

# **First Annual Report**

**on**

## **EL 3/2012 – ROSS**

**Reporting Period:** 11 September 2012 – 10 September 2013

**Project Operator:** ABx4 Pty Ltd

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**Date:** 10 September 2013

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# 1 ABSTRACT

## Objective:

Exploration Licence (EL) 3/2012 “Ross” 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 location of potential bauxite deposits prior to assessing 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. Planning of drilling programs on outcrops considered to be of sufficient quality to be quantified.

## Results:

A detail study of geological mapping, satellite images and literature was conducted over the first half of the year to define the areas with the best potential for bauxite. Exploring on foot was undertaken in private properties and public road cuttings focusing on the old ternary surface, analysing erosional patterns and looking for escarpments exposing red soil on a number of private properties. Either brief or detailed reconnaissance was conducted on Quorn Hall, Meadowbank and Beaufront. Areas where there is no bauxite potential, towns, settlements, rivers, mountains and exclusion areas are being considered for relinquishment.

Exploration in the Ross tenement has been successful with approximately 3 areas of bauxite already identified and drilling planned on the target areas. The deposits are located in agricultural properties and are generally considered poor quality farm land. ABx4 is partially relinquishing 70sq km of the tenement with the focus on removing towns, settlements, rivers and mountain areas from the current tenement. Many of these areas are unlikely to have bauxite because of increased amounts of erosion. In the other areas it would not be practical to explore because it would constrain any potential developments if bauxite was found.

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

Recommendation for future work include further:

- Further detailed geological mapping, including geomorphological mapping and study of satellite images to define the areas with the best potential for bauxite, with 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 drive 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 spacing to obtain data for preliminary resource estimation in the best target areas defined by program.
- Systematic sampling and drilling at waypoints with best bauxite potential.
- 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

Exploration Licence (EL) 3/2012 "Ross" 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.

Study of geomorphology based on a Digital Terrain Model led to the conclusion that Tertiary basalt flows are preserved on remnants of old surface which form larger plateaus or smaller 'mesas'.

Bauxite formed in certain layers of Tertiary basaltic volcanics. Process of formation of bauxite remains a matter of discussion between company geologists. However practical experience is that in areas like Penrose (SE NSW) bauxite is found as erosional remnants in higher parts of the terrain. Farmers generally decide to leave trees in areas with bauxite because the ground is not suitable for cultivation. If trees have been cut down, bracken tends to grow in areas with bauxite so that the bauxite areas are not suitable for grazing. By mining bauxite and rehabilitation one can increase the value of land.

In exploration for bauxite practical criteria like geomorphology and study of vegetation are used instead of geological theories. Company geologists and field technicians have acquired a great deal of practical experience in finding bauxite and they use a Niton instrument to test samples to determine whether they are bauxitic to speed up exploration for new deposits.

### Geological Setting

In the Ross tenement area, the occurrences of bauxite are located in areas with Tertiary basaltic volcanics.

Study of geomorphology based on a digital terrain model led the company's geologist to the conclusion that Tertiary basaltic volcanics are preserved on remnants of old surface which form larger plateaus or smaller 'mesas'.

The bauxite has formed in the lower areas of central Tasmania between two massive plateaus of Dolerite. The large valley is made up of Dolerite, young volcanics, recent sediment and some sandstone which have been extensively lateritised. There is a small amount of older volcanics in the bauxite areas which are believed to be the source rock for the bauxite. In the "Ross" tenement, most bauxite and the underlying sediments have been masked by a thick deposit of wind-blown sand of Post Tertiary Age. This sand appears equigranular and is postulated to have been deposited during a period "Arctic" glacial climate.

### Tenement Information

EL 3/2012 "Ross" was granted on and from 11 September 2012 for a period of 5 years to ABx4 Pty Ltd (ABx4).

This is the First Annual Report for the reporting period 11 September 2012 – 10 September 2013 incorporating the results of work completed during the first year of tenure.

Total area of the original licence is 174sq km and its Mineral Category is 1 – Metallic Minerals and Atomic Substances. ABx4 however is relinquishing 70sq km of the tenement bringing the total area to 104sq km.

## **INTRODUCTION Cont**

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

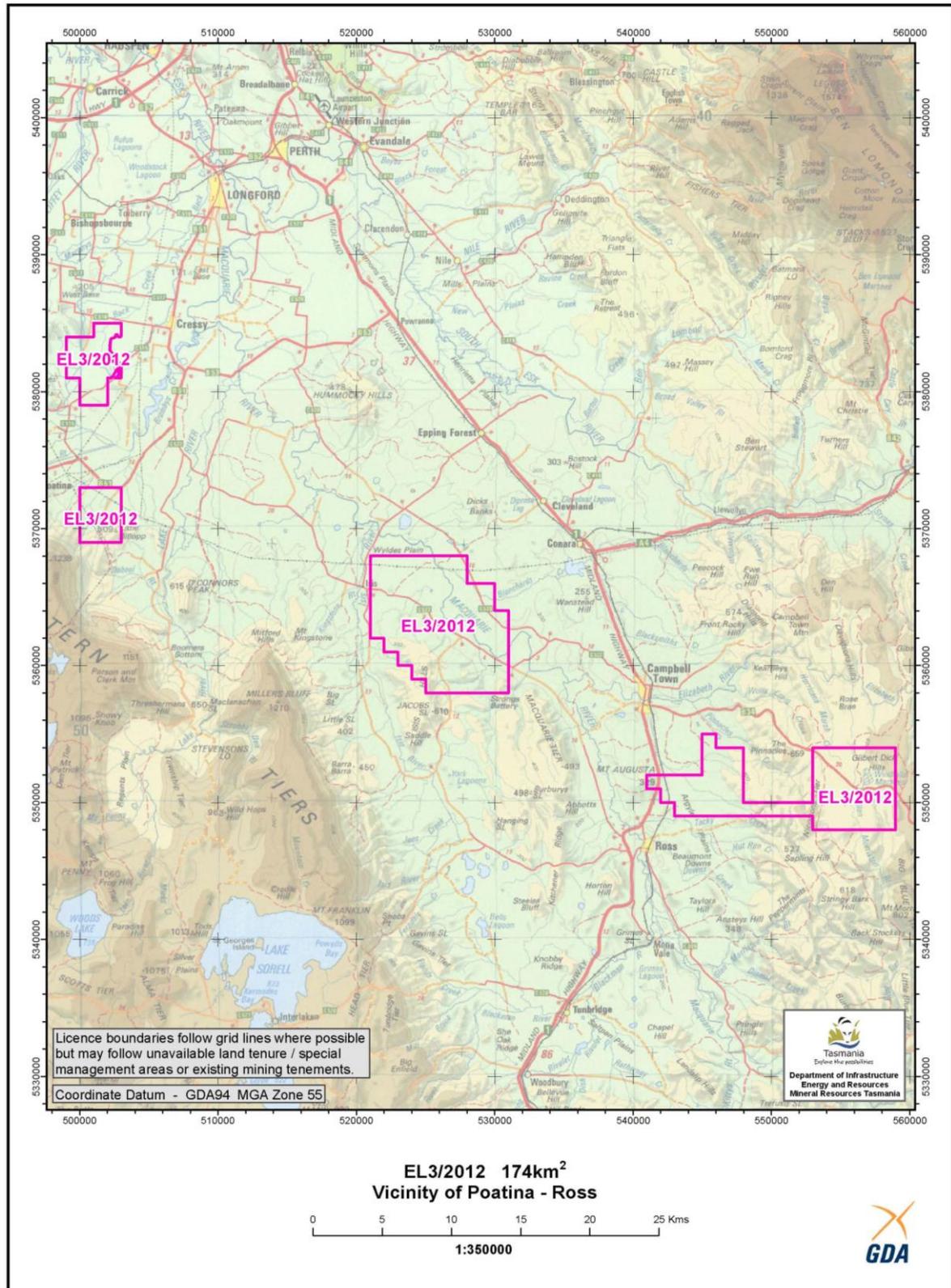
EL 3/2012 “Ross” is 100% owned by ABx4 which is a 100% owned subsidiary of Australian Bauxite Limited.

### **Location**

The Ross tenement is comprised of 4 separate area units, the second largest located 10 km to the south-east and 10 km directly west of the town of Campbell Town the other two lesser areas are located in a 10 km radius to the west of Cressy (45 km to the north-west of Campbell Town). The tenement is approximately 90km from the large operating port at Bell Bay and the Midlands highway passes through the centre of the tenement. The Ross tenement is ideally located for both rail and road transport to the port. EL 3/2012 is close to the City of Launceston which could offer a wide range of services and skilled work force.

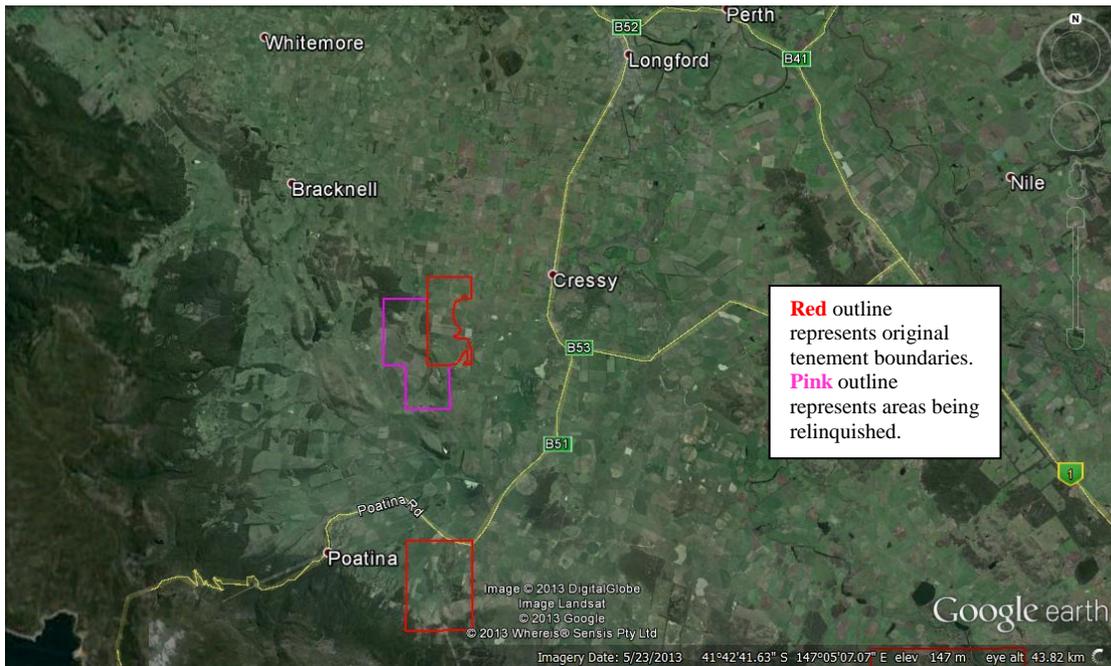
The majority of the land usage in the tenement is agricultural land with land categories 4-6, with some small private reserves and natural forest. Gaining access to farming properties was very successful, most landowners contacted by ABx4 allowed the geological assessment team to operate on their property.

**INTRODUCTION Cont**

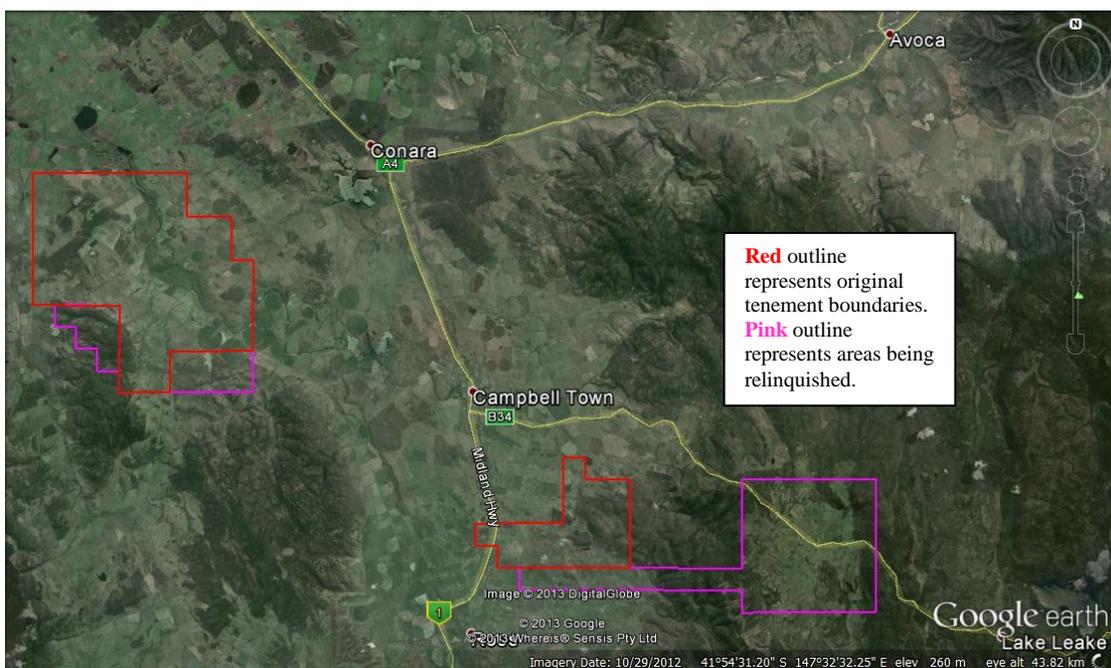


Map 1 – Location Map of EL 3/2012 “Ross”

**INTRODUCTION Cont**



Map 2 – EL3/2012 relinquishment areas marked by pink outline



Map 3 – EL3/2012 relinquishment areas marked by pink outline

ABx4 is partially relinquishing 70sq km of the tenement as seen on Map 2 and Map 3 by pink outlines with the focus on removing towns, settlements, rivers and mountain areas from the current tenement. Many of these areas are unlikely to have bauxite because of increased amounts of erosion. In the other areas it would not be practical to explore because it would constrain any potential developments if bauxite was found.

### **3 REVIEW OF PREVIOUS WORK**

#### **Prior to Current Tenement**

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

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

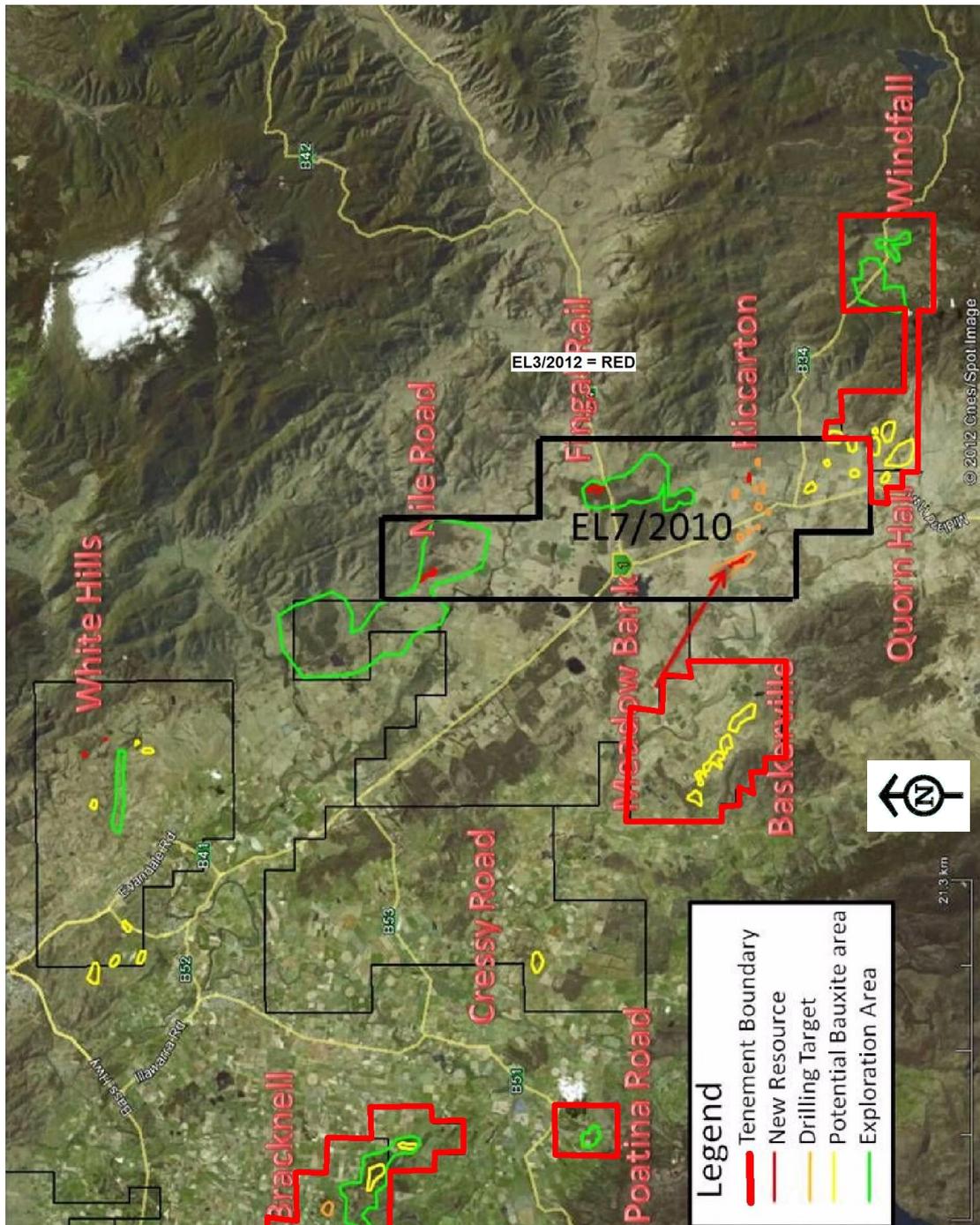
**EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont**

**4 EXPLORATION COMPLETED DURING THE REPORTING PERIOD**

**Literature Review**

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

**Regional Exploration Activities**



Map 4 – Map from Google Earth showing location of EL3/2012 Ross (red outline) and adjacent tenements held by ABx4 (black outline)

## **EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont**

### **Bauxite Targets and Proposed Relinquishment Area**

A detail study of geological mapping, satellite images and literature was conducted over the first year of tenure to define the areas with the best potential for bauxite. Exploring on foot was undertaken in private properties and focussed on the old ternary surface masked by Aeolian sands, analysing deposition feature patterns and looking for escarpments exposing red soil on a number of private properties. Either brief or detailed reconnaissance was conducted on; Quorn Hall, Meadowbank and Beaufront. Areas where there is no bauxite potential - towns, settlements, rivers and mountain areas are being relinquished. Poatina Road, Baskerville and Bracknell portions of the tenement were explored mostly along public roads to ascertain whether red soils observed on satellite images were bauxitic or in fact Iron rich laterites. Most areas visited were lateritic and a number of smaller potentially bauxitic deposits were outlined for exploration once the entry permits were in place. ABx4 has applied to partially relinquish 70sq km as seen by pink outlines on Map 2 and Map 3.

### **Poatina/ Baskerville and Bracknell Public Road Targets**

In the first year of tenure extensive road surveys were undertaken within the satellite areas of EL 3/2012. The bauxite mineralisation occurs as regolith remnants on low ridges and hills formed from weathering/bauxitisation of Tertiary basaltic volcanoclastic deposits. Jurassic dolerite forms the basement to the Tertiary volcanism. The deposits extend into a line of hill to the south-west of the road and may add additional tonnage to resources located in other tenements held by ABx4 in the vicinity. Large exploration areas have been identified in a north-west to south-east trend following the escarpment. This area is a high priority for further exploration.

### **Windfall Public Road Targets**

Extensive exploration was carried out in the Windfall Target area and no bauxite outcrops were located. This portion of EL 3/2012 has been flagged for relinquishment.

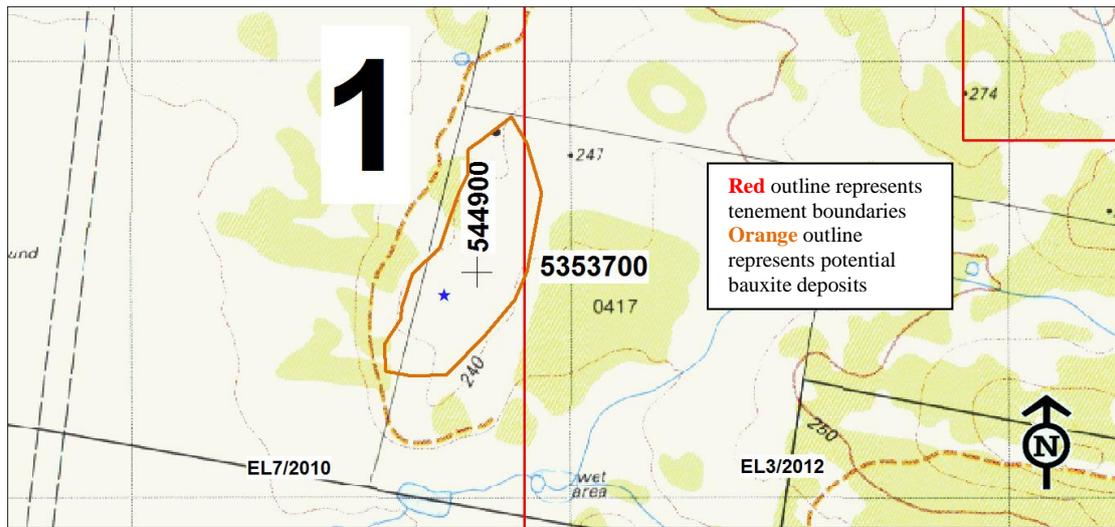
### **Quorn Hall Targets**

The Ross Targets occur on the Quorn Hall and Beaufront properties SE of Ross. The area once contained native vegetation but most has been destroyed by weeds and grazing. In the first year of tenure detailed mapping was undertaken outlining 4 areas of bauxite exposure which were exposed on the crest of sand dunes. The majority of the bauxite is hidden under overlying Aeolian Sands which cover the majority of the area explored within EL 3/2012. Additional deposits are likely as the deposits indicate the geomorphological remains of other features which could yield bauxite deposits below.

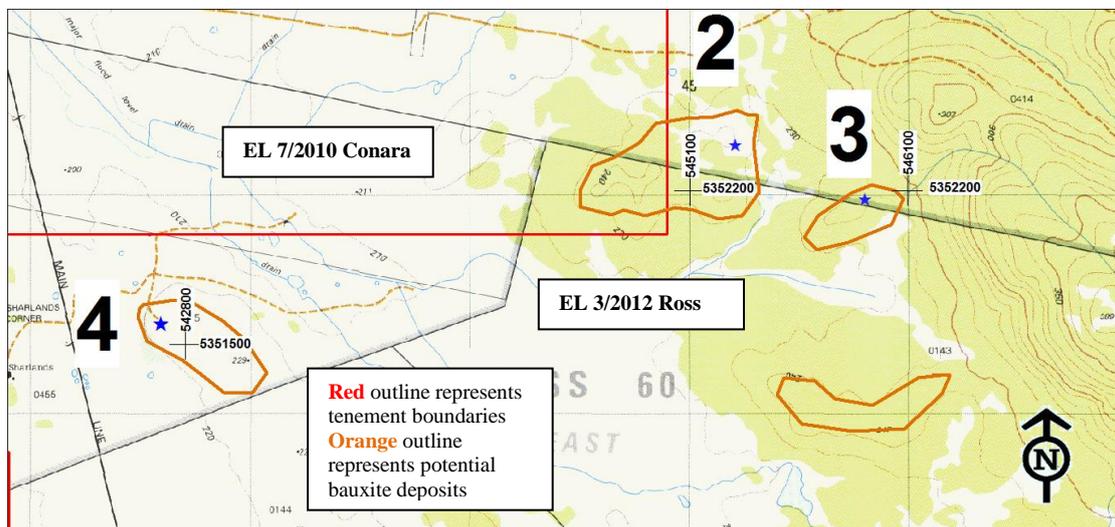
The deposits appear to contain thick zones of gibbsitic bauxite which will be tested by drilling. The bauxite layer contains consistent Iron and clay zones often forming between the high grade layers of gibbsitic bauxite as identified at Meadow Bank and Conara and shown in figure 1. In some cases the bauxite is forming in the lower parts of terrain and there is potential for bauxite to extend to the west in the lower ground and into the Quorn Hall property and EL 7/2010.

Other deposits were located by researching the quarry sites for World War 2 runway and road construction. Two WWII quarries were located both were of bauxitic origin, only one (Target 4 Fig. 7) is located within EL 3/2012.

**EXPLORATION COMPLETED DURING THE REPORTING PERIOD Cont**



Map 5 – Potential Bauxite Deposits Quorn Hall



Map 6 – Potential Bauxite Deposits Quorn Hall, Beaufront Properties

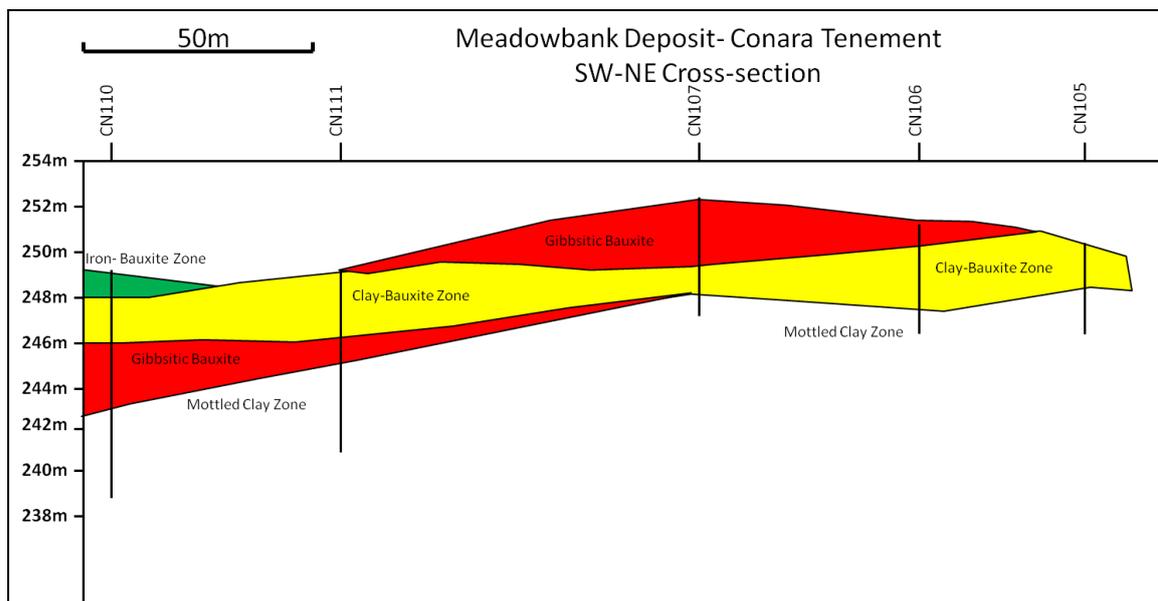


Figure 1 – Typical Cross-Section of Meadowbank/Rosedale Deposit (Similar to those in EL 3/2012)

## 5 DISCUSSION OF RESULTS

The bauxite mineralization in the Central Midlands and Ross region is generally confined to hills, ridges and plateaus of weathered/bauxitised basaltic volcanoclastic deposits. The bauxite is only partially continuous along the ridge tops and seems to form pockets of bauxite on the old surface. The original layer may have been more extensive but could have eroded away over time. The bauxite is sometimes pisolitic at surface (Figure 2) with massive red/yellow vuggy gibbsitic bauxite making up most of the lower mineralized layer. In some zones, probably in areas of increased drainage; a fine grained yellow friable bauxite forms which is difficult to identify because of its similarity to clay. The fine grained bauxite is highly gibbsitic, low in iron and slightly higher in reactive silica. The bauxite zone also contains zones of increased iron and clay; also likely associated with drainage patterns. Iron rich layers most often form near surface or on the edge of the bauxite deposit. The clay (reactive silica) rich bauxite forms an inter-burden waste or low grade bauxite usually between two layers of gibbsitic or iron rich bauxite. The underlying contact zone "Mottled Zone" is sometimes defined by red and white irregular mottled layer sometimes with cemented lumps of red iron rich clay just below the bauxite layer. In lower parts of the Mottled Zone relic textures of the original volcanic is evident.

Figure 3 shows bauxite exposed on the root system of a fallen tree, the bauxite was masked by Aeolian Sand and only became exposed when the tree roots dragged the hidden bauxite to the surface.

In EL3/2012 the majority of the bauxite bearing areas are masked by varying thicknesses of Aeolian sands which makes discovery of bauxite exposures difficult, however there are areas with "Windows" of recent wind erosion which allow underlying bauxite to be exposed and areas where deep tree roots enter bauxite and expose it to the surface once the tree is blown over in strong winds. Careful exploration methods undertaken with a clear understanding of geomorphology and Post Tertiary climatic processes have been successful in the exploration process in the tenement.

**DISCUSSION OF RESULTS Cont**



Figure 2 – Pisolitic bauxite exposed at Beaufront Target

**DISCUSSION OF RESULTS Cont**



Figure 3 – Bauxite exposed in tree roots at the edge of Aeolian Sands (Beaufront)

## 6 CONCLUSIONS AND RECOMMENDATIONS

A detailed study of geological mapping, satellite images and literature was conducted over the first year of tenure to define the areas with the best potential for bauxite. Exploring on foot was undertaken in private properties and focussed on the old ternary surface which has been mostly masked by Aeolian sands, analysing erosion and sand deposition patterns and looking for escarpments exposing red soil on a number of private properties. Detailed reconnaissance was conducted on; Quorn Hall and Beaufront properties.

Initial exploration in the Ross tenement has been successful with 4 target areas outlined. The deposits are located in agricultural properties and are generally considered poor quality farm land. The partial relinquishment of 70sq km focuses on removing towns, settlements, rivers and mountain areas from the current tenement. Many of these areas are unlikely to have bauxite because of increased amounts of erosion. In other areas it would not be practical to explore because it would constrain any potential developments if bauxite was found.

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. 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 bauxite search.
4. 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).
5. Systematic sampling and drilling at waypoints with best bauxite potential.
6. Sieve testing to find optimal sieve size for Tasmanian bauxites.
7. Detailed analysis of assay results to determine assaying strategy for future drilling.
8. Testing new sample processing techniques to improve silica reduction.

## **7 ENVIRONMENT**

### **Surface Disturbing Operations:**

No surface disturbing operations were undertaken in the first year of tenure. Only exploration on foot and traversing on existing tracks was undertaken.

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 plugged at 1.5m depth and then filled up with the same earth that came out of them immediately upon 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):**

A botanical survey was conducted by Philip Milner Consultant Pty Ltd titled "Quorn Hall, Chesterfield, Sharlands Campbelltown South-East Botanical & Fauna Habitat Survey".

This report has been included as Appendix A.

### **Rehabilitation:**

No rehabilitation was required during the first year of tenure.

ABx4 has a policy that all drill holes are filled immediately after completion. Drill holes 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 11 Sep 2012 – 10 Sep 2013

Exploration Category	Description of Activity	Quantity	Expenditure
<b>Office Administration</b>			
<b>Authority Management</b>	Tenement Management		\$1,605
	Botanical Survey		\$656
<b>Office Activities</b>	Data Processing & Interpretation		
<b>Field Activities</b>	Geological Mapping		
	Sampling	core storage	
	Equipment Hire	Vehicle Hire and Costs	\$2,169
	Accommodation/Field Camp	Days	
	Travel		\$7,036
	Land Holder Liaison		
	Field Supplies		\$300
	Other	Freight Charges	
	<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	
	Diamond	Holes/total metres	
	Other	Holes/total metres	
<b>Laboratory</b>	ME-XRF 13B, Reactive Silica Available Alumina	Samples	
<b>Salaries / Wages</b>	Employees	Drilling Supervision & Field Assistance	\$25,044
	Contractors		
		<b>Grand Total</b>	<b>\$36,810</b>

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

## **9 REFERENCES**

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