala Formation has undergone extensive lateritisation in the east Arnhem area. This has resulted in the formation of bauxite in areas where the protore was sufficiently clay rich and the land surface has been preserved.

While several occurrences of bauxite have been recorded in the east Arnhem area, large, economic deposits outside the Gove mine site have not been delineated.

The base of the Cretaceous sediments is prospective for manganese and this has been the focus of the GEMCO (BHPB) work

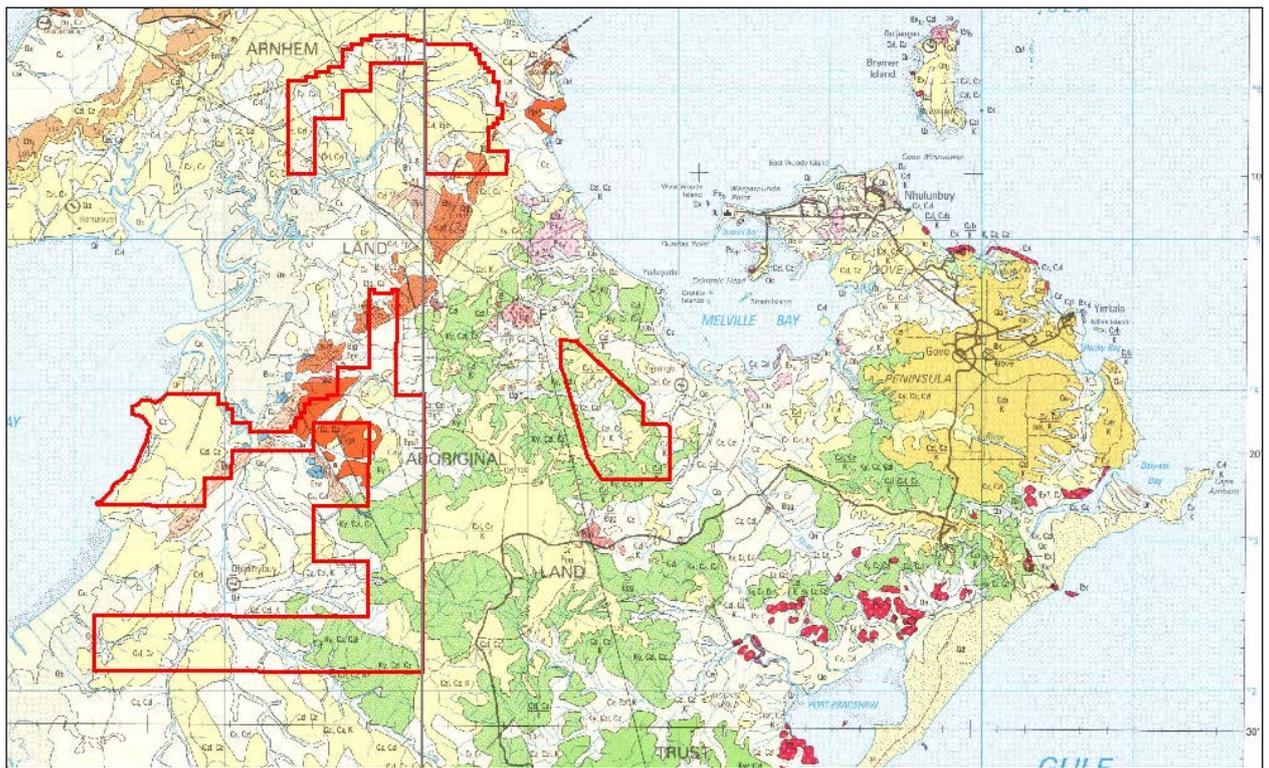


Figure 2: EL 4171 and EL 4170 showing the 1;250,000 geology plan. (SD5303-04 Arnhem Bay-Gove special sheet)

## 6 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 four kilometers across the centre of EL 4170, and another spur extends 3 kilometers into EL 4171 from the east. The plateau has steep breakaways and a flat top at an elevation of approximately 100m.

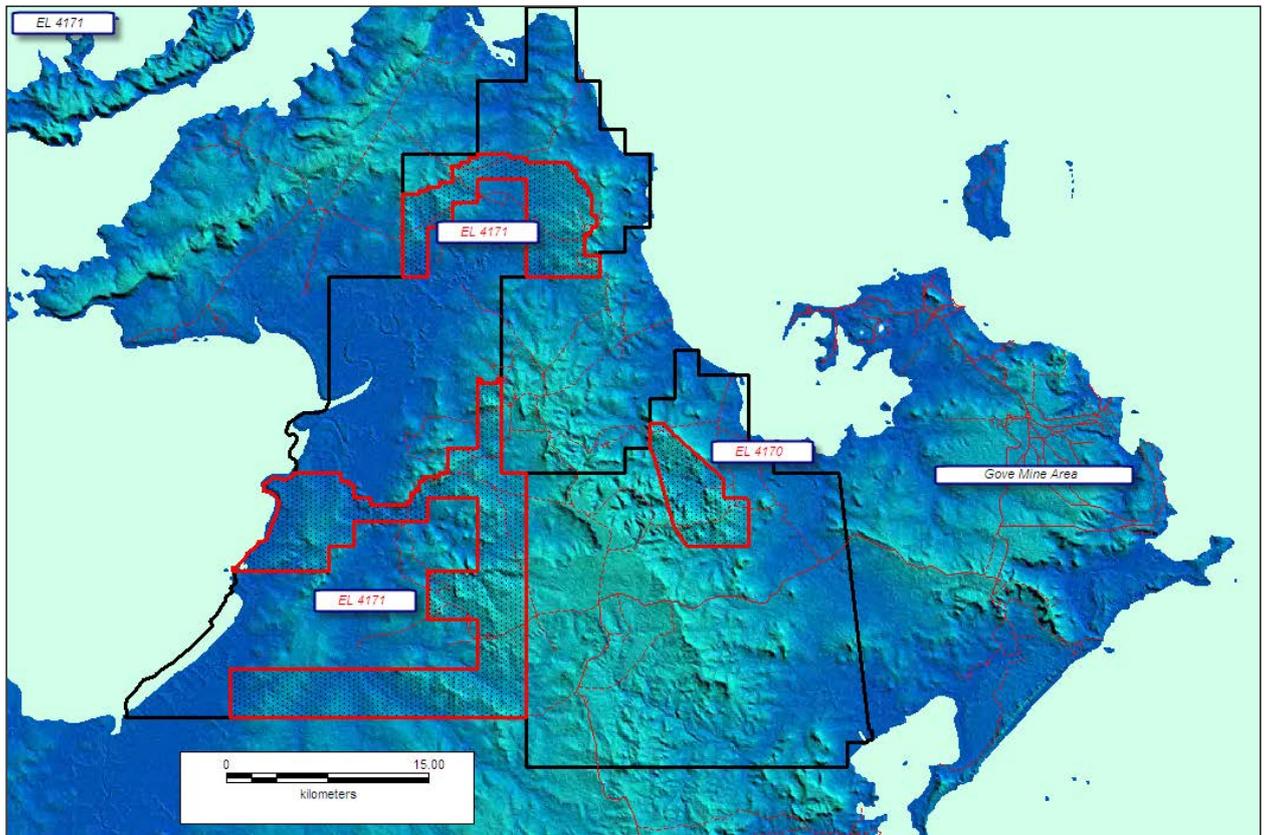


Figure 3: Cato Project showing the geomorphology on the digital terrain model

## 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. This method does not distinguish between bauxitic and non-bauxitic laterite.

In 2009, as part of the joint venture, BHPB flew an airborne EM survey over part of the licences.

Digital terrain data has been acquired and processed to assess areas that may be prospective for bauxite and or areas that are not eroded. The Cato Plateau is clearly defined as a gently south-westerly dipping flat surface of approximately 100 km<sup>2</sup> in area. Less than 10 km<sup>2</sup> of the Cato Plateau lies within the granted ELs.

## 8 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 EL 4170. 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.

In the mid 1960's, BHPB (then BHP Ltd) explored parts of the eastern Arnhem Land area for sedimentary-diagenetic Mn after the discovery of the Groote Eylandt deposit. A variety of exploration campaigns were completed by BHPB in the 1960's, including helicopter reconnaissance work, regional mapping, pitting and regional drilling at some prospects (e.g. Caledon Bay, Peter John River, Lake Evella). The Peter John River prospect extends over an area of about 10 sq km straddling EL24524 (BHPB 100%) and EL4171 (RTX). In 1965, a total of 33 exploration pits were dug. Subsequently 11 holes were drilled to various depths to test the Mn potential. However no significant Mn mineralisation was found at this prospect and was not pursued further.

**Table 2: Previous Exploration Summary**

Year	Company	Tenement	Exploration Completed
1955	New Guinea Resources Prospecting Ltd	?	19 auger holes for bauxite

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 4171	Auger drilling of small part of the Cato Plateau.
2007	RTX	EL 4171	Aircore drilling – 62 holes.
2008	RTX	EL 4170	Vacuum drilling – 52 holes.
2009	BHPB	EL 4171	RC Drilling for Mn – 21 holes.
2010	RTX	EL4171	Rock sampling
2012	RTX	EL 4171	Rock sampling (7 samples) and Auger sampling (10 samples) exploring for bauxite
2013	BHPB	EL4171	Drilling of 4 RC holes for Mn exploration

## 9 EXPLORATION ACTIVITIES DURING THE REPORTING PERIOD

During the reporting period exploration was conducted by GEMCO as part of the joint venture with RTX. The work GEMCO completed included:

- Assaying of 106 RC drill chip samples
- Rehabilitation of 4 drill sites

The drilling completed by BHPB within EL4171 was reported in the previous annual report. The description of the drill results from the GEMCO work is shown below in italics.

*Minor intervals of sandy manganese were intersected in the holes in two distinct horizons. Massive remobilised Manganese fragments were recovered in the first 2 metres of the holes. This discontinuous band is thought to be associated with a scree of weathered claystones which may have contained some manganese banding. A second mineralised layer of manganiferous sandstones was encountered at depth. In most places, this has been highly feruginised and therefore is not thought to have any economic value. 106 aircore samples have been submitted for chemical analysis however results have yet to be received. Figure 3 shows a generalised section of the stratigraphy encountered in the holes.*

The drill chips were treated raw without any upgrading process and assayed for Mn, Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, P, CaO, Sr, Ba, TiO<sub>2</sub>, Mg by XRF. The results show only minor concentrations of manganese with the best result being 0.5m @ 0.96% Mn from 3,5 to 4m in drill hole EARC350.



Figure 4: Location of drilling conducted by BHPB which the assay results refer to.

## 10 FUTURE WORK

The project is being reviewed based on the exploration for both bauxite and manganese that has been completed over the years. Negotiations are ongoing via the Northern Land Council to gain access to the adjacent license (ELA 24389) which was originally part of the application ELA 4170, prior to grant. These negotiations have been at a standstill for a number of years and is hampering further work on this project.

## 11 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.
- Chestnut W., Blayden, I., Edyvean, M. & Gee, C., BHP Pty Ltd., 1966. Report on Exploration Within AP1138, Eastern Arnhem Land. Northern Territory Department of Mines and Energy Open File Report CR1966-0008.
- Ferenczi P.A., 2001, Iron Ore, Manganese and Bauxite Deposits of the Northern Territory. Northern Territory Geological Survey Report No. 13.
- Fry K, 2006, First Annual Report for the Period Ending 11 September 2006, EL 4171 Cato River  
Gove Special SD 5304, Northern Territory. RTX Report No. 27882
- Hartshorn G., 2005, First Annual Report For Period Ending 13 October , 2005, EL 4170 Cato Plateau, Gove SD5304, Northern Territory. RTE Report Number 25518.
- Hartshorn G. 2006, First Annual Report For Period Ending 13 October , 2006, EL 4170 Cato Plateau, Gove SD5304, Northern Territory. RTX Report Number 27895.
- Hartshorn G. 2011, Annual Report For Period Ending 13 October , 2011, EL 4171 Cato River and EL 4170 Cato Plateau, Gove SD5304, Northern Territory. RTX Report Number 29177
- Hartshorn G. 2012, Annual Report For Period Ending 13 October , 2012, EL 4171 Cato River and EL 4170 Cato Plateau, Gove SD5304, Northern Territory. RTX Report Number 29422
- Hartshorn G. 2013, Annual Report For Period Ending 13 October , 2013, EL 4171 Cato River and EL 4170 Cato Plateau, Gove SD5304, Northern Territory. RTX Report Number 29587
- Hartshorn G. and Blake J., 2010, Annual Report For Period Ending 13 October , 2011, EL 4170 Cato Plateau, Gove SD5304, Northern Territory. RTX Report Number 28823.
- Hartshorn G. and Blake J., 2010, Partial Surrender Report For October , 2010, EL 4171 Cato River, Gove SD5304, Northern Territory. RTX Report Number 28822.
- Moharana, L., 2009, BHP Billiton - Combined Annual Report (Cato Project) For the Period 14 October 2008 to 13 October 2009 EL4170 Cato Plateau and EL4171 Cato River, Gove Special SD5304, Northern Territory.
- Rawlings, D.J., 1997, 1:250 000 Geological Map. Explanatory Notes. Arnhem Bay Gove SD5303-04, Northern Territory Geological Survey.

**LOCALITY**

Gove Special

SD 5304

1:250 000