

# **Fourth Annual Report**

**on**

## **EL 9/2010 – Deloraine**

**Reporting Period:** 14 September 2013 – 13 September 2014

**Project Operator:** ABx4 Pty Ltd

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**Date:** 13 October 2014

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# 1 ABSTRACT

## Objective

Exploration Licence (EL) 9/2010 “Deloraine” was applied for by ABx4 Pty Ltd (**ABx4**) in order to facilitate an exploration program to discover economically viable deposits of bauxite associated with Tertiary Volcanics, in an area with old peneplained surfaces preserved as plateaus. The goal of the program is to determine the quality and quantity of the bauxite in the area using an RC drill rig mounted on a light Mitsubishi 12 tonne truck.

## Methodology

1. Detailed geological mapping, including geomorphological mapping, to define the areas with best potential for bauxite.
2. Systematic sampling of natural outcrops and exposures in road cuts of bauxite profile.
3. Chemical analyses of samples, including specialist analyses to determine total and available alumina, total and reactive quartz, loss on ignition and other analyses as required in bauxite search.
4. Drill testing of zones with best potential defined by work under 1, 2. and 3, by an RC drill rig mounted on a light truck to get samples representing the whole bauxite profile.
5. Systematic drill testing at close spacings to obtain data for resource estimation in the best target areas defined by programme under 4.

## Results

Australian Bauxite Limited subsidiary company ABx4 completed drill testing of the DL-130 bauxite targets in EL9/2010 located East of Porters Bridge Road, North East of Deloraine. The purpose of the drilling program was to increase the grade of the deposit by in-filling and extending the resources in areas where good grades have already been intersected.

A detailed mapping program was also completed over 2 days to determine the extent of bauxite exposed at surface. Once this was determined, best targets were selected for drilling. A work program was submitted to MRT for all work and special approval from Gunns was organize to clear tracks between the plantation trees to decrease the drilling intervals and delineate the resources better.

Drilling was conducted in March to April 2014 and drilled a total of 118 holes for 1061m (DL214-DL331) bringing the total number of holes to 202 drilled since 2012 for the DL-130 area. Drill spacing's were 50m-75m and drill holes averaged 8m deep with a maximum of 17m. 602 samples were selected for sieved assay and samples which contained more than 15-20% available alumina where assayed using the whole sample at the ALS lab in Brisbane.

**Recommendations for future work**

The following exploration activities are planned for EL 9/2010:

- Detailed geological mapping, including geomorphological mapping and study of satellite images to define the areas with the best potential for bauxite.
- Systematic sampling of natural outcrops and exposures in road cuts of bauxite profile.
- Chemical analyses of samples, including specialist analyses to determine total and available alumina, total and reactive silica, loss and ignition and sieving.
- Drill testing of zones with best potential with an RC drill rig mounted on a light six wheel truck to get samples representing the whole bauxite profile.
- Systematic sampling and drilling at waypoints with best bauxite potential.
- Detailed analysis of assay results to determine assaying strategy for future drilling.
- Pit testing of the DL-130 target to test mineability of the deposit.
- Sieve testing to find optimal sieve size for Tasmanian bauxites.
- Testing new sample processing techniques to improve silica reduction.

## 2 INTRODUCTION

### Exploration Rationale

Exploration Licence (EL) 9/2010 “Deloraine” was applied for in order to facilitate an exploration program to discover economically viable deposits of bauxite associated with Tertiary Volcanics, in an area with old peneplained surfaces preserved as plateaus. The goal of the program is to determine the quality and quantity of the bauxite in the area using an RC drill rig mounted on a light 12 tonne truck.

### Geological Setting

The historic work done by H.B. Owen (‘Bauxite in Australia’, 1954) demonstrated that bauxite in Tasmania can be found in both Jurassic Dolerite and Tertiary Basaltic Volcanics. According to Owen, these bauxite deposits - regardless of host rock type - are thought to form either as ‘grouped remnants of former continuous sheet’ or ‘formed in lenticular or pod shaped bodies in localised depressions’.

### Tenement Information

EL 9/2010 “Deloraine” was granted on and from 14 September 2010 for a period of 5 years to ABx4.

This is the Fourth Annual Report for the reporting period 14 September 2013 - 13 September 2014 incorporating the results of work completed during the third year of tenure.

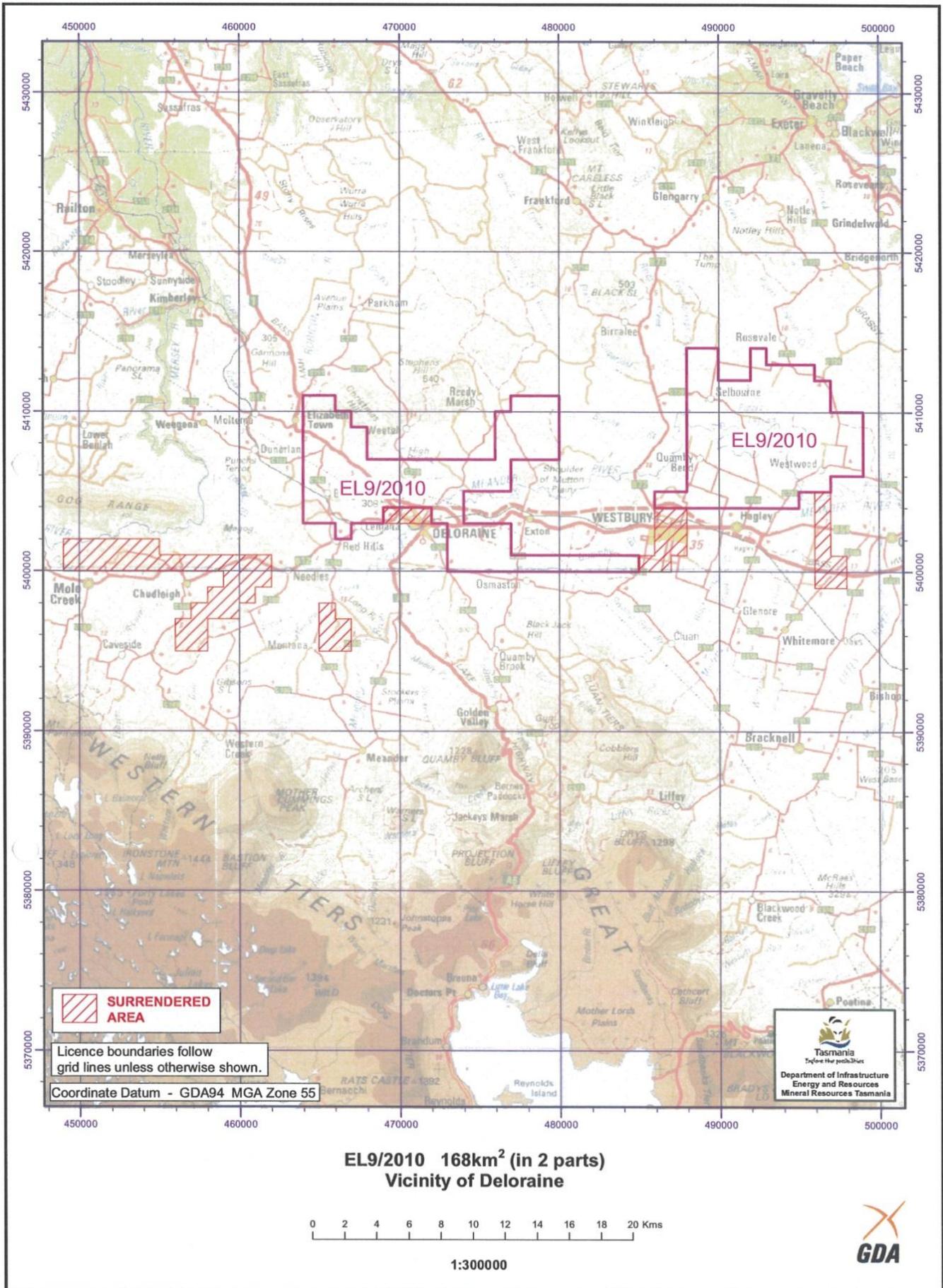
Total current area of the licence is 168 sq km. ABx4 relinquished 56sq km in the second year of tenure. The Mineral Category of EL 9/2010 is 1 – Metallic Minerals and Atomic Substances.

### Location

EL 9/2010 is located around the town of Deloraine (Map 1) where there is a rail line which connects all the ports of Tasmania to each other. Ports and rail way lines in Tasmania are generally under capacity and the Deloraine Tenement is only 42km from Devonport. EL 9/2010 is close to the city of Launceston and could offer a wide range of services and skilled work force.

### Tenure, including joint venture details and title transfers

EL 9/2010 “Deloraine” is 100% owned by ABx4 which is a wholly-owned subsidiary of Australian Bauxite Limited.



Map 1. Location of EL 9/2010 "Deloraine". Datum GDA94 (MGA94 Zone 55).

### 3 REVIEW OF PREVIOUS WORK

#### Prior to Current Tenement

Exploration for Bauxite was conducted by C.R.A Exploration Pty Limited (**CRA**) in the late 1960s and early 1970s. CRA decided to relinquish its tenement in central northern Tasmania as no worthwhile results were obtained.

Two reports were composed by CRA:

1. Miss S.E. Close, Feb 1970, Scintillometer Search for Bauxite, Northwest Tasmania, *CRA Exploration Pty Limited*
2. Miss S.E. Close, June 1971, Final Report on Bauxite Search, Devonport E.L. 36/70 Tasmania, *CRA Exploration Pty Limited*

The following is an extract from the second report, summarizing CRA's findings:

#### Final Report on Bauxite Search, Devonport E.L. 36/70 Tasmania

Final testing of this area in central northern Tasmania was carried out using a Gemco Model 210A auger drill. A total footage of 1148 feet was drilled in 57 holes and 206 samples were sent to Zinc Corporation for  $Al_2O_3$ ,  $SiO_2$  and  $Fe_2O_3$  analysis.

Drilling was concentrated on the two most promising areas, near Sassafras and near Deloraine, although all areas of soil over basalt within the E.L. were tested.

#### CONCLUSION

It is recommended that the E.L. be relinquished before the renewal date of 24th June, 1971. A memo has already been written to this effect.

No worthwhile results were obtained. Most of the 206 samples contained less than 30% total alumina, while 8 contained between 30 and 40% total alumina, but were also high in  $Fe_2O_3$  and  $SiO_2$ . The higher values occurred in holes B20 and B25.

#### GENERAL DISCUSSION

As stated before, the drilling was carried out on all the areas of soil over basalt within the E.L. These have been described in preceding reports.

**During Current Tenure Period (Prior to Current Reporting Period)**

Over the period 14 September 2010 – 13 September 2012, a total of 129 holes were drilled for 837m. Most holes intercepted bauxite mineralization averaging 3m in thickness to a maximum of 9m but varied from very high to very low grade. A total of 480 samples were selected for analysis by XRF and analysed for available alumina and reactive silica after wet screening at 260 microns. An additional 82 samples were selected for analysis without screening.

Between 14 September 2012 – 13 September 2013, land access became difficult in the DL-130 area due the liquidation of Gunns Limited. In this period, however, a drilling proposal was submitted for the Blackwood Target (now referred to as DL-130) which was drilled in the current reporting period.

## 4 EXPLORATION COMPLETED DURING THE REPORTING PERIOD

### Literature Review

Two reports were composed by CRA:

- Miss S.E. Close, Feb 1970, Scintillometer Search for Bauxite, Northwest Tasmania, *CRA Exploration Pty Limited*
- Miss S.E. Close, June 1971, Final Report on Bauxite Search, Devonport E.L. 36/70 Tasmania, *CRA Exploration Pty Limited*

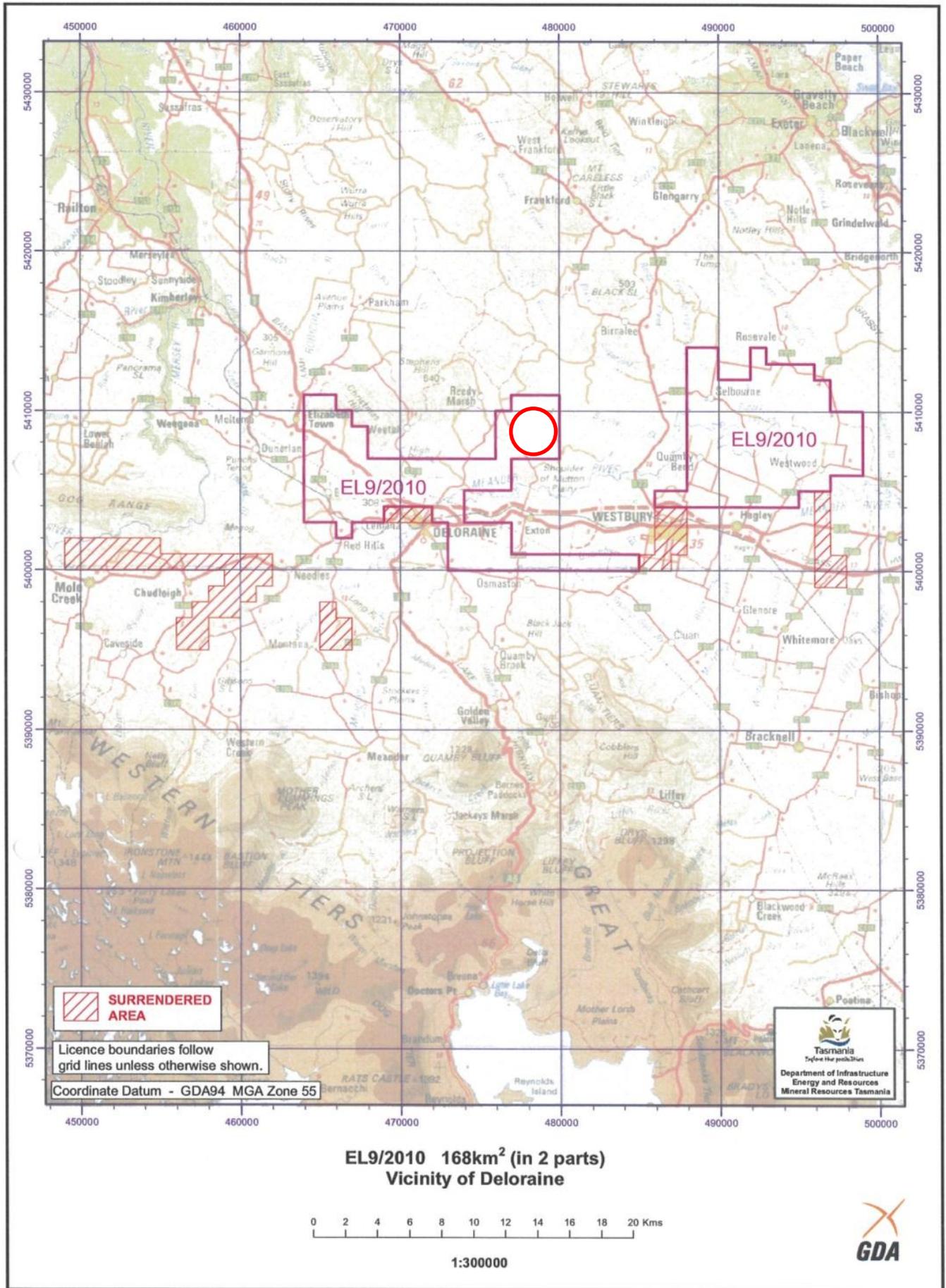
### Regional Exploration Activities

#### DL-130 Deposit (formerly referred to as 'Blackwood')

In March-April 2014 ABx prepared drilling tracks for drilling using a small 7 tone excavator supervised by a senior field technician. Debris, stumps and scrub was cleared from between the plantation rows to allow the drill rig access to the area. A turning circle was created at the end of each row to allow the machinery to turn.

Drilling was undertaken using the contracting company Underdales who provided an Air core rig mounted on a light Mitsubishi 12 tonne truck with a driller and offsider. Drilling was carried out in a semi-random pattern with typical spacing's between 50-100m. Drilling recovery is generally good and consistent with all drillhole locations surveyed at the time of drilling using a hand held GPS, with accuracy of  $\pm 5$ m. Drill holes were 75mm in diameter and averaged 8m in depth. Samples were collected by placing a bag at the base of the cyclone and drilling at 1m intervals. Bauxite samples were firstly mixed well by hand then split for analysis. Samples were analysed at the ALS laboratory in Brisbane. Additional samples were taken for Hand Held XRF analysis onsite. A small sample was also added to a chip tray at meter long intervals for geological logging. All chip trays, bauxite and non-bauxite samples, are stored in a nearby storage shed.

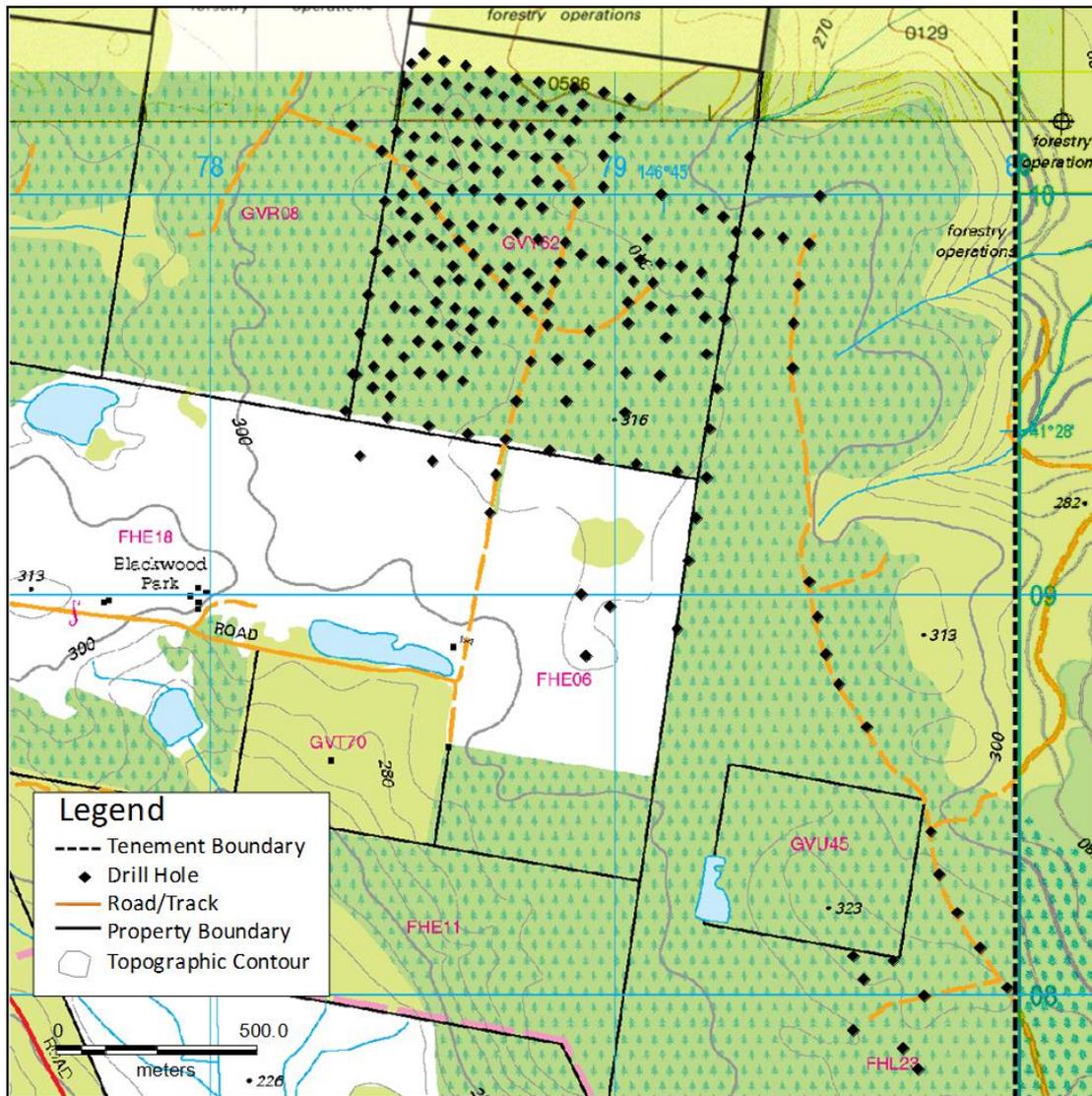
All machinery and equipment was washed down before and after accessing the target. All personnel were briefed and given relevant documentation before commencing work. All sites were rehabilitated on completion including removal of all rubbish, samples and plugging and backfilling of drill holes.



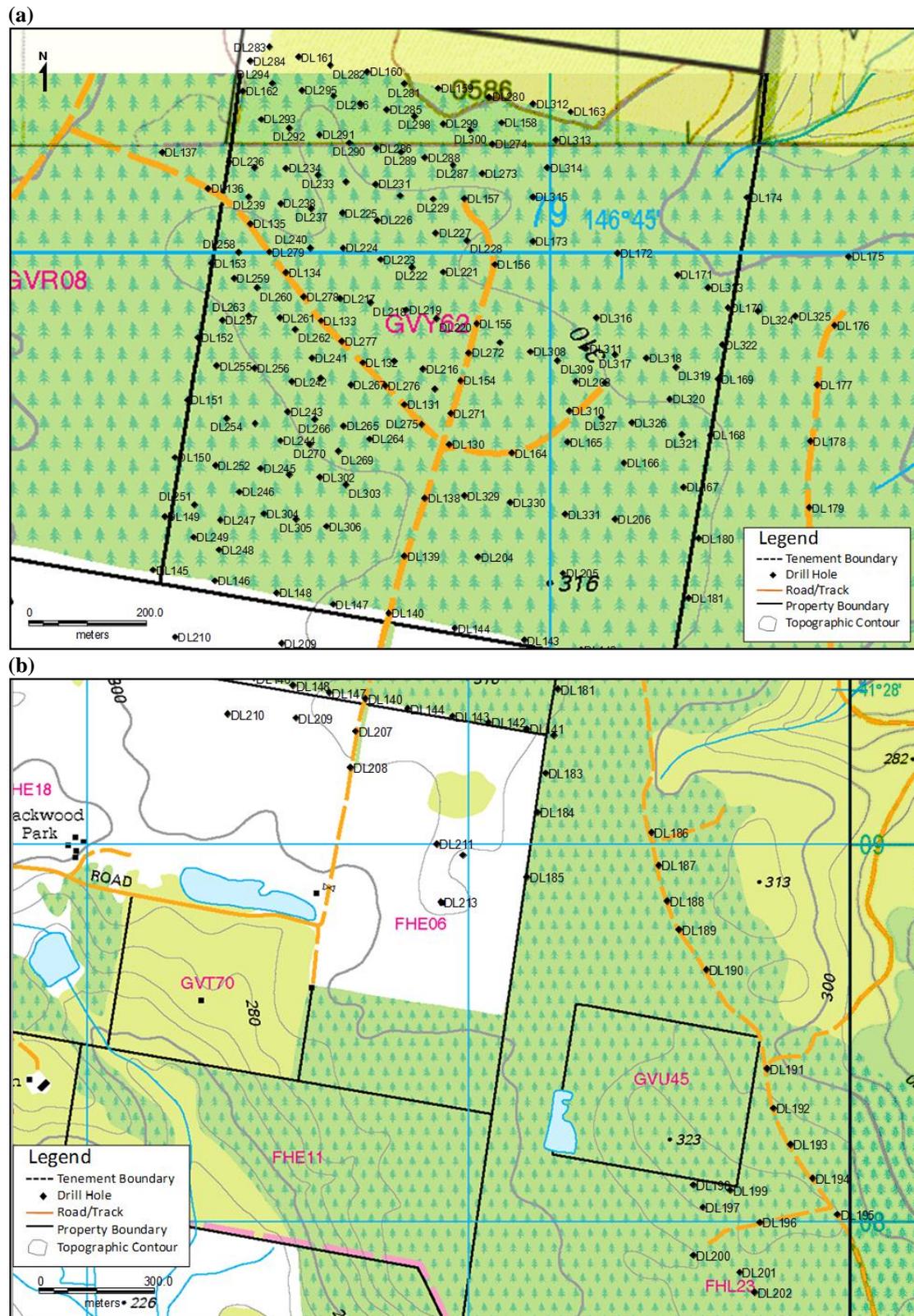
Map 2 – EL 9/2010 Location of DL-130 Deposit in red circle. Datum GDA94 (MGA94 Zone 55).

Drilling was conducted in March to April 2014 and drilled a total of 118 holes for 1061m (DL214-DL331). A total of 202 holes have been drilled since 2012 totalling 1681m drilled for the DL-130 area. Drill spacing's were 50m-75m and drill holes averaged 8m deep with a maximum of 17m.

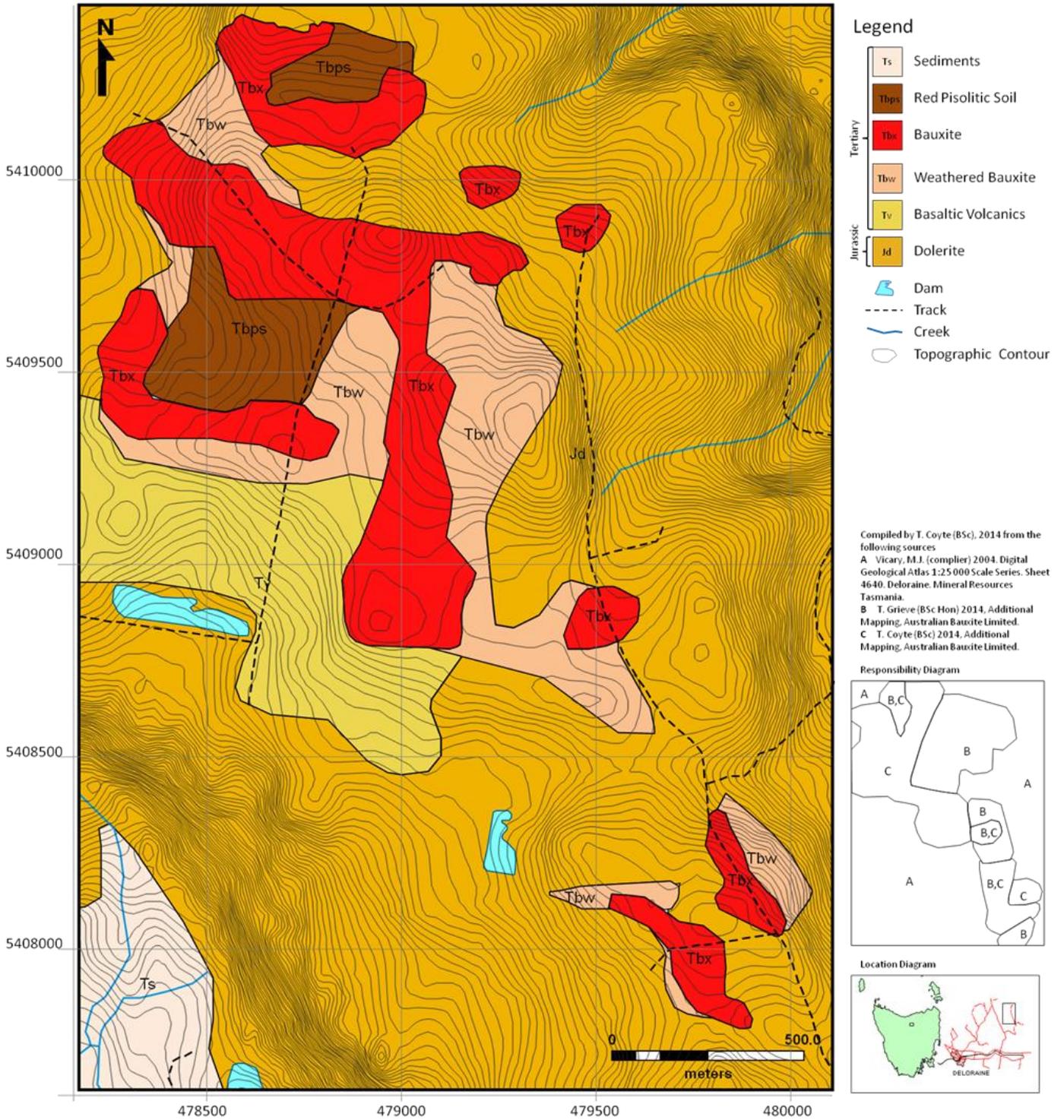
A total of 602 samples were selected for sieved assay and samples which contained more than 15-20% available alumina where assayed using the whole sample at the ALS Lab in Brisbane. 345 whole samples were selected for assay for this drilling program. A total of 858 sieved and 492 whole samples have been assayed so far for the DL-130 area.



Map 3. All holes drilled at DL-130 to date. See next map for hole data. Datum GDA94 (MGA94 Zone 55).



Map 4. Holes drilled in the (a) northern and (b) southern areas of DL-130. DL214-DL331 were drilled in the current reporting period. Datum GDA94 (MGA94 Zone 55).



## 5 DISCUSSION OF RESULTS

### DL-130 Deposit: Geology and Bauxite Structure

Bauxite at the DL-130 deposit had an average thickness of 3-4m with virtually no overburden. The bauxite mineralisation occurs as lenticular bodies of bauxitised mafic volcanic and sub-volcanic rocks usually in small rises and hills. The bauxite was possibly more extensive over the area but has since been eroded. The area is made of Tertiary Volcanics underlain with Jurassic Dolerite both of which have very similar mineralogy and geochemistry. Jurassic Dolerite forms the basement to the Tertiary volcanism and outcrops throughout the deposit area. It is suspected that the basaltic volcanic has infilled the area between dolerite hills.

The stratigraphy of the DL-130 Bauxite Deposit is as follows:

1. Overburden

Overburden at DL-130 is usually low grade bauxite. This material may have other uses. Overburden in the form of red kaolin rich soils are very uncommon and contain eroded lumps of bauxite with an abundance of magnetic pisolites.

2. Upper Bauxite Zone - Pisolitic Bauxite

The pisolitic bauxite zone consists of rounded, black shiny pisolites in a heavily cemented matrix of hematite and gibbsite which often forms a ferruginous cap. This bauxite is usually exposed at surface; and shows evidence of being exposed at surface for a long period of time. Later lateritic events have controlled the distribution and concentration of iron which has been enriched in the first few meters of bauxite. The pisolitic bauxite is very low in alumina and high in iron hence it is sometimes considered overburden. This bauxite always occurs at the top of the bauxite profile and its presence indicates a low amount of erosion in the area.

3. Upper Bauxite Zone - Earthy Bauxite

This bauxite is slightly earthy red and hematitic with tubular vughs of buff colored material-low iron gibbsitic bauxite. This bauxite is found at all the volcanogenic bauxite deposits of Tasmania and is the most common type of economic bauxite found by Australian Bauxite limited. At DL-130 this bauxite type slowly grades from the pisolitic bauxite zone into a higher grade vuggy bauxite zone with minor pisolites. The red and buff coloration within the bauxite signifies slight changes in hematite concentrations but kaolin content remains the same. The buff colored bauxite becomes more dominant with depth and will occasionally become very high grade in the form of light weight yellow and grey vuggy bauxite which resembles the parent volcanic.

#### 4. Interburden Waste

In bauxite profiles of more than 10m thick, interburden waste bands also get thicker and can be distinguished in the 1m drilling intervals. The bands contain mostly kaolin with about 15-25% Gibbsite and are often mottled red and grey. The waste band usually occurs between the upper and lower bauxite zones but is not always present.

#### 5. Lower Bauxite Zone - Granular Bauxite

The Granular bauxite mostly consists of friable yellow vuggy bauxite which occurs below or at a lower elevation to the upper bauxite zone. The presence and density of vughs is a very good indicator for grade. This bauxite is low in hematite, goethite and limonite with a relatively moderate to high quartz and kaolin content. It is likely considering the geology, texture and chemistry that this bauxite could be derived from Jurassic Dolerite. Drilling till fresh dolerite is intersected should ensure that all bauxite has been found in each drill hole.

#### 6. Contact

The basal bauxite contact is fairly sharp either with fresh dolerite or a kaolin zone.

#### 7. Kaolin Zones

The kaolin zones occur between the upper and lower bauxite zone; and between the bauxite dolerite contacts in some cases. The kaolin zones consist of brown, red and grey kaolin clay, minor gibbsite and hematite.

#### 8. Basaltic Volcanics and Dolerite

Minor Tertiary Volcanics are mapped and outcrop to the south west of the bauxite with fresh and weathered dolerite mapped throughout the rest of the area. It is suspected that the basaltic volcanics have in-filled the area between dolerite hills and ridges with bauxite formed on top.

## 6 CONCLUSIONS AND RECOMMENDATIONS

Bauxite at the DL-130 deposit had an average thickness of 3-4m with virtually no overburden. The higher grade bauxite could be selectively mined and sieved to produce a moderate grade ore. This would significantly reduce the size of the deposit but improve salability.

The upper bauxite layer which is low grade contains a small amount of PDM. With the right characteristics this material may still have many commercial uses and could be process to produce a premium product from otherwise low grade ore.

The bauxite mineralisation at DL-130 occurs as lenticular bodies of bauxitised mafic volcanic and sub-volcanic rocks usually in small rises and hills.

Numerous bauxite targets have been identified in the immediate area, some of similar size and style. The tonnage potential in the Gunns plantation and surrounding area could be up to 10Mt.

### **Recommendations for future work**

The following exploration activities are planned for EL 9/2010:

- Detailed geological mapping, including geomorphological mapping and study of satellite images to define the areas with the best potential for bauxite.
- Systematic sampling of natural outcrops and exposures in road cuts of bauxite profile.
- Chemical analyses of samples, including specialist analyses to determine total and available alumina, total and reactive silica, loss and ignition and sieving.
- Drill testing of zones with best potential with an RC drill rig mounted on a light six wheel truck to get samples representing the whole bauxite profile.
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- Detailed analysis of assay results to determine assaying strategy for future drilling.
- Pit testing of the DL-130 target to test mineability of the deposit.
- Sieve testing to find optimal sieve size for Tasmanian bauxites.
- Testing new sample processing techniques to improve silica reduction.

## 7 ENVIRONMENT

### **Surface Disturbing Operations:**

ABx4's surface disturbing operations are in general, minimal.

Drilling is conducted by an RC drill rig mounted on a light 12 tonne truck. All drill holes are filled immediately after completion and photographed.

Existing tracks are used wherever possible. In the event that any specific access is required for drill rigs and/or service vehicles, track construction will be minimised and in accordance with directions of landowners or the department. Saplings and over hanging branches were removed when necessary and fallen trees and braches were pushed aside.

### **Surveys (archaeological, botanical):**

No surveys were undertaken within EL9/2010 within the current reporting period.

### **Rehabilitation:**

ABx4 has a policy that all drill holes and tracks are fully rehabilitated immediately after drilling. Drillholes are plugged using "octo-plugs" at a depth of 1.5m and re-filled using innocuous material from the drill hole.

## 8 EXPENDITURE

Table 1 – Exploration Activity and Expenditure Table for reporting period 14 September 2013 – 13 September 2014.

Exploration Category	Description of Activity	Quantity	Expenditure
<b>Office Administration</b>	General		\$1,500
<b>Authority Management</b>	Rehabilitation	\$5 per drillhole	\$585
	General		\$1,200
<b>Office Activities</b>	Data Compilation & Report Preparation inc. Compliance		\$1,500
<b>Field Activities</b>	<b>Geological Mapping</b>		
	Sampling		
	Equipment Hire	Vehicle Hire / Other	\$6,655
	Travel and Accommodation	Days	\$21,547
	Land Holder Liaison		
	Field Supplies		\$15,990
	Other	Freight charges	\$1,667
	<b>Geophysics</b>		
	Airborne		
	Type		
	Ground		
	Type		
	<b>Drilling (program cost)</b>		
	RAB/AC		
	RC	117 Holes for 1,061m	\$47,720
	Diamond		
	Other		
<b>Laboratory</b>	ME-XRF 13B, Reactive Silica & Available Alumina	602 Samples	\$64,172
<b>Salaries / Wages</b>	Employees & Contractors	Geologists	\$13,351
		Field Assistance	\$55,886
		Drilling Supervision	\$22,815
		Geochemical	\$499
		<b>Grand Total</b>	<b>\$255,086</b>

Note: Office Administration was met by parent company – Australian Bauxite Limited.

## 9 REFERENCES

Miss S.E. Close, Feb 1970, Scintillometer Search for Bauxite, Northwest Tasmania, *CRA Exploration Pty Limited*

Miss S.E. Close, June 1971, Final Report on Bauxite Search, Devonport E.L. 36/70 Tasmania, *CRA Exploration Pty Limited*

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