

**Second Annual Report**  
**on**  
**EL 37/2010 – WESTBURY**

**Reporting Period:** 7 November 2012 – 6 November 2013  
**Project Operator:** ABx4 Pty Ltd  
**Address:** Level 2, 131 Macquarie Street, Sydney, NSW, 2000  
**Author:** Tamara Coyte  
**Date:** 23 October 2013

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## CONTENTS

1	ABSTRACT .....	2
2	INTRODUCTION .....	4
3	REVIEW OF PREVIOUS WORK .....	7
4	EXPLORATION COMPLETED DURING THE REPORTING PERIOD .....	8
5	DISCUSSION OF RESULTS .....	15
6	CONCLUSIONS AND RECOMMENDATIONS .....	17
7	ENVIRONMENT .....	18
8	EXPENDITURE .....	19
9	REFERENCES .....	20

## TABLES

Table 1 – Exploration Activity and Expenditure Table for reporting period 7 November 2012 – 6 November 2013 .....	19
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## MAPS (NOTE: All Garmin maps use WGS – 84)

Map 1 – Location Map of EL 37/2010 “Westbury” .....	5
Map 2 – EL37/2010 additional relinquishment areas marked by red outline .....	6
Map 3 –Map showing location of EL 37/2010, areas to surrender and bauxite exploration areas .....	9
Map 4 – EL 37/2010 Rosevale Target areas with Drill hole locations .....	10
Map 5. Geological Map of the Rosevale Bauxite area .....	11
Map 6 – Bracknell Target - Drilling locations.....	12
Map 7. Geological map of the Bracknell bauxite area.....	13
Map 10 - Map of Targets around Westbury.....	14

## APPENDIX

Appendix A: Assay results for Drill Hole

Appendix B:Table of Drill Collars

Appendix C: Botanical Survey Rosevale Targets

Appendix D: Botanical Survey Bracknell Targets

# 1 ABSTRACT

## **Objective:**

Exploration Licence (EL) 37/2010 “Westbury” 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 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 lateritic weathering 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 12 tonne truck to get samples representing the whole lateritic weathering profile (from upper-most iron rich zone through alumina rich zone down into mottled and pallid saprolite zone).
5. Systematic drill testing at close spacings to obtain data for resource estimation in the best target areas defined by programme under 4.

## **Results:**

In November 2012- March 2013 Australian Bauxite Limited subsidiary company ABx4 completed drill testing of the Rosevale and Bracknell bauxite targets in EL 37/2010. The drilling was proposed to determine the grade and extent of bauxite in the area. A total of 75 holes were drilled for 851m.

The bauxite mineralization in the Westbury Tenement occurs on the edge of the Tertiary Basin hosted in Tertiary volcanics in contact with Jurassic Dolerite. The mineralisation occurs as channels or sheets of bauxitised volcanics, which drape the paleo topography.

The bauxite at Rosevale is predominantly composed of pink brecciated bauxite, which often contains amorphous pink gibbsite concretions and has retained strong volcanic textures such as volcanic breccias and relic crystal distribution and structures. At Bracknell the bauxite is massive red vuggy haematitic bauxite with minor PDM this is the most common type of bauxite in Tasmania.

Discovery of bauxite tonnage at Rosevale was relatively successful with an approximate estimated tonnage around 0.50Mt with great potential to increase with more drilling. The Identification of bauxite tonnage at Bracknell was unsuccessful with only 1 sample above typical cut off grade for low quality bauxite.

**ABSTRACT Cont****Recommendations for future work:**

Recommendation for future work include further:

- 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 lateritic weathering profile.
- Chemical analyses of samples, including specialist analyses to determine total and available alumina, total and reactive quartz, loss on ignition and sieving (+0.26mm) at 260 microns as required in the bauxite search.
- 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 lateritic weathering profile (from upper-most iron rich zone through alumina rich zone down into mottled and pallid saprolite zone).
- Systematic drilling at close spacings to obtain data for preliminary resource estimation in the best target areas defined by program.
- Sieve testing to find optimal sieve size for Tasmanian bauxites.
- Detailed analysis of assay results to determine assaying strategy for future drilling.

## 2 INTRODUCTION

### Exploration Rationale

ABX4 Pty Ltd the holder of Category 1 Exploration Licences EL37/2010a wholly owned subsidiary of Australian Bauxite Ltd. Australian Bauxite Limited (ABx) (ASX: ABZ) is an exploration company that holds the core of the Tasmanian Bauxite Province with all tenements selected on 3 principles:

- Quality – good quality bauxite with potential for significant resource tonnages;
- Proximity – easy access to infrastructure connected to export ports; and
- Accessibility – free of socio-environmental or native title land constraints.

Land within the tenement consists of freehold agricultural land with some forests and plantations. Bauxite targets are located mostly on freehold land.

EL 37/2010 “Westbury” 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 was 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

Bauxite mineralization is generally confined to hills, ridges, plateaus, and channels of bauxitised volcanoclastic which drape the paleo-topography. The bauxite was formed during the Lower Tertiary period when volcanism commenced and extreme tropical climatic conditions prevailed – at the boundary between the Cretaceous Era and the onset of the Tertiary Era which is often referred to as the K-T boundary commonly associated with the extinction of the dinosaurs, approximately 60 million years ago. The bauxite occurs on the old lateritic surface, where the processes of laterisation in the Tertiary period has removed silica from the rock, leaving mainly Aluminium and Iron rich minerals behind.

### Tenement Information

EL 37/2010 “Westbury” was granted on and from 7 November 2011 for a period of 5 years to ABx4.

This is the Second Annual Report for the reporting period 7 November 2012 - 6 November 2013 incorporating some results from work completed during the first year of tenure.

Total area of the original licence is 218sq km and its Mineral Category is 1 – Metallic Minerals and Atomic Substances. ABx4 however has surrendered 44sq km of the tenement 2012 and is relinquishing an additional 77sq km in 2013 bringing the total area to 102sq km.

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

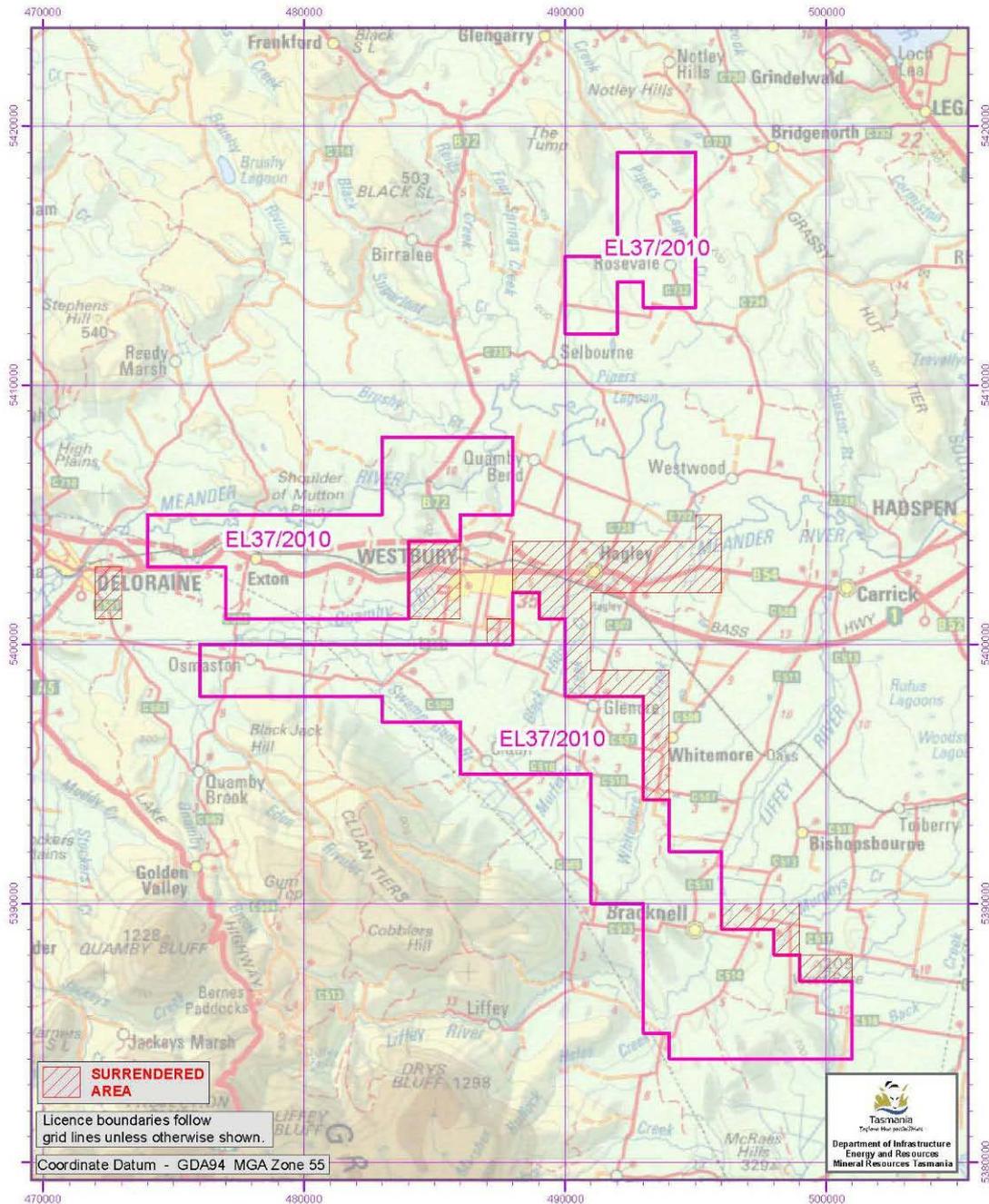
EL 37/2010 “Westbury” is 100% owned by ABx4 which is a fully owned subsidiary of Australian Bauxite Limited.

### Location

The Westbury tenement is centred on the town of Westbury and is approximately 68km from Bell Bay and 114km from Burnie which are both large operation ports. There is also a railway siding just south of Hagley next to the highway and away from residential areas. The Westbury tenement is ideally located for both rail and road transport to the port.

**INTRODUCTION Cont**

The majority of the land usage in the Westbury tenement is Plantation, natural forest and agricultural land with land categories 3-6. Gaining access to farming properties has been very successful; with all landowners contacted by ABx4 allowing exploration on their land.



**EL37/2010 179km<sup>2</sup>**  
**Vicinity of Westbury - Bracknell**

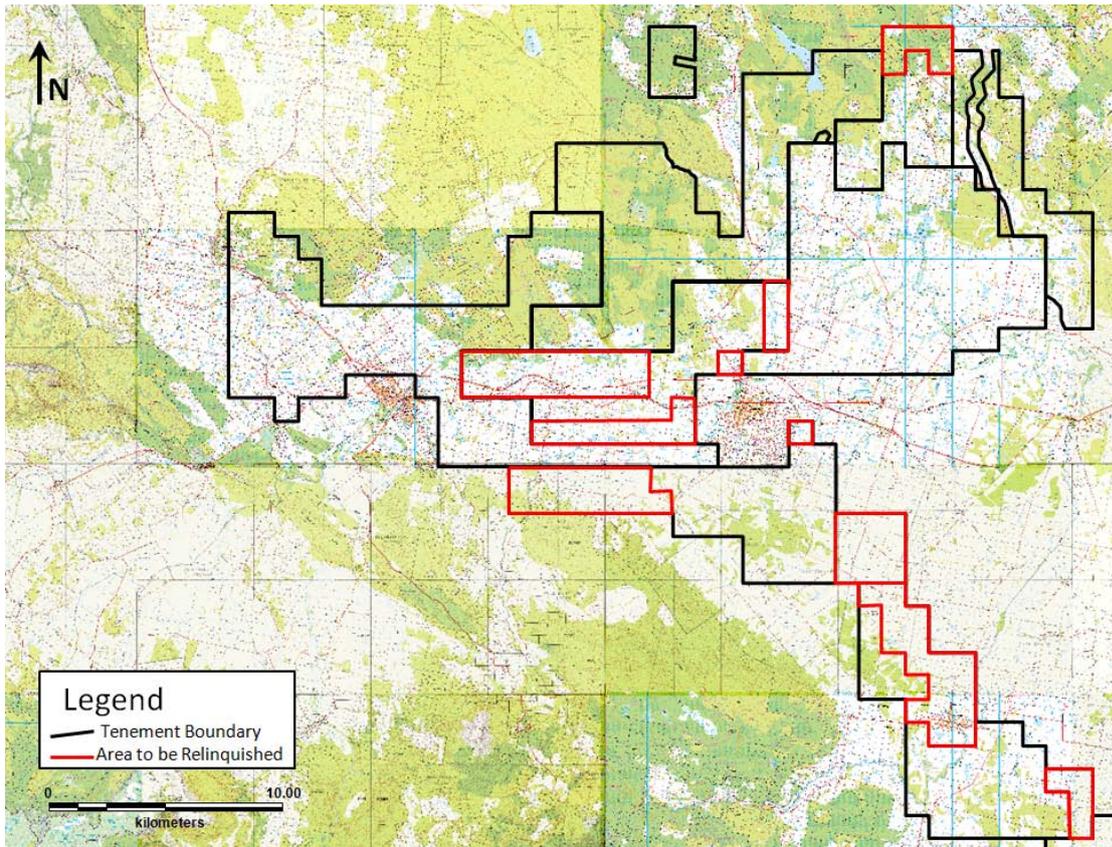


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Map 1 – Location Map of EL 37/2010 “Westbury”

**INTRODUCTION Cont**



Map 2 – EL37/2010 additional relinquishment areas marked by red outline

### 3 REVIEW OF PREVIOUS WORK

#### Prior to Current Tenement

Historical references for bauxite in the Westbury Tenement are reported by H.B. Owen in his book "Bauxite in Australia", 1954, which was the basis for Initial exploration of the area.

- Owen H.B, (1954), *Bauxite in Australia*, Bulletin 24
- Owen H.B (1946). *Rosevale, Country Devon, Tasmanian*. Bureau of Mineral Resources

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:

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

#### Summary of Work Completed in 1st Year of Tenure

Exploration in the Westbury tenement successfully identified multiple bauxite targets. The deposits are located in areas generally considered poor quality land and have been left forested or put to plantation. Four significant bauxite zones have been Identified; Bracknell target located south west of Bracknell, Rosevale Target West of Rosevale, Birralee Rod Target north of Westbury and the Westbury targets just south of Westbury.

Work Completed during the first year of Tenure:

1. Detailed geological mapping, including geomorphological mapping and study of satellite images to define the areas with the best potential for bauxite.
2. Systematic sampling of natural outcrops and exposures in road cuts of lateritic weathering profile.
3. Chemical analyses of samples, including specialist analyses to determine total and available alumina, total and reactive quartz, loss on ignition and sieving (+0.26mm) at 260 microns as required in the search of bauxite.
4. Conducting Environmental and Heritage Surveys of the prospective areas.
5. Planning, preparing and submitting work plans for drilling of prospective areas.

## 4 EXPLORATION COMPLETED DURING THE REPORTING PERIOD

### Literature Review

Two reports were composed by CRA:

- Close, S.E. (1970). *Recommendations for Testing E.L. 36/70, Devonport, Tasmania*. CRA Exploration Pty Ltd.
- Close, S.E. (1970). *Scintillometer Search for Bauxite, Northwest Tasmania*. CRA Exploration Pty Ltd.

Geological Maps composed by Mineral Resources Tasmania:

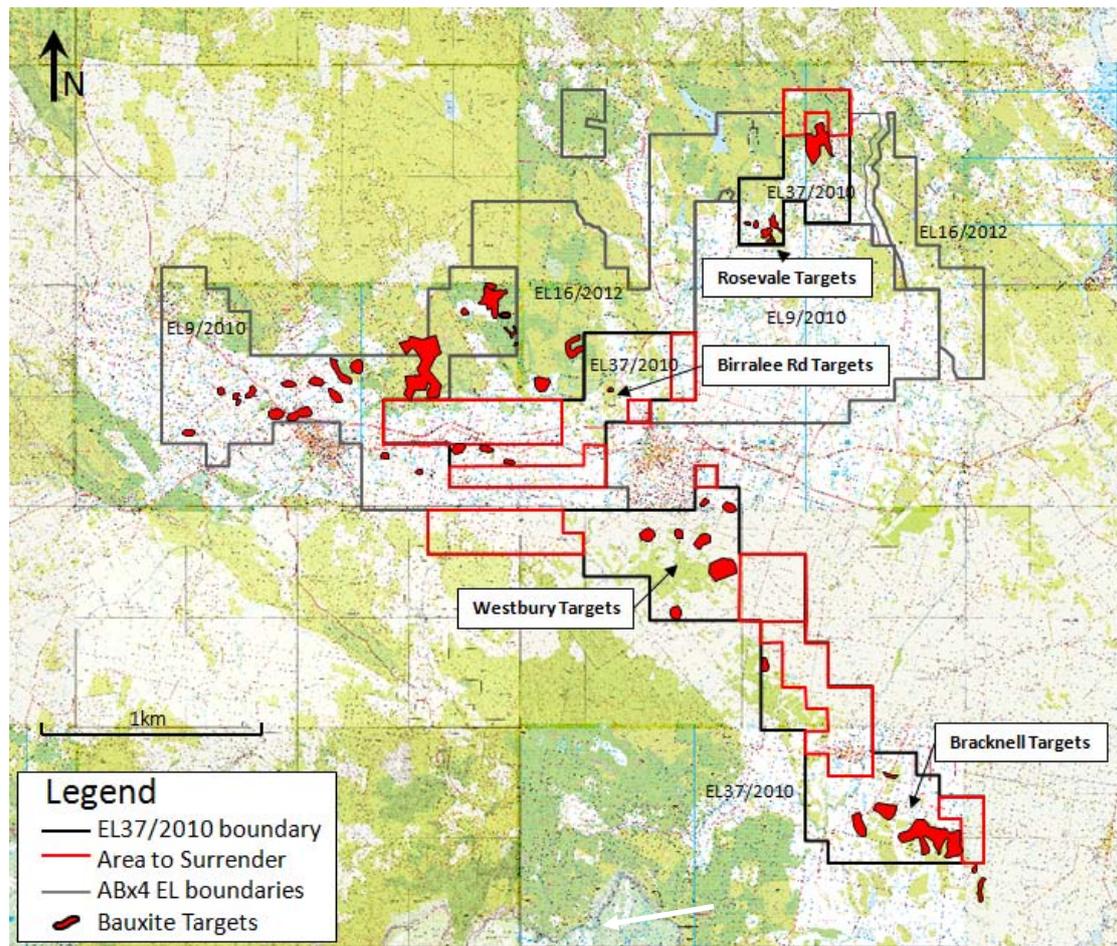
- M. Vicary (Compiler) 2004. *Digital Geological Atlas 1:25000 Series, Sheet 4841 Bridgenorth*. Mineral resources Tasmania.
- M. Vicary (Compiler) 2004. *Digital Geological Atlas 1:25000 Series, Sheet 4838 Liffey*. Mineral resources Tasmania.

Two report composed by H.B. Owen for the Government in 1946 & 1954, which was the basis for Initial exploration of the area.

- Owen H.B, (1954), *Bauxite in Australia*, Bulletin 24
- Owen H.B (1946). *Rosevale, Country Devon, Tasmanian*. Bureau of Mineral Resources

**EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont**

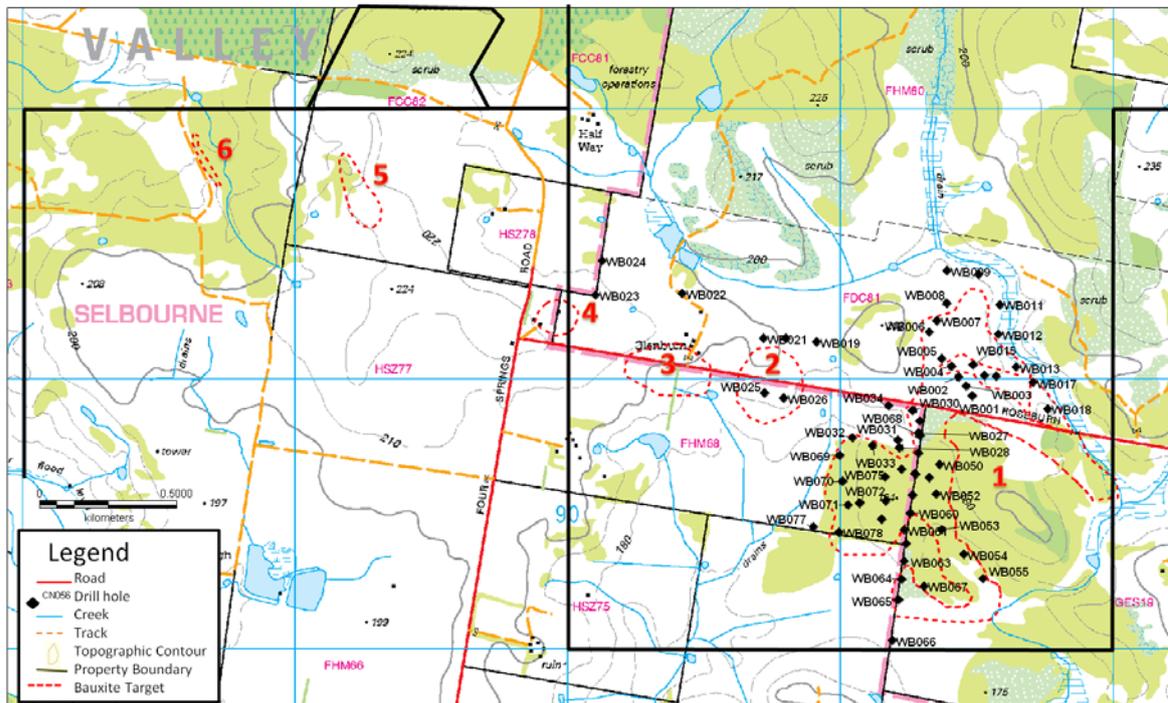
**Regional Exploration Activities**



Map 3 –Map showing location of EL 37/2010, areas to surrender and bauxite exploration areas

## EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont

## Rosevale Targets



Map 4 – EL 37/2010 Rosevale Target areas with Drill hole locations

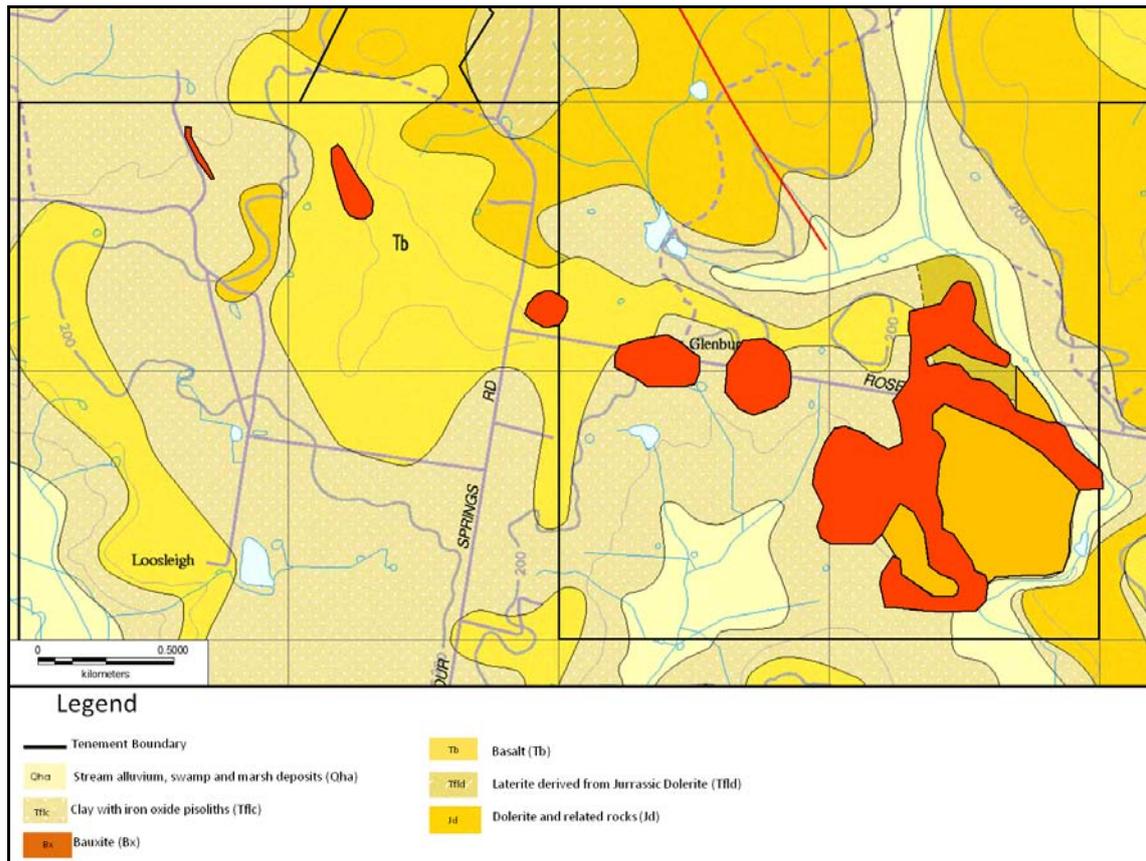
In November 2012- March 2013 Australian Bauxite Limited subsidiary company ABx4 completed drill testing of the Rosevale bauxite target in EL 37/2010 located 3km South west of Rosevale. The drilling was proposed to determine the grade and extent of bauxite in the area. A total of 62 holes were drilled for 733m. Drilling was undertaken using the contracting company Underdales who provided Air core rig mounted on a light Mitsubishi 12 tone truck with a driller and offsider. Drilling was carried out in a semi-random pattern with typical spacing's between 75-150m. Drilling recovery is generally good and consistent and all drill hole locations were surveyed at the time of drilling using hand held GPS, with accuracy of  $\pm 5m$ .

Due to an irregular contact with the hard Doleritic basement and inconsistent overburdens, hole depth varied from 2m to 39m depending on the Hanging wall and Foot wall contacts. Due to thick overburden in and the porosity and permeability of bauxite; the bauxite was saturated in some areas which made bauxite identification and drilling conditions difficult.

Most samples from drill holes were tested using the hand held Niton XRF. 88 samples which had positive Niton results have been submitted to ALS for sieved analysis and an additional 61 samples were submitted for whole analysis.

In addition to Niton and ALS sample; bulk samples were taken of any bauxite material as the holes were drilled to reduce double handling of the samples bags. These are stored separately for metallurgical testing at a later stage if needed.

**EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont**

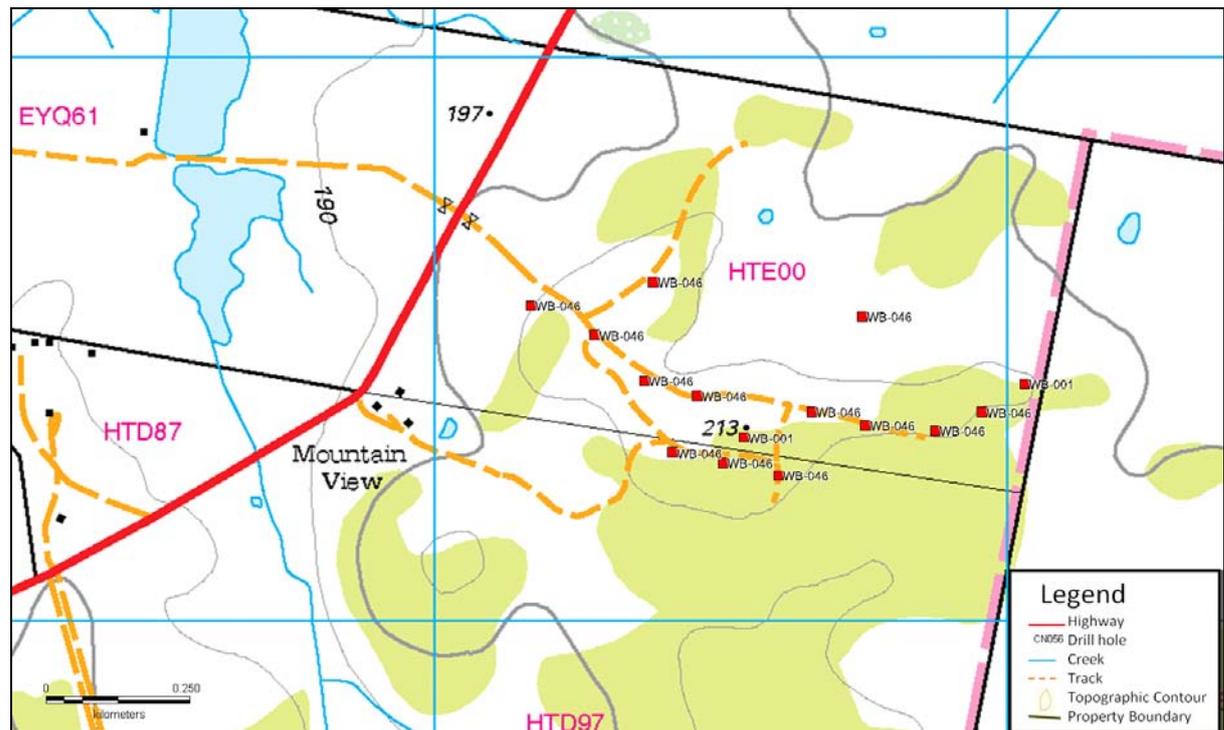


Map 5. Geological Map of the Rosevale Bauxite area

Bauxite geology overlying Base map: VICARY, M. (compiler) 2004. Digital Geological Atlas 1:25 000 Series, Sheet 4841 Bridgenorth. Mineral Resources Tasmania

The complete assay results can be found in Appendix A.

## EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont

**Bracknell Targets**

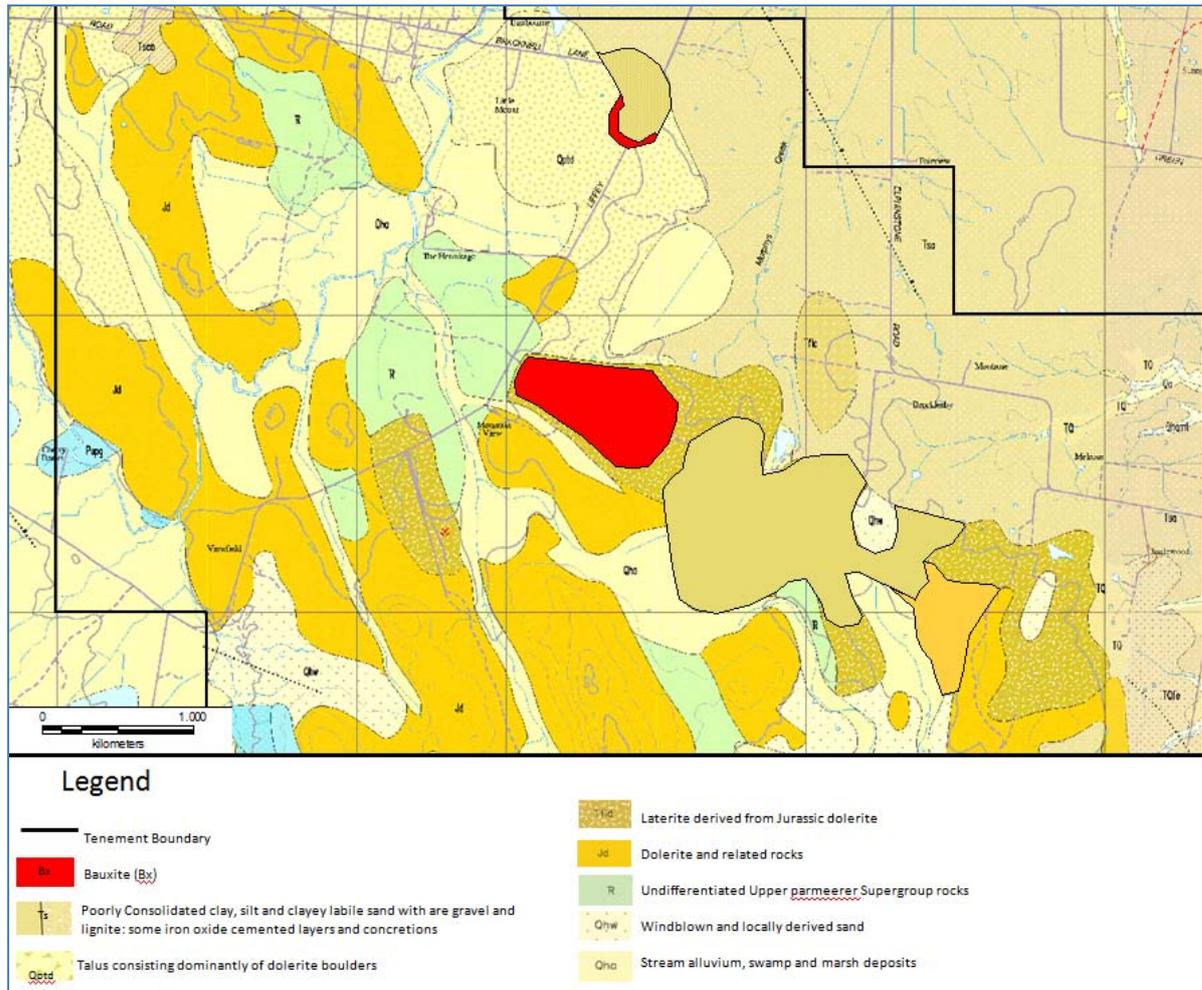
Map 6 – Bracknell Target - Drilling locations

In December 2012 Australian Bauxite Limited subsidiary company ABx4 completed drill testing of the Bracknell bauxite target in EL 37/2010 located 18km South of Westbury. The drilling was proposed to determine the grade and extent of bauxite in a short 1 day program. 13 holes were drilled for a total of 118m. Drilling was undertaken using the contracting company Underdales who provided Air core rig mounted on a light Mitsubishi 12 tone truck with a driller and offsider. Drilling was carried out in a semi-random pattern with typical spacing's between 75-150m. Drilling recovery is generally good and consistent and all drill hole locations were surveyed at the time of drilling using hand held GPS, with accuracy of  $\pm 5m$ .

WB046 was the only hole it intersect significant bauxite. The bauxite and Bracknell had no overburden or significant soil cover and was very thin. Drill hole depth was consistently 8-10m depth.

All holes were logged by the ABx geologist supervising the drilling and all samples were first photographed and then analysed by handheld Niton XRF onsite before samples were selected to go to the lab. 13 samples have been submitted to ALS for sieved analysis and an additional 3 samples have been submitted for whole analysis.

**EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont**



Map 7. Geological map of the Bracknell bauxite area

Bauxite geology overlying Base map: VICARY, M. (compiler) 2004. Digital Geological Atlas 1:25 000 Series, Sheet 4838 Liffey, Mineral Resources Tasmania.



Photo 1 (left)- Example of the Texture at Bracknell. Red Haematic bauxite with long yellow vughs filled with paler bauxite. Similar to Blackwood and Nile road bauxites

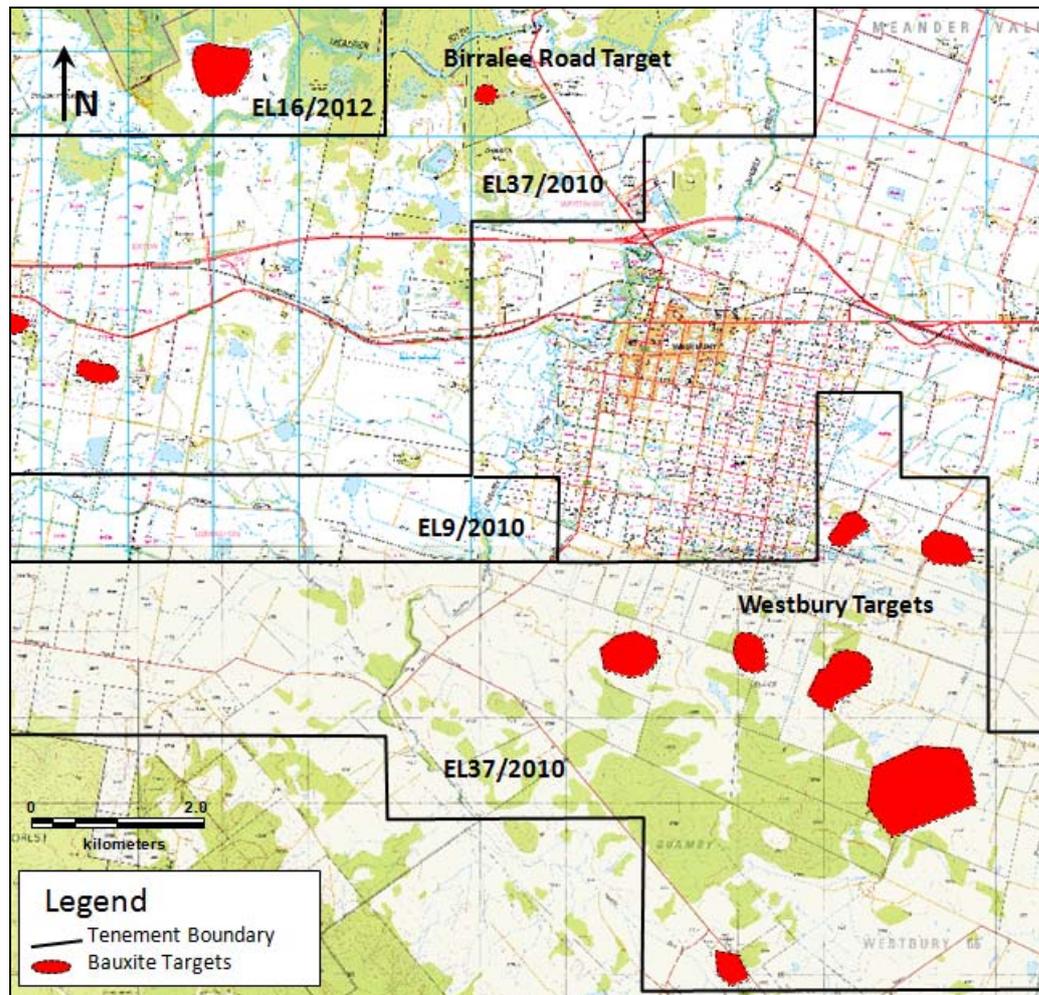


Photo 2 (above)- Piles of hard cap bauxite removed from the quarries at Bracknell

**EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont**

**Westbury Targets & Birralee Road Target**

The Westbury bauxite and Birralee bauxite occurrences are identified in mineral occurrence maps of Tasmania and briefly mentioned in Owen H.B book Bauxite in Australia. The Targets south of Westbury has had no exploration completed by ABx due to its proximity to the Westbury township. These bauxite deposits will not be drilled and possibly never mined. The Birralee Road Target is located north of the highway and occurs close to other know bauxite localities. This area will be a priority bauxite target in 2014.



Map 8 - Map of Bauxite Targets around Westbury

## 5 DISCUSSION OF RESULTS

### Geology and Structure

The bauxite mineralization in the Westbury Tenement occurs on the edge of the Tertiary Basin hosted in Tertiary volcanics in contact with Jurassic Dolerite. The mineralisation occurs as channels or sheets of bauxitised volcanoclastics, which drape the paleo topography. The bauxite most likely formed in the Lower Tertiary period when volcanism commenced and extreme wet-tropical climatic conditions prevailed. The bauxite occurs on the old surface, where processes in the Tertiary period has removed silica from the rock, leaving mainly Aluminium and Iron rich minerals behind. At Rosevale Relatively soon after the bauxite was formed sedimentary layers were deposited in depressions resulting in sedimentary formations over the top of the bauxite.

The bauxite at Rosevale occurs as a sheet of bauxite which drapes the paleo topography and dips to the south. The bauxite has been eroded where it is exposed in the North and East of the deposit. The Bauxite mostly consist of high grade volcanogenic bauxite lying above clay with a dolerite basement. The overburden layers consist mostly of peat and gray clay.

The Bracknell Bauxite deposit is a thin sheet of bauxite which drapes the western side of a subtle hill in the topography and has no top soil. At some stage it may have been extensive but was quarried 30yrs ago for road base to build the Poatina Rd. The bauxite layer has almost completely been removed from this area but still occurs where hard cap outcrops in the old pit floor. The Bauxite body would have been elongate in a east-west direction up to 1km long and 400m wide and dipping in a southerly direction.

### Bauxite types and Mineralogy

The bauxite at Rosevale is predominantly composed of pink brecciated bauxite, which often contains pink gibbsite concretions and mag-haemite pisolites. Gibbsite forms as either, clear white crystals up to 1mm or as amorphous pink gibbsite – the pink colour being fine grained particles of hematite. The other minerals are hematite-rich masses, minor clay kaolinite clay and titania minerals including anatase and trace ilmenite. This bauxite has retained strong volcanic textures such as volcanic breccias and relic crystal distribution and structures.

At Bracknell the bauxite is massive red vuggy haematitic Bauxite with minor PDM. It is a gibbsite-rich bauxite mostly in an amorphous phase which is often vuggy with iron depletion around the rims of the vughs and enrichment of iron in zones between vughs. The Iron is mostly in the form of hematite, mag-haemite pisolites and sometimes contains goethite banding.

Typically, Pisolitic Bauxite is present as the upper layer, and is exposed at surface as a hard cap which is iron-enriched and relatively dense. This is normal gibbsitic bauxite with black, glassy PDM emery nodules comprising up to 10%. "PDM" stands for "poorly diffracting material" and was first tested at Taralga to determine the composition.

All types of bauxite can contain small amounts of quartz grains but is usually less than 5%. Quartz is an inert mineral in the processing of bauxite at low temperature, and the only deleterious trait is it dilutes the ore slightly.

**EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont****Grade, Sieve Yields and Tonnage**

Discovery of bauxite tonnage at Rosevale was relatively successful with an approximate small tonnage around 0.50Mt with great potential for increase. At Rosevale bauxite intersects were generally inconsistent, switching between high grade bauxite and low grade Iron rich bauxite. The bauxite responds well with sieving and has exceptional recovery at 0.26mm. At a larger screen size it could be ideal for mining.

The Identification of significant bauxite tonnage at Bracknell was unsuccessful with only 1 sample above typical cut off grade for low quality bauxite. The effectiveness of sieving could not be determined from the 3 samples that were analysed both whole and sieved. Hence no measurable tonnage is present nor can an average grade be determined. The bauxite was almost completely removed with the quarrying 30 years ago. The thickest zone of bauxite appears to the west of a small hill in the deposit where the majority of the hard cap has been stock piled and more hard cap is exposed in the pit floor.

**EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont****6 CONCLUSIONS AND RECOMMENDATIONS**

Exploration in the Westbury tenement has been successful with multiple bauxite targets identified and some partially drilled. The deposits are located in areas generally considered poor quality land and have been left forested or put to plantation. Exploration in 2014 will be focused on completing drill testing of the Rosevale area and regional exploration of other bauxite targets.

Recommendations for future work include:

1. Detailed geological mapping, including geomorphological mapping and study of satellite images to define the areas with the best potential for bauxite.
2. Contacting landowners to gain access to properties for exploration.
3. Systematic sampling of natural outcrops and exposures in road cuts of lateritic weathering profile.
4. Chemical analyses of samples, including specialist analyses to determine total and available alumina, total and reactive quartz, loss on ignition and sieving (+0.26mm) at 260 microns as required in the search of bauxite.
5. Conducting Botanical and heritage surveys and submitting for work programs focused on Drilling.
6. 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 lateritic weathering profile (from upper-most iron rich zone through to the alumina rich zone and down into the mottled and pallid saprolite zone).

**EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont****7 ENVIRONMENT****Surface Disturbing Operations:**

ABx4's surface disturbing operations are minimal.

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

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 any landowners who may be affected.

**Surveys (archaeological, botanical):**

Three botanical surveys have been conducted by Philip Milner Consultant Pty Ltd covering the following areas within EL 37/2010.

1. Rosevale Main Target Area
2. Bracknell Target Area

Please refer to Appendix C&D for the complete Surveys.

**Rehabilitation:**

All drill holes are filled immediately after completion.

All landholders sign a rehabilitation statement at the completion of each program confirming their satisfaction with the rehabilitation completed.

## 8 EXPENDITURE

Table 1 – Exploration Activity and Expenditure Table for reporting period 7 November 2012 – 6 November 2013

Exploration Category	Description of Activity	Quantity	Expenditure
<b>Office Administration</b>			
<b>Authority Management</b>	Land Holders Compensation		
	Tenement management		\$1,594
	Rent		
<b>Office Activities</b>	Data Processing & Interpretation		
<b>Field Activities</b>	<b>Geological Mapping</b>	Days or Ha	
	Sampling	Number of samples	\$2,690
	Equipment Hire	Vehicle hire and petrol	
	Accommodation/Field Camp	Days	\$8,754
	Travel		\$2,474
	Land Holder Liaison		
	Field Supplies		
	Other	Freight Charges	\$128
	<b>Geophysics</b>		
	Airborne		
	Type	Line kms	
	Ground		
	Type	Line kms	
	<b>Drilling (program cost)</b>		
	RAB/AC	Holes/total metres	
	RC	Holes/total metres	\$28,956
	Diamond	Holes/total metres	
	Other	Holes/total metres	
<b>Laboratory</b>	ME-XRF 13B, Reactive Silica Available Alumina	Samples	\$11,583
<b>Salaries / Wages</b>	Contractors - consultants		\$6,202
	Contractors - employees		\$40,411
	Contractors - field assistants		\$4,313
		<b>Grand Total</b>	<b>\$107,105</b>

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

## 9 REFERENCES

T Coyte, 2012, *First Annual Report EL37/2010 Westbury, 31 October 2012*, ABx4 Pty Ltd

H.B. Owen, 1954, *Bauxite in Australia*, Bulletin 24

H. B. Owen 1946. *Rosevale, Country Devon, Tasmanian*. Bureau of Mineral Resources

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