

## ASX Announcement

ASX: QBL

29<sup>th</sup> December 2014

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### Clarification of 30 October Scoping Study announcement

On behalf of the Directors of Queensland Bauxite (ASX:QBL) (“the Company”), I am delighted to release the new Scoping Study for South Johnstone Bauxite Project as set out in this announcement, which supersedes completely the Scoping Study of 30 October 2014. The new Scoping Study sets out initial production targets and financial forecasts based solely on the now upgraded JORC compliant Indicated Mineral Resources.

The Company advises that investors, brokers and analysts may only use the current updated scoping study announcement as a basis for investment decisions and not the previous one released on 30 October which we hereby retract, as we have been advised that in our specific circumstances only a JORC Indicated Resource together with the appropriate associated disclosures of the modifying factors to a level which meets the reasonable grounds requirements in the Corporations Act 2001 may be used when completing and releasing the results of our scoping study. We have been advised that the release of results of the previous scoping study solely on the basis of JORC Inferred resources alone in our specific circumstances does not accord with ASX Guidance Note 31, para 8.7 and the Australian Corporations Act 2001, as Inferred Resources alone is considered to not provide reasonable grounds to imply economic viability unless under exceptional circumstances. An Inferred resource is a lower geological level of confidence by comparison to an Indicated resource, as an Indicated resource enables a greater level of confidence in projecting more accurate production and profitability in the pre-mining Scoping Study.

Therefore we are pleased to have been able to replace the previous scoping study announcement with this new Scoping Study announcement which is based solely on the higher confidence level JORC compliant Indicated Resources as set out in this announcement.

This announcement sets out the Company’s progress over the last few weeks and includes numerous significant milestones as set out below.

# South Johnstone Bauxite Project

## Upgrade of Mineral Resource & Updated Scoping Study Based on the Upgraded JORC Compliant Indicated Mineral Resource

### Key points

- The Company's geological bauxite continuity model has now been confirmed
- Upgrade to Higher Confidence Initial JORC Indicated Mineral Resource
- The Upgraded Indicated Resource and updated Scoping Study Stage 1 Project are major milestones in the development of South Johnstone
- Low Capex, Low Opex, Payback and Revenues justifies initial production decision
- Current initial JORC Indicated Resource area drilled is significantly less than 1% of surface Exploration Target area
- The upcoming program of drilling aims to rapidly further increase Indicated Mineral Resources tonnages and grade at depth and along strike
- New Scoping Study results are based **solely** on new initial JORC Indicated Resource Stage 1 Project and does not rely on any lower confidence Inferred Resources
- Payback of estimated capital costs: <6 months
- Annual Gross Revenue: A\$42.4m
- IRR: 223%
- Operating annual positive cash flow before tax (from year 1; Operating Stage 1 Scenario only): A\$12.3M
- Average available alumina of 29.7% and reactive silica of 3.2% for current initial Indicated Resource
- Surface drilling returned up to 33.6% available alumina and as low as 1.8% reactive silica
- Alumina to silica (A:S) ratio for Indicated Resource is approximately 10:1
- Limited deeper drilling to 3m has seen higher alumina, lower silica grades
- Recent drilling is down to average of 1.4 metres bauxite depth only
- Drilling at depth to follow in upcoming program
- Cashed up for development
- Potential for increased bauxite production in Operating Scenario Stage 2 Project
- Commenced Environmental Approval and Mining Lease preparations
- Additional off taker interest received from further commodity trading and alumina refinery groups
- Limited new supplies of seaborne bauxite is forecast on-stream in the next 12 months
- Aiming for mining to commence in second half of 2015

The Directors are looking forward to the further development of the South Johnstone Project and to a most successful 2015 for all our shareholders.

Pnina Feldman  
Executive Chairperson

## **New Scoping Study Based On Indicated Mineral Resources**

The Company has upgraded an appropriate portion of its Inferred Mineral resources to a higher level of confidence with sufficient consideration of mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and government factors.

The Scoping Study indicates that South Johnstone Bauxite Project represents a robust bauxite deposit with a simple mining and quarrying operation to produce a DSO product with a favorable location with respect to infrastructure and presents a real opportunity to promote sustainable regional development and development of the project in 2015.

The Directors would note that the initial Indicated Resource that underpins this Scoping Study provides the basis for progressing the aggressive development of South Johnstone Bauxite Project and the Scoping Study contains sufficient information to enable the Company to formally commence environmental approvals and apply for a Mining License in 2015, which process is now being initiated.

Following receipt of this Scoping Study, Queensland Bauxite is aggressively implementing a new drilling campaign to upgrade further Inferred Mineral Resources to Indicated categories.

The new Indicated Mineral Resource confirmed the geological bauxite continuity model at the South Johnstone Bauxite Project as a result of recent drilling which has defined an initial Indicated Mineral Resource.

As drilling continues to increase the Indicated Resources, and results are received, these will be released to the market in a timely manner.

The Company has concluded that it has a reasonable basis for providing the forward looking statements included in this announcement. The detailed reasons for that conclusion are outlined throughout this announcement.

The estimated mineral resources underpinning the Scoping Study production targets have been prepared by competent persons in accordance with the current JORC Code 2012 Edition.

The focus has been on Area I where further drilling has proven continuity and consistency of results from surface. In addition, some results were received from limited drilling to a depth of three metres which returned higher available alumina and lower reactive silica grades.

The upgrade in mineral resources estimation was undertaken by Chief Geologist Dr Robert Coenraads.

Xstract Mining Consultants Pty Ltd provided an additional internal reporting to the Board on the methodology and efficacy of the approach and provided specialist advice to assist the Competent Person in developing the Mineral Resource.

Drilling results were received from ALS Laboratories in Queensland and the Indicated Resource returned an average of 29.7% available alumina and 3.2% reactive silica, which is in line with initial drilling and proving the geological model of Chief Geologist Dr Robert Coenraads.

Dr Coenraads commented: "We are excited by these results which confirm my original geological model."

“The Indicated Resource results are consistent with the first metre of the earlier initial surface results at Area I which returned an average 29% available alumina and 2.9% reactive silica, which allows for the slightly lower grades at surface due to topsoil horizon contamination.”

“We expect that with further drilling at depth, the grades should correlate with the original drilling between one to three metres which produced an average grade of 30.55% available alumina and 1.85% reactive silica.”

““In the most recent drilling, laboratory results returned a high of 33.6% available alumina and it is anticipated that with further drilling at depth and along strike, we would expect to continue to be able to convert the sizeable Inferred Mineral resources into a significant Indicated Mineral Resource.”

“In the area of the recent surface drilling down to an average of 1.4 metres, there is now an Indicated Resource estimate of over 1.9 million tonnes at 29.7% available alumina and 3.2% reactive silica which is a ratio of almost 10:1 A:S. These tonnages are the tonnages calculated after deducting any areas covered by or immediately adjacent to sealed roads or other built structures. We are very pleased with the positive cooperation of the local relevant landowners, who are keen to see the project developed.”

“The Initial Indicated Resource drilled to date represents significantly less than 1% of our previously reported Exploration Target area, which is very encouraging for our goal of achieving a huge economic resource.”

The Company had previously reported an Exploration Target area ranging between 193 million tonnes and 405 million tonnes of expected bauxitisation, of grades ranging from 31.7% available alumina and 1.9% reactive silica with a cut off grade of 20% available alumina and 10% reactive silica. The company is intending to further refine the Exploration Target parameters and model in accordance with the requirements of JORC 2012 as the further drilling results are returned on the project area.

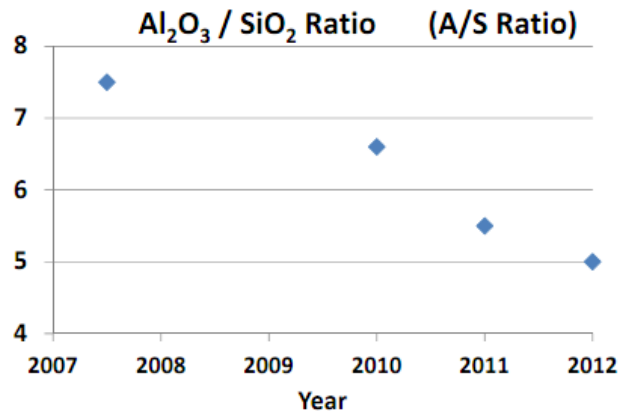
The Indicated Mineral Resource estimate is the basis of the operating scenario used in the independent Scoping Study undertaken for the Project as reported in this announcement. Using solely the initial Indicated Resource, the capital expenditure is repaid within 6 months of first year’s production with significant profit margin. Therefore, the viability of the project can be reasonably expected utilising just the initial Indicated Resource portion alone.

### **Economic grade bauxite**

As reported by The International Committee for the Study of Bauxite, Alumina & Aluminium in 2014, the average alumina to silica being processed in refineries in China has fallen to an average ratio of available alumina (Al<sub>2</sub>O<sub>3</sub>) to reactive silica (SiO<sub>2</sub>) of less than 5:1 in 2012. Previously, in 2007, this A:S ratio was around 7.5:1.

## Alumina content in bauxite is gradually decreasing.

This chart is representative of the Chinese market.



Sources: conference in abu dabi, name of author

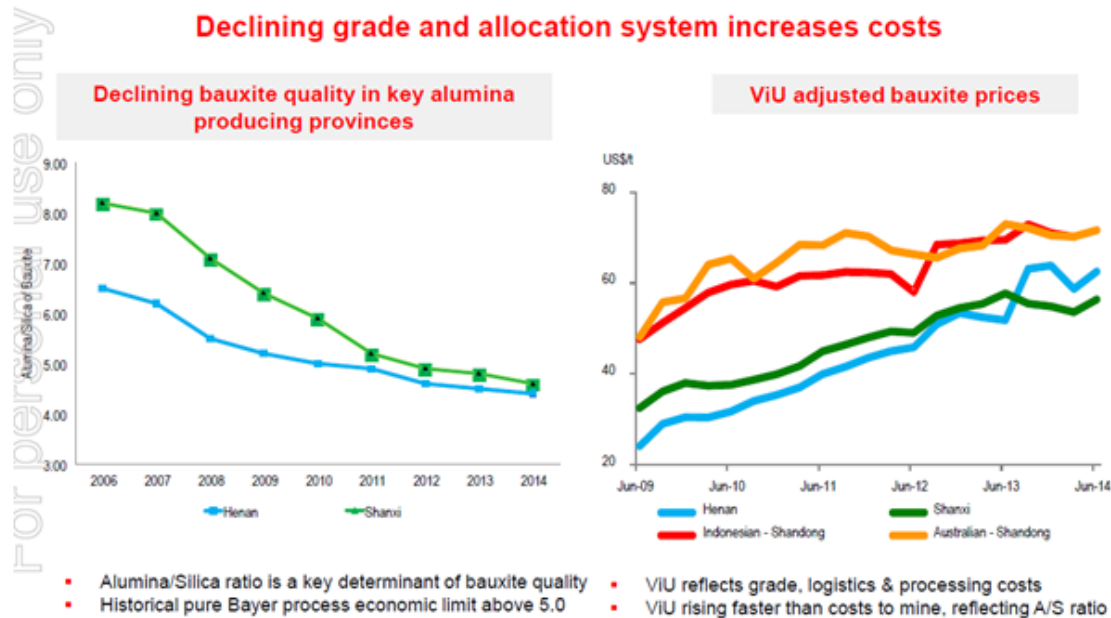
1. Where is the limit to the A/S ratio?
2. How much and of which grade bauxite exists in each country inventory ?

ICSOBA & Feret Analytical Consulting 2014

CM Group highlighted this trend of declining alumina to silica ratios in use in refineries throughout China alongside the rising prices as a result of the looming shortage of bauxite.

## China's longer term bauxite issues

CM GROUP



In addition, recent exports of Malaysian bauxite at lower grades have been snapped up by Chinese alumina refineries in 2014.

Of note, industry and analysts report little new supply of bauxite is likely to be on-stream in 2015, providing opportunities for new bauxite suppliers with favourable infrastructure and CAPEX and OPEX metrics.

Overall, the macro bauxite picture provides confidence in not only the potential of South Johnstone bauxite products to find markets for its higher grade bauxite but also for the lower grade bauxite.

South Johnstone bauxite has similar levels of alumina to the bauxite mined in the Darling Ranges of Western Australia that has average alumina grades of 27-30%. Approximately 20% of the world's bauxite is supplied from the Darling Ranges region.



Hand auger surface drilling profiles bauxite at South Johnstone Project

## **Queensland Bauxite Updated Scoping Study**

The level of confidence in the South Johnstone Bauxite Project is greatly enhanced with the initial Indicated Resource which has enabled the Company to refine the Scoping Study to support the economics of the Project.

The initial JORC Indicated Resource underpins a revised independent Scoping Study Stage 1 of the South Johnstone Bauxite which illustrates a technically low risk, low cost, highly profitable bauxite operation with significant free cash flows.

The updated Scoping Study supports profitable bauxite production by initially mining the higher confidence Indicated Mineral Resource at South Johnstone.

### **Project Parameters**

The following details the inputs and parameters of the Study that was based on utilising the higher confidence Initial Stage 1 Indicated Mineral Resource Project defined to date. Drilling is planned to further increase the Indicated JORC Resources.

The Study to date assessed the viability of an initial mining operation at Area I producing 800,000 tonnes per annum of bauxite.

### **Key Results of Operating Scenario 1: 800,000 tonnes per annum Stage 1 Project:**

- Payback of estimated capital costs: <6 months
- Capex: A\$5.14m
- Operating Cost: A\$20.87/tonne FOB (not including royalties)
- Project Study at A\$53.01/tonne bauxite price
- Operating Gross Profit Margin: A\$32.14/tonne FOB
- Royalties: A\$5.30/tonne
- Current Freight Costs to Shandong, China: A\$11.24/tonne
- Average annual bauxite production Operating Scenario Stage 1: 800,000 tonnes
- Annual Gross Revenue: A\$42.4m
- IRR: 223%
- Operating annual positive cash flow before tax (Stage 1 Project): A\$12.3M
- Environmental approval application and mining lease application processes underway
- Mining estimated start: second half of 2015

### **Cautionary Statements as required by JORC 2012**

Pursuant to JORC Clause 26, the Scoping Study is entirely based on the Initial Indicated Resource which is a higher confidence category than Inferred Resource.

Pursuant to JORC Clause 38, this announcement refers to a Scoping Study. A Scoping Study is defined as an order of magnitude technical and economic study of the potential viability of Mineral Resources. It includes appropriate assessments of realistically assumed modifying factors together with any other relevant operational factors that are necessary to demonstrate at the time of reporting that progress to a Pre-Feasibility Study can be reasonably justified.



A Scoping Study is based on lower-level technical and economic assessments, and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Scoping Study will be realised.

The Company has concluded that it has a reasonable basis for providing the forward looking statements included in this announcement. The detailed reasons for that conclusion are outlined throughout this announcement.

Under the independent scoping study scenario, using solely the Indicated Resources, the capital expenditure is expected to be repaid within 6 months of first years production with significant operating profit margin remaining. Therefore viability can be reasonably expected utilising only the current Initial Indicated Mineral Resource.

The estimated mineral resources underpinning the Scoping Study production targets have been prepared by a Competent Person in accordance with the current JORC Code 2012 Edition.

### **Executive Chairperson's Comments**

Executive Chairperson Mrs Pnina Feldman said, "The very pleasing results of the South Johnstone Scoping Study show a highly profitable project which will deliver significant free cash flows already in the first year."

"The Company is pleased to be able to report an Initial Indicated Resource. I am confident that with the continued drilling planned, we should be able to increase the Resource to ensure there is a large resource to support the Scenario 2 larger and more comprehensive mining operation."

"Our focus is on generating earnings and building a robust bauxite business as quickly as possible to enable the Project to add considerable value to QBL shareholders. The existing infrastructure and close proximity to a deepwater Port with current capacity reduces both the capital cost and lead time to bauxite production which is reflected in a very quick payback."

"The study validates the opinion of the Company that South Johnstone ticks all the boxes with low Capital Expenditure (Capex), low Operating Costs, significant operating margins, fast pay back period and fast track to production. We are well positioned to become a competitive, highly profitable producer with a plan that aims to deliver the timely and economic development of the Project."

"There is potential to develop a much larger mining operation over time which should see revenues multiplied accordingly."

"Bauxite mining at surface is perhaps the simplest of all mining operations, as all that is required is picking up the ore and putting it on the back of a truck. When a project is as close to a deep water port as South Johnstone is, it is indeed quite fortunate for the company as the infrastructure is already in place to enable an application for mining to proceed".

Mrs Feldman said: "The Company will utilise the Initial Stage 1 Scoping Study to further advance discussions with potential off-takers, stakeholders and financiers, in order to fast track the development of the Project".

“The Company will look to develop a larger production scenario in tandem with key stakeholders including the Port, local and state government departments as well as relevant communities.”

“The Study is a significant milestone for all shareholders, stakeholders and local communities and we are very excited about the potential benefits to all from project development.”

## **Summary**

The Study was carried out by independent consultants Sandercock and Associates Pty Limited and with key input from other contributors including independent industry experts and consultants and is based on the upgrade in the JORC Mineral Resource estimate in this announcement.

The scoping study shows that based on the current technical and market assumptions, the project is technically and commercially feasible at the lower end of industry operating and capital costs and can generate strong cash flows.

The Project Development Plan envisages a staged production ramp up commencing at 800,000 tonnes per annum based on the initial higher confidence category Indicated Mineral Resource (Initial Stage 1) sufficient for almost 3 years of production which current drilling will look to increase to 10 years (Operating Scenario 1).

Projected costings and detail regarding any potential larger production scenario (Operating Scenario 2) will be detailed in a future study which will incorporate advanced mining, production, transport and shipping options.

The priority is to develop the 800,000 tonnes per annum project into production given that there is existing infrastructure and Port capacity available to support this level of production.

## **Capital cost estimate**

Table 2 provides the capital cost estimates for the proposed components of the project. The costs are provided in AUD.

***Table 2: Capital cost estimate for producing 800,000 tonnes per annum of bauxite.***

<b>CAPITAL ESTIMATE</b>	<b>EXPENDITURE</b>
Port stockpile	\$3,762,900
Mining License & environment approvals	\$430,000
Bulk Sampling, drilling	\$245,000
Contingencies including land access	\$700,000
<b>Total</b>	<b>\$5,137,900</b>

## Operating cost estimate

**Table 3: Operating cost estimate for producing 800,000 tonnes per annum of bauxite.**

ITEM	ESTIMATE
Cost per tonne of ore (including royalties)	\$26.18
Shipping/tonne to Shandong, China	\$11.24

## Bauxite Price

A bauxite price of AUD \$53.01 per tonne has been used in the Financial Model by the independent Consultant group based on market prices for bauxite of similar grades and specifications as reported in Area I at South Johnstone. The market for bauxite is forecast to remain strong with the trend to further price increases in 2015/2016 anticipated by industry experts & analysts including CRU, CM Group, Metal Bulletin Research.

## Mining Schedule

Various mining production scenarios were examined. The scenario that was adopted as the base case of the Study was a simple mining operation to extract ore from surface to an average of 1.4 metres at the rate necessary to utilise current available Port capacity of 800,000 tonnes per annum.

Bauxite is to be mined by surface methods (open cut mining). The topsoil is removed to allow for the simple extraction of the underlying bauxite. The bauxite is to be mined in panels, with the topsoil from the following panel being placed back into the previously mined panel for a quick rehabilitation of the area.

Mining is estimated to cost an average of \$4.11 per tonne.

Mining production would be campaigned throughout the year. During the wet season, production will continue with ore being stockpiled if necessary.

## Transport

For the purpose of the Study the only transport option considered was direct trucking of bauxite to the Port of Mourilyan. The project is located 15-25 kilometres west of the Port; the exact distance is dependent on which areas of the project are mined first.

The loading and transport under this scenario is estimated to cost an average of \$5.83 per tonne.

Future studies, including for the increased production in Operating Scenario 2 will investigate additional transport scenarios such as utilising the current existing rail network that goes directly from the project area to the port, amongst other transport alternatives.

Port and ship loading costs are estimated to cost an average of \$10.51 per tonne.

## **Drilling program**

Continued drilling is planned over the next few months at South Johnstone to increase the Indicated Resources inventory to support Operating Scenario 1 in later years of production. The ongoing results will be released to market as and when received.

## **Well funded**

The Company is well funded to continue drilling and drive development of the South Johnstone, as it has been a central tenet of the Board to conserve resources where possible, and operate the Company in as frugal an operating structure as possible.

## **Interest increases from strategic partners, off takers**

The Company has fielded additional interest from: potential joint venture partners, refineries, commodity trading companies and offtakers, financiers to assist in the development of South Johnstone Bauxite Project given the confidence in the Project and the strong macro demand expected for bauxite in 2015/16.

The Company has opened a data room and selection process to assist with advancing discussions and negotiations to short list these above groups and ensure the best development option is selected for the Company and its shareholders.

## **Environmental Approvals and Mining Lease**

Mining on the Project is not able to take place unless all environmental approvals, mining lease approvals and land owner access agreements are finalised. Preparations are underway with appropriate stakeholders and agencies for commencement of the application for environmental approvals as well as a mining lease to commence mining in the second half of 2015. Although we do not currently have the relevant approvals to enable the commencement of mining, based on discussions with the relevant Departments, landowners, local authorities and environmental experts, the Company has reasonable grounds to believe that the land access approvals, the environmental approvals and mining lease will be granted as expected in 2015.

## **Competent Person Statements**

The information in this announcement that relates to Mineral Resources underpinning the Production Target is based on, and fairly represents, information compiled by Dr Robert Coenraads. Dr Robert Coenraads is a Fellow of the Australasian Institute of Mining and Metallurgy. Dr Coenraads contracts services to Queensland Bauxite Limited. Dr Coenraads has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Dr Coenraads has given his consent to the inclusion in the announcement of the matters based on this information in the form and context in which it appears.

## **About Sandercock and Associates Pty Ltd**

Mr Sandercock is an independent expert consultant and is the author of the scoping study reported in this announcement and is the Principal of Sandercock and Associates, a Sydney based mining

consultancy established in 2001 to provide independent mining and management consultancy services.

Mr Sandercock graduated with a Bachelor of Engineering in Mining Engineering from the University of NSW in 1974 and has 40 years of metalliferous and precious commodity operations and consulting experience. He is a Fellow and Chartered Member of the Australasian Institute of Mining and Metallurgy, a Member of the Mineral Industry Consultants Association as well as being a Member of the Society of Mining Engineers (United States).

Sandercock and Associates has conducted due diligence reviews of mining operations in Australia, the Philippines, South Africa, South America and Russia. In particular he was part of a team conducting due diligence on Russian Aluminium (RUSAL) assets in Siberia as part of the merger of RUSAL, Siberian Aluminium and Glencore aluminium assets into RUSAL AC one of the largest aluminium producers in the world. Mr Sandercock also conducted a due diligence on RUSAL'S Guyana bauxite assets.

Sandercock and Associates has conducted scoping, pre-feasibility and bankable feasibility studies to JORC and NI 43-101 standards on a variety of metals in Central and S.E. Asia, Australia, the Pacific and South America. In particular Mr Sandercock was on a team conducting a scoping study on bauxite in the Kimberley region of WA.

### **About Xstract Mining Consultants Pty Ltd**

Xstract Mining Consultants is a diversified technical services group providing professional services in the areas of geology, geotechnical, mining, processing, and corporate advisory. Xstract provides strategic and tactical solutions and operational services to resource projects and mining operations globally in the areas of corporate advisory, technical and consulting services, and project and mine support.

Mark Noppe, General Manager & Principal Consultant, Xstract Mining Consultants Pty Ltd

Since graduating as a geologist in 1983, Mark has worked in South Africa, Western Australia and Queensland in exploration, mining geology, practical geostatistical applications, resource estimation, grade control, mine reconciliation, and professional training and mentoring. Mark's technical experience covers a wide range of commodities, geological and mining settings, including bauxite, gold, nickel laterite, coal, alluvial, eluvial deposits, hard rock diamonds, base metals, industrial minerals. He has held positions as Chairman of the Southern Queensland branch of the Australasian Institute of Mining and Metallurgy, and the Geostatistical Association of Australasia.

Mark Noppe holds a Master of Science in Exploration Geology, a Diploma in Terrain Evaluation, and a Bachelor of Science in Geology and Chemistry, with Honours in Geology. He is also a Fellow and Chartered Professional Geologist of the Australasian Institute of Mining and Metallurgy and a Member of the Geostatistical Association of Australasia.

Mark provided specialist advice to assist the Competent Person in developing the Mineral Resource and has consented to his findings being included in the form and context in which it appears in this announcement.

## 1.0 RESOURCE ESTIMATE

### 1.1 Drilling Programs

As previously reported, QBL had conducted a 60-hole air core drilling program to delineate areas of bauxite mineralisation for further exploration (Figure 1). The drilling was targeted as close as possible to the historical bauxite locations identified by CEC so that the 1960s drilling could be verified. Ground mapping by QBL indicated the most ideal location for bauxite development to be ridge tops and flanks to the ridges so drilling was sited in these locations where possible.

A total of 460 m were drilled with each hole averaging 7.5 m in depth. Drilling was conducted at a spacing varying between 100 m and 5 km. The bauxite mineralisation forms a surficial deposit developed on flat-lying to gently undulating topography giving reasonable confidence to interpolate geology and grade across these distances.

The results indicate that the upper parts of the weathering profiles are relatively enriched in alumina and depleted in silica in places.

Nearly half of all the holes drilled (29 out of 60 holes) encountered bauxite between 0.5 and 3 m thick and, together with the 10 m topographic data and geologic model (see Figure 1) a number of areas of bauxite mineralisation were identified, mapped and earmarked for drilling on a 200 m grid.

Figure 1 shows the location of CEC and QBL drill holes, the QBL bauxite discoveries (known as Areas A to K in the QBL June 2014 Addendum), and the QBL Exploration Target within EPM 18463.

In the past quarter, QBL conducted a 51-hole auger drilling program on a 200 m by 200 m grid on a two square kilometre (km) plateau in the Camp Creek area (Area I). This area was chosen as it had the highest grade bauxite at a thickness of 3 m. Samples were collected over 0.5 m intervals vertical downhole with sample weights ranging from 1 kg to 2.5 kg recovered from the 62 mm diameter auger. The bauxite mineralisation forms a surficial deposit developed on flat-lying to gently undulating topography giving reasonable confidence to interpolate geology and grade across these distances. The following Figures and Tables show the location of the auger drilling program.

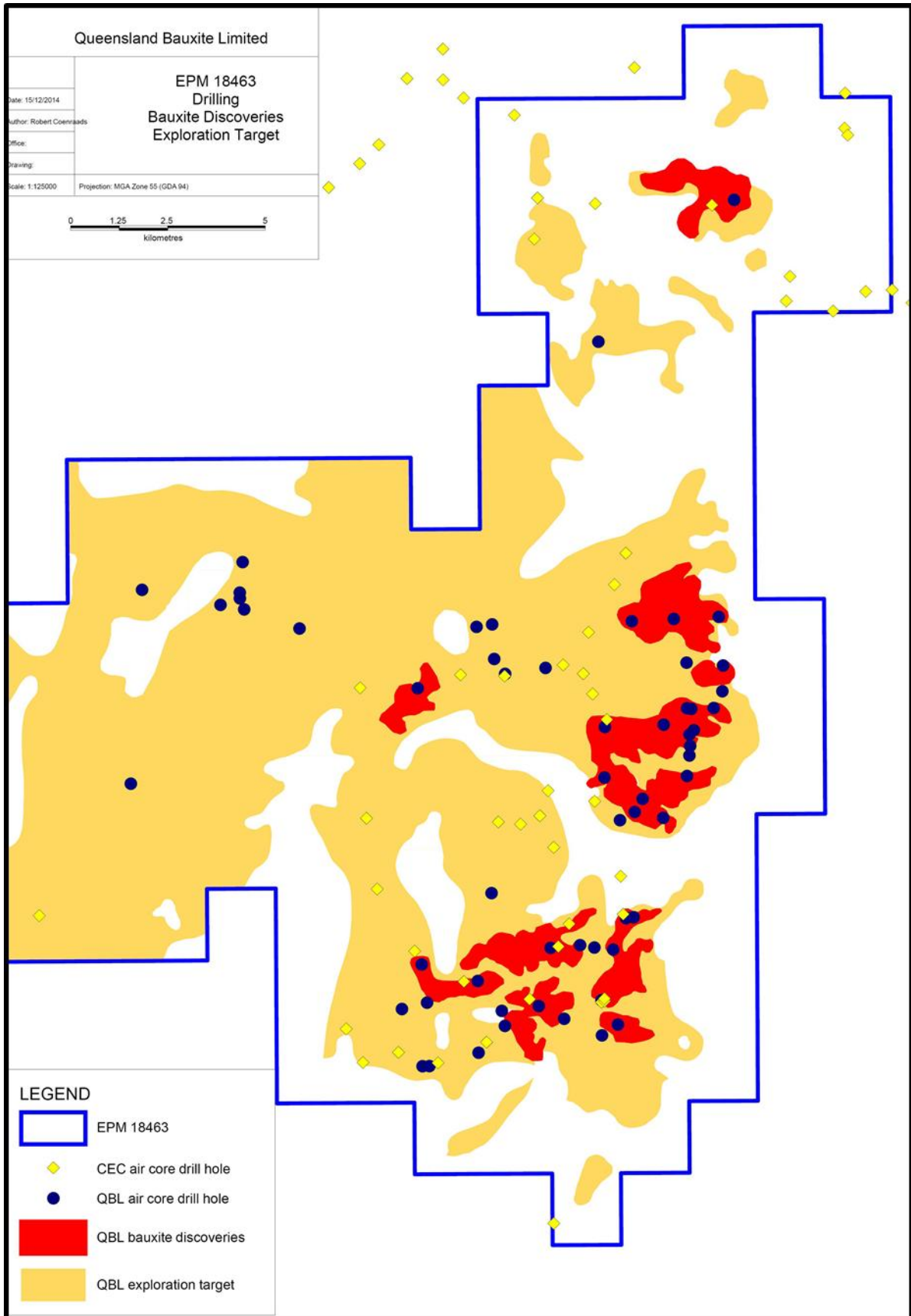
During November and December 2014 QBL analysed the results of its drilling program to calculate a JORC Indicated Resource within the Camp Creek area.

An initial Indicated Resource of approximately 1.9 million tonnes (Mt) of bauxite grading 29.7% available bauxite and 3.2% reactive silica was identified in the immediate vicinity of Camp Creek and the scoping study is based on those resources alone. The Company anticipates that Inferred Resources of similar grades in that area will be converted to Indicated Resources over the coming months.

Based on the results and mapping to date in EPM 18463 QBL has previously reported an Exploration Target area ranging between 193 million tonnes and 405 million tonnes of expected bauxitisation, of grades ranging from 31.7% available alumina and 1.9% reactive silica with a cut off grade of 20% available alumina and 10% reactive silica. (published in the June 2014 Addendum).

The Company has a planned exploration program over the coming year to test these areas of bauxite mineralisation to JORC Code 2012 standard using a 200 m grid of auger holes.

Figure 1: Exploration Drilling, Bauxite Mineralisation and Exploration Target in EPM 38463





## 1.2 Area I Location and Geology

The bauxitised basalt plateau making up Area I is low relief, falling gently in elevation from west to east; a fall of about 20 m over a distance of about 3 km. The higher ground immediately to the west is made up of older silica rich basement rocks. The plateau area was previously defined as being bauxitic as a result of analytical work carried out on samples recovered from air core hole SJAC 052. This hole encountered 3 m of bauxite of average grade 30.2% available alumina (Av Al<sub>2</sub>O<sub>3</sub>) and 2.2% reactive silica (Rx SiO<sub>2</sub>).

The edge of the bauxite is marked by the 80 m Above Sea Level (ASL) contour on the western end of the plateau and 60 m on the east. The geologic model assumes that the bauxite has been eroded away in these younger features. Bauxitic soil profiles bottoming on hard basalt bedrock can be seen in some of the surrounding creek beds.

## 1.3 Sampling and Analysis

### 1.3.1 Air Core

The following sampling and analysis was undertaken on the air core samples as were previously reported upon:

- Samples showing potential to be bauxite based on hand-held XRF were selected for low temperature alkali leach testing.
- Selected bauxite samples were re-analysed by high temperature leach testing to determine if there were further gains to be achieved in the recovery of available alumina from high temperature processing.
- Selected samples were selected for multi-screen testing (four samples of around 0.9 – 1.2 kilograms [kg] were sieved using the 2.5 millimetre [mm], 1.2 mm, 0.9 mm, 0.6 mm and 0.3 mm screens) to see if grade beneficiation could be achieved for different size fractions.
- Selected bauxite samples were chosen for XRD analyses to determine the mineralogy present.
- Selected samples from drill holes were chosen for XRF analyses. Total alumina results could then be compared directly with those obtained from the earlier drilling by CEC.

#### Low Temperature Alkali Leach Testing

- A total of 73 drill samples were selected by a hand-held XRF device and tested by low temperature alkali leach for available alumina and reactive silica. It was assumed that samples rejected by hand-held XRF selection because of low total alumina and total silica levels would lie below the bauxite cut-off grade.
- Bauxite was recovered in 29 out of the 60 holes after applying a cut-off grade of 20% available alumina and 10% reactive silica. These holes were used to determine the average thickness and grade for the bauxite mineralisation within EPM 18463.

#### High Temperature Alkali Leach Testing

For 15 samples tested, available alumina recovered by high temperature alkali leaching was only marginally higher than that recovered by low temperature alkali leaching. There was a marginal increase in reactive silica for the samples tested by high temperature alkali testing compared to low temperature alkali testing.

#### Dry Multi-screen Testing

Three bauxite and one sub-grade bauxitic grade samples were selected for multi-screen analysis to test the grade recovery at different sieve sizes. Samples of around 0.9 – 1.2 kg were sieved using the 2.5 mm, 1.2 mm, 0.9 mm, 0.6 mm and 0.3 mm screens.

Results across the size categories of the screening on these samples indicate that that beneficiation by screening does not seem to be worthwhile. Further work may be done in this regard on samples from different areas of the deposit in the future.

#### **XRD Analysis**

Three bauxite and one sub-grade bauxitic grade samples were selected for x-ray diffraction (XRD) analysis to determine the mineralogy present.

The dominant mineral phase present in the samples is gibbsite (36-48%). Other aluminium phases requiring high temperature processing are either absent or in very low concentration (Boehmite 0-2% and Diaspore 0-3%). Various iron-rich phases are present and clays make up 5-9% of the bauxites, rising to 16% in one sample explaining its higher reactive silica.

#### **XRF Analysis**

Ten samples were selected for x-ray fluorescence (XRF) analysis to determine the elemental oxides present in the bauxite.

The samples returned a relatively high iron content (25% to 31% Fe<sub>2</sub>O<sub>3</sub>) with high water content (18.9% to 23.2% loss on ignition [LOI]). The total alumina lies in the range from 32% to 38% Al<sub>2</sub>O<sub>3</sub> and these results compare directly with the results reported by the Carpentaria Exploration Company (CEC) of 31% to 37% reported by Znebejanek (1961).

All of the above is a summary of previous work and has been previously reported in greater detail by the Company.

#### **1.3.2 Auger Drilling**

A hand auger drilling programme was recently undertaken over a section of Area I. The hand auger holes failed to penetrate the total thickness of the flat lying bauxite body as the ground proved to be too hard. The maximum depth reached by hand was 2 m with the remainder of the holes reaching between 1 m and 1.5 m into the bauxite body and between 0.5 m and 1 m in the surrounding non-bauxite ground. Future exploration programs will be carried out using a mechanised hand auger system which will allow penetration of the full bauxite thickness which is assumed from air core hole SJAC052 to be around 3 m in this area

Samples from the first 0.5 m to a maximum depth of 3 m in the drill holes were selected for low temperature alkali leach testing.

Sixty eight samples from the auger program were sent to ALS for analysis for available alumina and reactive silica using a standard alkali leach (sample leached in 10 millilitres of 90 grams per litre NaOH at 143°C for 30 minutes). The results support the geologic model returning bauxite from all holes drilled on the plateau surface with the remaining holes on the flanks of the structure and in the surrounding valleys returning analyses that were not bauxitic (Av Al<sub>2</sub>O<sub>3</sub> of less than

20% and Rx SiO<sub>2</sub> greater than 10% - a total of 29 samples). The results for the auger drilling program are shown in Appendix A Tables 1 & 2.

### 1.3.3 Density test work

A dry bulk density value of 1.43 dry tonnes per cubic metre (t/m<sup>3</sup>) was used for the resource calculations. This figure is an average of three bulk density tests carried out in different areas across the surface at Camp Creek and shown in Table 3.1. Tests were conducted on level areas of hard, compact, unvegetated and undisturbed surface with sample weights approaching 5 kg each used to minimise measurement error. Samples were taken with a small spade, weighed on a set of scales with 50 g divisions and bagged. The neat hole was lined with a thin plastic bag and filled to the top with water poured in from a measuring bottle with 10ml divisions. The samples were reweighed following being dried in an oven at 110<sup>0</sup>C for 120 minutes.

As the three samples are from the surface only, it is proposed to test the bulk density through the entire bauxite profile at a later stage. It would be expected for the densities to be higher at depth, which would then further increase the resource tonnages if that is proven to be the case.

**Table 3.1: Camp Creek Bauxite Bulk Density Tests**

Test location	SJHA 040	SJHA-014	SJHA-023	Average
Sample weight (kg)	4.85	4.51	4.75	
Dry sample weight (kg)	4.15	3.98	4.45	
Sample pit volume (L)	2.99	2.81	3.00	
Density	1.62	1.60	1.58	1.60
Dry density	1.39	1.42	1.48	1.43

## 1.4 Resource Modelling

### 1.4.1 Modelling Parameters

Bauxite mineralisation occurs at surface in a weathering profile that is known from the drilling to extend from 0 m to a depth of about 3 m. It is found as a continuous blanket overlying flat-lying basalt flows of the Atherton Province within EPM18463. The deposit has been formed by weathering of the basalt surfaces with resultant leaching of silica downwards and concentration of alumina towards the surface of the profile. It is not clear how much of the material is in-situ or if some transportation has been involved, however in approximately half of the holes a gradual decline in alumina and increase in silica with depth is noted in the first few metres indicating an in-situ profile.

### 1.4.2 Sampling

Contamination was avoided by ensuring that the hole was completely clean before each successive sample was taken such that the auger could be lowered smoothly and cleanly to the top of the next interval and that the auger was not turned outside of the sampling interval either during entry or exit from the hole.

The average grade of bauxite (Av Al<sub>2</sub>O<sub>3</sub> and Rx SiO<sub>2</sub>) in each hole was mapped and contoured using 5% Rx SiO<sub>2</sub> grade contours as shown in Figure 2.

The 68 half-metre bauxite samples were also sorted in order of increasing reactive silica and graphed on Figure 4. These data show an inverse linear relationship (decreasing available alumina with increasing reactive silica). Sorting the samples in this way enables grouping of data into various categories each with their own respective areas, volumes, tonnages and grades. A polygonal model was prepared to achieve an optimal tonnage versus grade model to support the project economics.

Figure 2: Camp Creek Auger Drilling Showing R<sub>x</sub> SiO<sub>2</sub> Grade Contours

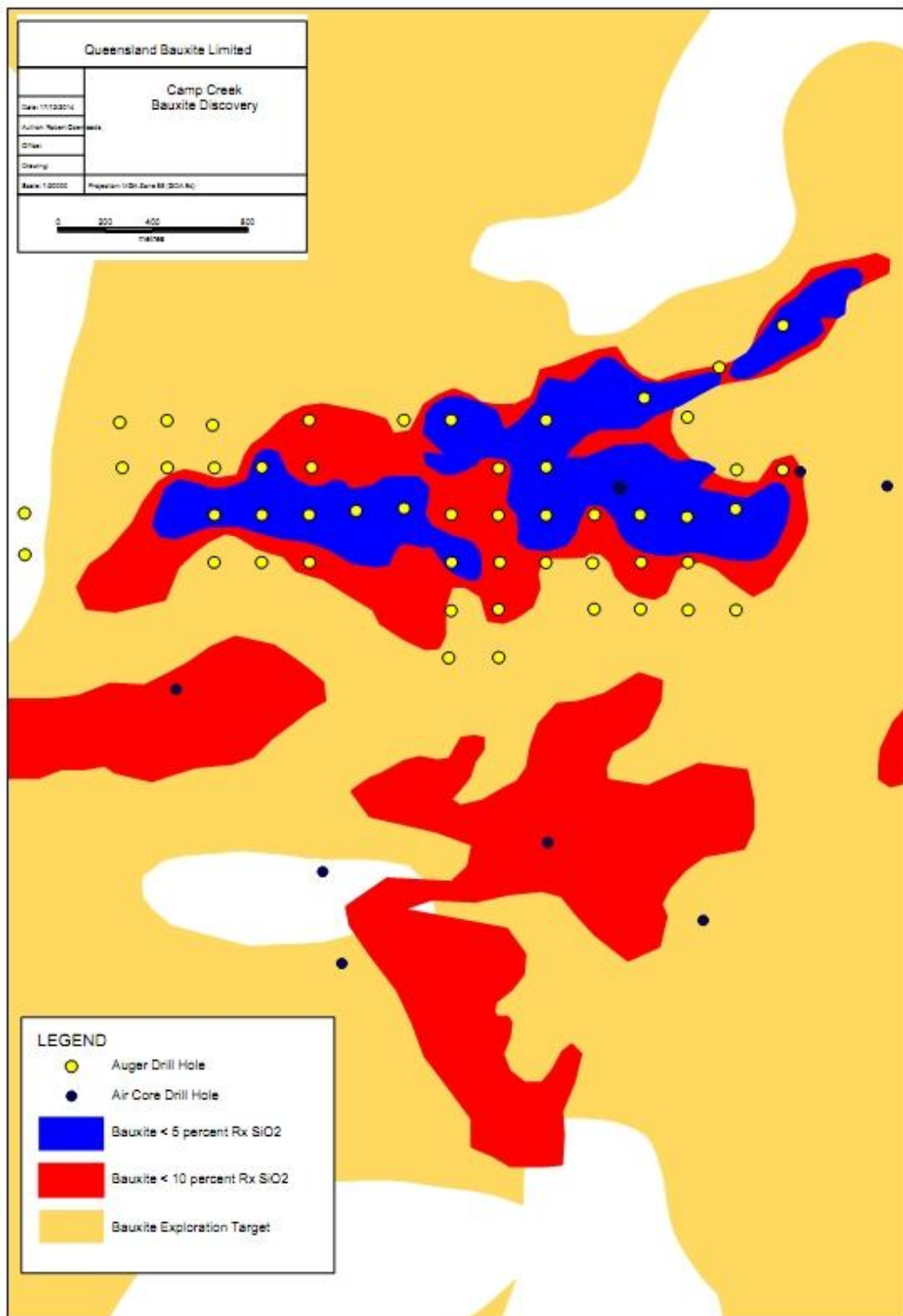


Figure 3 shows the average thickness of the bauxite achieved in the unbottomed auger holes. These thicknesses are expected to be increased with further drilling which should significantly increase the resource tonnages.

**Figure 3: Camp Creek Auger Holes, Bauxite Thicknesses and Resource Blocks**

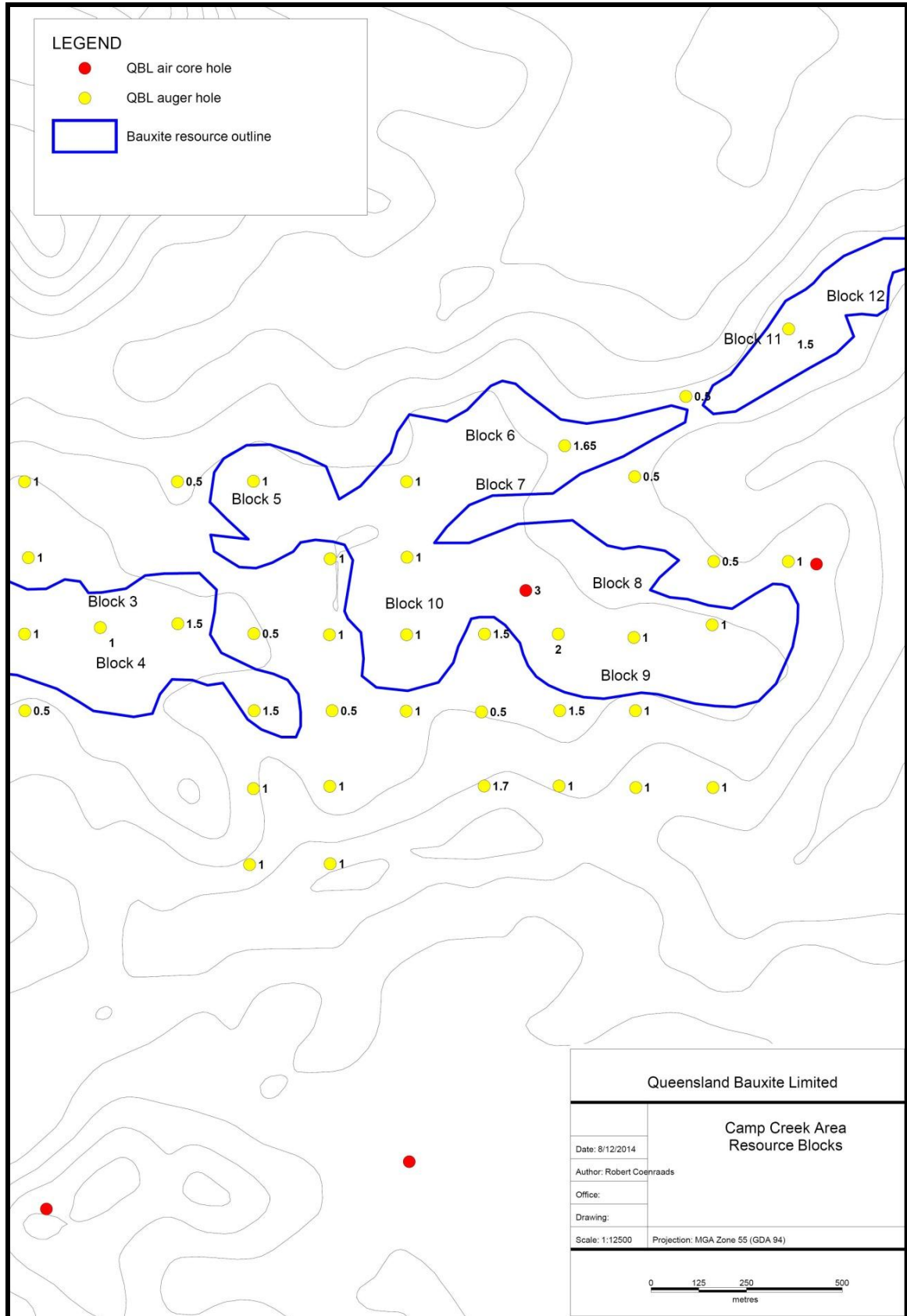
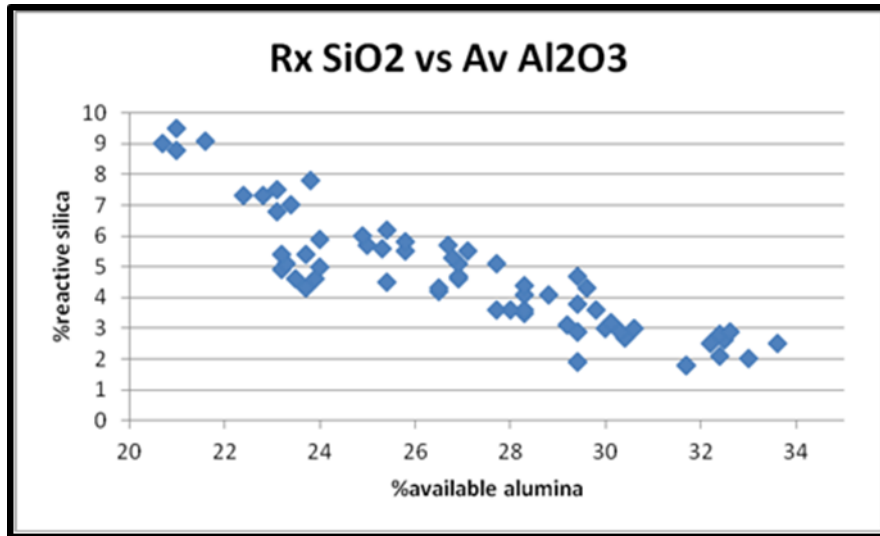


Figure 4: Rx SiO<sub>2</sub> versus Av Al<sub>2</sub>O<sub>3</sub> in Camp Creek Area I



The model polygons chosen for this analysis are shown in Figure 3 with the outer boundary being the 5% Rx SiO<sub>2</sub> contour. The 5% Rx SiO<sub>2</sub> contour was divided into twelve polygons, each enclosing between 1 and 4 holes and excluding roads, houses and other infrastructure. These holes included in the easternmost 10 polygons were used to create an average grade of 29.7% Av Al<sub>2</sub>O<sub>3</sub> and 3.2% Rx SiO<sub>2</sub> and average thickness of 1.4 m for the model area shown in Figure 3.

The drilled shallower portion of bauxite mineralisation at Camp Creek (i.e. that portion intersected by air core and auger drilling in the 5% Rx SiO<sub>2</sub> grade contour and only that in the easternmost 10 polygons (blocks 3 to 12) was chosen for upgrade to JORC Code Indicated Resource in the modelling exercise. Blocks 1 to 2 were excluded due to lower grade. Similarly bauxite lying inside the 10% Rx SiO<sub>2</sub> contour but outside of the 5% Rx SiO<sub>2</sub> contour was also excluded.

Geostatistical analyses of the exploration data prepared by Mark Noppe of Xstract Group show that the 200 m spacing of samples is sufficient to support the assumption of geological and grade continuity between the sample points, particularly for Av Al<sub>2</sub>O<sub>3</sub> and, although less certain, probably also Rx SiO<sub>2</sub>.

Volume calculations were made using the surface area defined by the 5% Rx SiO<sub>2</sub> grade contour as indicated by the drilling and topographic constraints multiplied by the average bauxite thickness of 1.4 m calculated for the modelled area. It is known that that the true average thickness must lie somewhere in between 3 m (SJAC052, the deepest hole) and 1 to 1.5m - the thickness encountered routinely in the incompletely drilled auger holes. For modelling Indicated Resources, holes that end in bauxite and were less than the average bauxite thickness of 1.4 m in depth have been extrapolated to that average bauxite depth. In other areas within the 200 m range of influence where holes have ended in bauxite, the depth of the deepest bauxite intercept has been applied to estimate the thickness of bauxite within that range.

Polygon volumes were converted to resource tonnages using a dry bulk density value of 1.43 t/m<sup>3</sup>.

Modelling resulted in a JORC Code Indicated Resource of 1.9 Mt of average grade of 29.7% Av Al<sub>2</sub>O<sub>3</sub> and 3.2% Rx SiO<sub>2</sub> as shown in Table 3.

#### **1.4.3 JORC Code Classification**

The JORC Code classification is based on the coverage of holes on a 200 m by 200 m grid over most of Camp Creek (51 auger holes and 1 aircore hole with bauxite recovered in most of those into a geological model. Modifying factors considered included mining, metallurgical, infrastructure, economic, marketing, legal, environment, social and government issues. Based on this understanding, a select portion of the bauxite mineralisation at Camp Creek (1.9 Mt at 29.7% Av Al<sub>2</sub>O<sub>3</sub> and 3.2% Rx SiO<sub>2</sub>) has been classified as a JORC Code Indicated Resource.

The mineral resource estimates and modifying factors have been audited and reviewed by Sandercock and Associates Pty Ltd. Geostatistical analysis of the drilling data from Camp Creek was carried out by Mark Noppe Xstract Group who also provided advice and reviewed the modelling discussion and assumptions in JORC Code Table 1 (see Table 2).

#### **1.4.4 Other Considerations**

Although there are no known environmental restriction to development of the Project, no detailed environmental studies have been conducted at present. The land on which the bauxite mineralisation occurs is currently being used for large and small acreage agricultural activities, principally sugar cane and bananas. It is assumed that a mining licence would be granted by government for an open cut extraction operation. It is also assumed that no unforeseen environmental difficulties, landholder, or other issues would impact on the mining and processing operation.

#### **1.4.5 Risk Factors**

Following is a list of the factors that could affect the relative accuracy and confidence of the estimate:

- The estimate of bauxite thickness: this varies between 0.5 m and 3 m in holes drilled in the Camp Creek area with a mean of 1.4 m. This is a minimum thickness estimate as when these holes are deepened it is assumed that further resource will be intersected. The bauxite dry bulk density has been measured at 1.43 t/m<sup>3</sup> at the surface and this value has been used for modelling. It is planned to make further density measurements at depth in the future.
- The mineral resource estimate is based on the assumption that geology and grade is continuous between 200 m spaced bore holes.



## 1.5 Resource

The resulting resource is shown in Table 3.2.

**Table 2: Camp Creek Indicated Resource Estimate Based on 5% Rx SiO<sub>2</sub> Contour**

Area & depth	Area (m <sup>2</sup> )	Thickness (m)	Volume (m <sup>3</sup> )	Tonnage (t)	Av Al <sub>2</sub> O <sub>3</sub> (%)	R <sub>x</sub> SiO <sub>2</sub> (%)
1 (av)	44,680	1.40	62,383	89,207	23.8	5.0
2 (av)	92,440	1.40	129,066	184,564	23.5	4.9
3 (av)	12,700	1.40	17,732	25,357	28.1	4.5
3 (1.5)	27,300	1.50	40,950	58,559		
4 (av)	41,940	1.40	58,557	83,737	28.2	4.1
4 (1.5)	72,830	1.50	109,245	156,220		
5 (av)	61,640	1.40	89,581	128,101	31.4	2.9
6 (av)	97,650	1.40	136,340	194,966	32.1	2.7
6 (1.65)	26,650	1.65	43,973	62,881		
7 (av)	22,656	1.40	31,633	45,235	32.5	2.7
7 (1.65)	33,990	1.65	56,084	80,199		
8 (av)	42,660	1.40	59,562	85,174	29.5	3.1
8 (3)	56,450	3.00	169,350	242,171		
8 (2)	8,206	2.00	16,412	23,469		
9 (av)	86,950	1.40	121,400	173,603	29.2	3.1
9 (3)	35,270	3.00	105,810	151,308		
9 (2)	26,610	2.00	53,220	76,105		
10 (av)	87,500	1.40	122,168	174,701	27.6	4.1
10 (3)	3,946	3.00	11,838	16,928		
11 (av)	4,879	1.40	6,812	9,741	31.9	2.3
11 (1.5)	17,030	1.50	25,545	36,529		
12 (av)	22,392	1.40	31,624	44,707	31.9	2.3
12 (1.5)	35,590	1.50	48,885	69,906		
<b>Total Areas 1 - 12</b>	961,479	1.61	1,547,808	2,213,366	29.0	3.4
<b>Total Areas 3 – 12 only</b>	824,359	1.64	1,356,360	1,939,595	29.7	3.2

2.0 APPENDIX A - AUGER HOLE ANALYSES

Appendix A - Table 1 Camp Creek Auger Drill Hole Sample Analyses

APPENDIX B -Table 1 CAMP CREEK AUGER DRILL HOLE SAMPLE ANALYSES								
Sample Number	Al-LICP01	Si-LICP01	Sample Number	Al-LICP01	Si-LICP01	Sample Number	Al-LICP01	Si-LICP01
Auger	%Av Al2O3	% Rx SiO2	Auger	%Av Al2O3	% Rx SiO2	Auger	%Av Al2O3	% Rx SiO2
SJHA 009 0.0-0.5	0.6	15.3	SJHA 031 0.0-0.5	23.2	4.9	SJHA 048 0.0-0.5	18.3	16.5
SJHA 010 0.0-0.5	15.1	13.4	SJHA 031 0.5-1.0	24.0	5.0	SJHA 049 0.0-0.5	0.3	8.7
SJHA 011 0.0-0.5	24.0	5.9	SJHA 032 0.0-0.5	17.4	10.5	SJHA 049 0.5-1.0	0.4	14.2
SJHA 011 0.5-1.0	25.8	5.5	SJHA 032 0.5-1.0	13.6	15.1	SJHA 050 0.0-0.5	4.5	16.4
SJHA 011 1.0-1.5	22.4	7.3	SJHA 033 0.0-0.5	23.3	5.1	SJHA 051 0.0-0.5	26.8	5.3
SJHA 012 0.0-0.5	17.5	10.8	SJHA 033 0.5-1.0	23.7	4.3	SJHA 051 0.5-1.0	27.1	5.5
SJHA 012 0.5-1.0	15.7	13.5	SJHA 034 0.0-0.5	22.8	7.3	SJHA 052 0.0-0.5	30.0	3.0
SJHA 013 0.0-0.5	26.5	4.2	SJHA 034 0.5-1.0	14.6	11.5	SJHA 052 0.5-1.0	32.5	2.6
SJHA 013 0.5-1.0	26.9	4.6	SJHA 035 0.0-0.5	28.3	3.5	SJHA 053 0.0-0.5	30.6	3.0
SJHA 014 0.0-0.5	28.0	3.6	SJHA 035 0.5-1.0	29.2	3.1	SJHA 053 0.5-1.0	32.6	2.9
SJHA 014 0.5-1.0	28.8	4.1	SJHA 035 1.0-1.5	27.7	3.6	SJHA 054 0.0-0.5	13.8	14.6
SJHA 015 0.0-0.5	15.7	13.1	SJHA 036 0.0-0.5	20.7	9.0	SJHA 055 0.0-0.5	25.0	5.7
SJHA 016 0.0-0.5	15.3	12.5	SJHA 037 0.0-0.5	21.6	9.1	SJHA 055 0.5-1.0	27.7	5.1
SJHA 017 0.0-0.5	30.1	3.2	SJHA 037 0.5-1.0	21.0	9.5	SJHA 056 0.0-0.5	32.2	2.5
SJHA 017 0.5-1.0	30.4	2.7	SJHA 038 0.0-0.5	23.1	7.5	SJHA 056 0.5-1.0	33.6	2.5
SJHA 018 0.0-0.5	23.1	6.8	SJHA 039 0.0-0.5	25.3	5.6	SJHA 056 1.0-1.5	32.4	2.8
SJHA 018 0.5-1.0	23.4	7.0	SJHA 039 0.5-1.0	26.7	5.7	SJHA 056 1.5-1.65	29.8	3.6
SJHA 019 0.0-0.5	30.4	2.7	SJHA 040 0.0-0.5	25.4	4.5	SJHA 057 0.0-0.5	26.9	5.1
SJHA 019 0.5-1.0	32.4	2.1	SJHA 040 0.5-1.0	28.3	4.1	SJHA 058 0.0-0.5	26.9	4.7
SJHA 019 1.0-1.5	33.0	2.0	SJHA 041 0.0-0.5	0.6	12.5	SJHA 058 0.5-1.0	29.6	4.3
SJHA 020 0.0-0.5	0.4	21.8	SJHA 042 0.0-0.5	0.2	20.8	SJHA 058 1.0-1.5	29.4	4.7
SJHA 021 0.0-0.5	3.9	12.7	SJHA 043 0.0-0.5	0.4	10.8	SJHA 059 0.0-0.5	26.5	4.3
SJHA 022 0.0-0.5	5.4	14.0	SJHA 044 0.0-0.5	19.9	8.9	SJHA 059 0.5-1.0	28.3	4.4
SJHA 023 0.0-0.5	14.1	9.7	SJHA 044 0.5-1.0	21.0	8.8	Air core		
SJHA 024 0.0-0.5	3.2	17.0	SJHA 045 0.0-0.5	28.3	3.6	SJAC 052 0.0-1.0	29.4	2.9
SJHA 025 0.0-0.5	0.5	21.8	SJHA 045 0.5-1.0	30.3	2.9	SJAC 052 1.0-2.0	31.7	1.8
SJHA 026 0.0-0.5	0.5	13.7	SJHA 045 1.0-1.5	29.4	3.8	SJAC 052 2.0-3.0	29.4	1.9
SJHA 027 0.0-0.5	23.2	5.4	SJHA 045 1.5-2.0	25.8	5.8	SJAC 052 3.0-4.0	16.5	13.4
SJHA 027 0.5-1.0	23.5	4.6	SJHA 046 0.0-0.5	24.9	6.0	SJAC 052 4.0-5.0	5.2	24.4
SJHA 028 0.0-0.5	0.5	15.0	SJHA 046 0.5-1.0	25.4	6.2			
SJHA 029 0.0-0.5	12.7	14.4	SJHA 046 1.0-1.5	23.8	7.8			
SJHA 030 0.0-0.5	23.7	5.4	SJHA 047 0.0-0.5	17.8	10.2			
SJHA 030 0.5-1.0	23.9	4.6	SJHA 047 0.5-1.0	14.7	14.5			

APPENDIX A - Table 2 CAMP CREEK DRILL HOLE COLLARS

Hole Number	Easting	Northing	Collar Elev
Zone 55K	GDA94 nE	GDA94 nN	m asl
SJHA 009	388604	8050003	58
SJHA 010	388597	8050197	70
SJHA 011	388605	8050401	75
SJHA 012	388400	8050199	72
SJHA 013	388401	8050399	73
SJHA 014	388402	8050602	78
SJHA 015	388998	8050813	62
SJHA 016	389205	8050591	62
SJHA 017	389201	8050425	71
SJHA 018	387411	8050601	85
SJHA 019	389401	8051200	68
SJHA 020	386201	8050233	122
SJHA 021	386199	8050408	102
SJHA 022	386612	8050600	74
SJHA 023	386802	8050600	75
SJHA 024	386993	8050779	61
SJHA 025	386801	8050799	72
SJHA 026	386601	8050791	79
SJHA 027	387001	8050400	85
SJHA 028	387000	8050200	78
SJHA 029	387001	8050599	77
SJHA 030	387201	8050601	83
SJHA 031	387201	8050400	85
SJHA 032	387200	8050200	78
SJHA 033	387401	8050401	85
SJHA 034	387402	8050200	78
SJHA 035	388002	8050200	75
SJHA 036	388206	8050200	74
SJHA 037	388199	8050399	75
SJHA 038	388001	8050402	81
SJHA 039	388201	8050598	80
SJHA 040	388996	8050392	75
SJHA 041	388000	8049996	72
SJHA 042	387990	8049797	68
SJHA 043	388201	8049799	53
SJHA 044	388200	8050002	73
SJHA 045	388798	8050401	75
SJHA 046	388802	8050200	73
SJHA 047	389000	8050200	67
SJHA 048	388800	8050003	62
SJHA 049	389001	8049999	55
SJHA 050	389203	8049999	56
SJHA 051	389400	8050591	65
SJHA 052	388401	8050800	72
SJHA 053	388000	8050801	75
SJHA 054	387801	8050800	68
SJHA 055	387401	8050800	81
SJHA 056	388815	8050894	68
SJHA 057	389132	8051023	63
SJHA 058	387802	8050428	83
SJHA 059	387599	8050418	85
SJAC 052	388713	8050515	73

## Section 1: SAMPLING TECHNIQUES AND DATA

Criteria	Explanation
Sampling techniques	<p>Hand Auger drilling of vertical holes to a depth of 0.5 m to 2.0m, depending on the depth of the ground, was carried out to recover 0.5 m sample intervals downhole (holes SJHA 009 to 059) over the area of bauxite mineralisation known as Camp Creek (Area I). Holes were backfilled immediately after sampling. Material was collected in a drawstring calico bag. The entire drilled half metre sample was collected to assure an appropriate sample size. Each bagged sample was weighed at the laboratory on receipt and these weights varied between 1 to 2.5 kg. The hole was drilled to refusal depth which varied between 0.5 and 2.5m depth in the hard dry soils of that area. The samples from each hole, after testing with hand-held XRF, were sent to ALS Brisbane. In the ALS laboratory. samples were riffle split and 1000g pulverized to 85% &lt; 75 micron then analysed for available alumina (according to process Al-LICP01) and reactive silica (Si-LIP01) using an ICP-AES instrument (Leach conditions – 1g leached in 10ml of 90gpl NaOH at 143 degrees for 30 minutes). Leach tests of selected samples at higher temperature showed no significant gain in available alumina with XRD analyses supporting these observations by showing the bauxite mineralogy to be predominantly gibbsitic (i.e. amenable to low temperature leaching) Analytical data are presented in Appendix A - Table 1, with collar coordinates presented in Appendix A - Table 2.</p>
Drilling techniques	<p>Auger drilling was carried out under close supervision to ensure a high standard of sample collection, (to avoid contamination from shallower intervals), using a Dormer 62mm diameter soil auger with a 600mm wide T-handle. Contamination was avoided by insuring that the hole was completely clean before each successive sample was taken such that the auger could be lowered smoothly and cleanly to the top of the next interval, and that the auger handle was not rotated outside of the sampling interval either during entry or exit from the hole. It is planned to compare a selection of auger hole results with those obtained by a different drilling methodology to ensure that no contamination downhole is occurring with deeper drillholes.</p>
Drill Sample Recovery	<p>Samples collected in calico bags labelled with hole number and depth interval. Representative samples collected in chip trays labelled by hole number and interval. Samples collected are noted in a field log book. The entire sample interval was collected and no loss of fines was noted.</p>

<p>Logging</p>	<p>Samples described geologically on site in a specifically designed logbook with the first sample from each hole sent for analysis (available alumina and reactive silica). The remainder of the hole to be submitted contingent on positive results in the 0.0-0.5m interval.</p>
<p>Sub-sampling techniques and sample preparation</p>	<p>Bagged samples were not subsampled. Samples were prepared by ALS in Brisbane to industry standards according to the techniques described above in sampling techniques. The material was soft and friable and of grain size fine. Cream white gibbsite nodules up to several cm were noted in certain areas</p>
<p>Quality of assay data and laboratory tests</p>	<p>Samples were weighed and analysed by ALS Minerals according to their industry standards. Results for Avail-alumina and Rx-silica presented to 0.01% accuracy. A QC certificate (BR14078034) was issued by ALS containing 2 standards, 2 blanks and 2 duplicate samples showing acceptable levels of accuracy (ie lack of bias) and precision have been established. The duplicate samples varied by up to 0.2% available Al<sub>2</sub>O<sub>3</sub> and 0.2% Rx SiO<sub>2</sub></p>
<p>Verification of sampling and assaying</p>	<p>Sampling was carried out by independent laboratory ALS with standards and blanks. Assay results are presented as reported with no adjustment. Holes SJHA 038 and SJHA 055 were analysed in duplicate and the results presented in a QC certificate. Variation between the duplicates was 0.2% available alumina and 0.2% reactive silica.</p>
<p>Location of Data Points</p>	<p>Drill hole collars were located using hand-held GPS (accuracy 5 m) based on a pre planned 200m x 200m grid. Coordinates recorded in GDA94. Topographic control to +/- 5m provided by digital elevation model (DEM) supplied by Geoimage Pty Ltd, covering the 1:100,000 topographic sheets; Atherton 7963, Bartle Frere 8063, Ravenshoe 7962 and Tully 8062. Coordinates are stored in the GPS memory for later download and also hand recorded in the field geologist. Auger drill collar coordinates are presented in Appendix A - Table 2.</p>

Data spacing and distribution

Camp Creek (Area I) within EPM18463 was drilled at a grid spacing of 200m x 200m over the majority of target geological unit (Atherton Basalt Terrain), inferred as a 10 Mt resource by the previous Aircore drilling program. Certain gaps in the data coverage that can be seen on Figure 2 resulted from physical inability to access the site or landowner access problems. This resulted in a spacing of up to 400m between certain drill holes. The deposit is a surficial deposit formed on flat-lying to gently undulating topography giving high confidence to interpolate geology and grade across these distances – suitable for estimation of indicated resources. Samples were collected at 0.5 m intervals downhole. Bauxite samples in each hole were averaged. Non-bauxites (i.e. those with >10% Rx SiO<sub>2</sub> and <20% Av Al<sub>2</sub>O<sub>3</sub>) were not included in the average calculations. It is proposed to further test the assumption of the suitability of a 200m drill spacing with a test area of at least 200m by 200m with a cross of holes drilled at 25m spacing to detail the potential grade variability and thickness variability of bauxite on a local scale (i.e. shorter than the 200m spacing) – this will be crucial for testing the spacing at which data may be required to better define the DSO qualities and quantities for actual mining.

Orientation of data in relation to geological structure

The bauxite mineralisation at Camp Creek (Area I) is considered as a planar horizontal sheet of approximately 1 to 3 m thick located at surface (surficial deposit developed on weathered top of flow basalts of the Atherton Province). Shallow vertical drilling was carried out on a 200m x 200m grid over the deposit sampling the mineralisation at right angles to the planar sheet (i.e. yielding a true thickness). The first half metre sample 0.0-0.5m was analysed to determine the aerial extent of the mineralisation with the boundary clearly conforming with topography. The deeper samples were then analysed.

Sample security

Samples were shipped in sealed boxes by TNT road transport to ALS minerals in Brisbane. Samples and pulps securely stored by ALS for the duration of the project

Audits or reviews

Calculations and conclusions drawn from analytical work carried out on the air core and hand auger drill samples have been audited and peer reviewed by Heath Sandercock of Sandercock and Associates as part of an independent technical study. Drill hole analytical data, hole spacing and grade continuity assumptions, and this JORC Code Table 1 have been reviewed by Mark Noppe of Xstract Group.

## SECTION 2: REPORTING OF EXPLORATION RESULTS

Criteria	Explanation
Mineral tenement and land tenure status	The Exploration Permit EPM 18463 is held by Volcan Queensland Bauxite Pty Ltd (80%) and South Johnstone Bauxite Pty Ltd (20%); both these companies are 100% owned by Queensland Bauxite Limited. The tenement is secure at the present time.
Exploration done by other parties	Exploration in the area was carried out by Carpentaria Exploration Company in the 1960s. Znebejanek (1961) reported results for total (acid soluble) alumina rather than for alkali leach and results for silica were not reported. Location of CEC drill holes are shown as yellow diamonds on Figure 1
Geology	Bauxite mineralisation occurs at surface in a weathering profile that is known from the drilling to extend from surface to a depth of about 3m. It is found as a continuous blanket overlying flat-lying basalt flows of the Atherton Province within EPM18463. The deposit formed by weathering of the basalt surfaces with resultant leaching of silica downwards and concentration of alumina towards the surface of the profile. In at least half of the Aircore holes drilled, a gradual decline in alumina and increase in silica with depth was noted in the first few metres indicating an in-situ weathering profile over basalt.
Drill Hole Information	Date, GDA94 Zone 55K collar coordinates, collar elevation, hole depth and bauxite thickness for the 51 auger holes and 1 air core hole drilled over the Camp Creek area (Area I) are presented in Table 3. Analytical data (Available Alumina and Reactive Silica analyses) for each of the 52 holes are presented in Table 2. No material data have been excluded.

Data aggregation methods

The results for Camp Creek (Area I) were plotted on DEM topography and, together with the elevation data, modelled and contoured according to the reactive silica in the sample (Figure 3.2). Of the 52 holes drilled, 28 holes contained bauxite (defined as <10% Rx SiO<sub>2</sub> and >20% Avail Al<sub>2</sub>O<sub>3</sub>). The 10% Rx SiO<sub>2</sub> contour and outer edge of bauxite mineralisation conforms with the edge of the remnant plateau at Camp Creek. This plateau (>1.5ma weathering surface as shown on Figure 2) varies in elevation by no more than 20m and corresponds with the 60, 70 and 80m asl contours. Within the <10% Rx SiO<sub>2</sub> boundary, holes with lower reactive silica values lie in well defined areas and are enclosed by a <5% Rx SiO<sub>2</sub> boundary. Seventeen of the holes (grouped into 12 polygonal blocks) are enclosed by the <5% Rx SiO<sub>2</sub> contour and these higher grade data were aggregated for the purposes of estimating a JORC Code Indicated Resource of suitable average grade and tonnage required by the Sandercock and Associates scoping study for mining startup. These resource areas are shown on Figures 3 & 5.

Relationship between mineralisation widths and intercept lengths

Bauxite mineralisation occurring as part of a surface weathering layer can be modelled as a thin horizontal tabular body. Vertical drill holes perforated this horizontal body at right angles, and therefore all down hole mineralisation intercept lengths are true thicknesses. The only hole penetrating the full thickness of the horizontal bauxite sheet is air core hole SJAC052. This hole indicates a thickness of at least 3m. This hole lies on the boundary of blocks 8 and 9

Diagrams

Figure 1 shows the location of EPM18462, collar locations of CEC and QBL air core holes drilled, bauxite discoveries and exploration target area. Figure 2 shows bauxite mineralisation and reactive silica grade contours at Area I, Camp Creek. Figure 3 shows how the 5% contour has been divided into polygonal modelling blocks), in relation to topography and the collars of all drilling in and around this body

Balanced reporting

All exploration data (ALS analytical results and their location and depth range, etc) are presented in the report – grade averages, number of samples used, and maximum variation from the mean are presented and explained.



Other substantive data	<p>All exploration data collected at Camp Creek pertinent to the resource calculation (bauxite thickness and grade - available alumina and reactive silica - data) have been included here. Other mineralogical test work carried out on selected samples, includes high temperature leach testing, multi screen testing to determine suitability of bauxite to beneficiation, XRD analyses to determine bauxite mineralogy (predominantly gibbsitic), multi element XRF analyses to determine range of elemental oxides and their concentration present in the bauxite. The results of these tests have been previously reported to market, and are reported in the 2014 annual report for EPM18463 to the Queensland Department and in the 2014 Scoping Study by Sandercock and Associates - Appendix A - Tables 3, 4 &amp; 5.</p>
Further work	<p>Further drilling is required to define the true thickness of the bauxite body at Camp Creek which is currently inferred as 3 vertical metres based on hole SJAC052. Ground hardness has prevented any of the auger holes penetrating beyond 2 metres in this area to date. A motorised auger is now being investigated to achieve this.</p> <p>An auger drilling program on a grid of 200m x 200m will be conducted on the remainder of the bauxitic areas defined by the 2011 drilling. A shallow auger drilling program on a broader grid of 400 sq m within the 250 sq km Atherton Basalt target area is proposed (1600 points) to define further mineralisation within the remainder of EPM18463.</p> <p>At present the entire area of the Atherton basalt remains prospective with a 48% success rate achieved (29 out of 60 holes in aircore drilling to date).</p>

**SECTION 3: ESTIMATION AND REPORTING OF MINERAL RESOURCES**

Criteria	Explanation
Database integrity	<p>Samples collected and labelled with permanent marker on drawstring calico bag. Samples bagged by hole and shipped to ALS in sealed boxes by TNT Road Transport. Samples stored on site at the ALS Brisbane facility for the duration of the project. Data also returned by ALS as non-editable PDF file and editable .csv file which can be cut and pasted to eliminate keying &amp; transcription errors. Data is stored in a back up drive at the Company's office, and also with ALS as a backup.</p>

### Site visits

The field program is being conducted by local geologist Mr. Trevor Mitchell, supervising two field assistants operating the hand auger. The competent person, Dr Robert Coenraads, was present for the majority of the sampling program and has visited the project area six times in order to arrange landholder Standard Conduct and Compensation Agreements for property access and oversee the drilling project.

### Geological interpretation

Confidence in the geological interpretation of the mineral deposit in Camp Creek (Area I) is high because of its simple geometry and topographic conformity (see Figure 3) - a flat-lying visible weathering horizon at surface. Drilling to date indicates there is little to no overburden.

Drilling on a 200m x 200m grid provides confidence that the geology and mineralisation can be interpolated between boreholes containing bauxite across un-dissected terrain at the same general elevation with areas of high grade mineralisation clearly visible and extrapolated from the outer holes at least 200m beyond. Mineralisation at Camp Creek (Area I) was only previously inferred from hole SJAC052 with the topography/geomorphology guiding the initial Inferred Resource estimation with topographic features such as plateaus, ridge tops etc, interpreted to be part of the original flat lava surface. Results from the auger drilling program at Camp Creek have shown the geological model to be accurate, giving higher confidence to the other resource areas inferred by the Company elsewhere in EPM18463.

- Continuity of the mineral deposit is not assumed where the terrain has been dissected by younger drainages (i.e. around the plateau edges). Drilling at Camp Creek has also shown this assumption to be correct - i.e. that the surrounding bauxite has been eroded away beyond the current plateau edges.

### Dimensions

The deposit at Camp Creek is a flat-lying body measuring 3km x 1 km (area of about 2km<sup>2</sup> with air core penetration of 6m in hole SJAC052, and between 0.5 and 1.5m in the 51 auger holes (SJHA009-SJHA059). Bauxite was encountered in the upper 3 metres of hole SJAC052 and in the 27 out of the 51 auger holes drilled (i.e. in 54% of the holes drilled).

Estimation and modelling techniques

• The model polygons chosen for this analysis are shown in Figure 3 with the outer boundary being the 5% Rx SiO<sub>2</sub> contour. The 5% Rx SiO<sub>2</sub> contour was divided into twelve polygons, each enclosing between 1 and 4 holes and excluding roads, houses and other infrastructure. These holes included in the easternmost 10 polygons were used to create an average grade of 29.7% Av Al<sub>2</sub>O<sub>3</sub> and 3.2% Rx SiO<sub>2</sub> and average thickness of 1.4 m for the model area shown in Figure 3. The drilled shallower portion of bauxite mineralisation at Camp Creek (i.e. that portion intersected by air core and auger drilling within the 5% reactive silica grade contour - and only that in blocks 3 to 12) was chosen for upgrade to JORC Code Indicated Resource in the current modelling exercise. Blocks 1 to 2 were not included at the present time as they would lower the average grade of the bauxite from grade 29.7% Av Al<sub>2</sub>O<sub>3</sub> 3.2% Rx SiO<sub>2</sub> to 29.0% Av Al<sub>2</sub>O<sub>3</sub> 3.4% Rx SiO<sub>2</sub>) nor was the lower grade bauxite lying inside the 10% reactive silica contour but outside of the 5% contour included as this would further lower the average to grade 27.0% Av Al<sub>2</sub>O<sub>3</sub> 4.7% Rx SiO<sub>2</sub>. This remainder of the bauxite body will not be upgraded until mechanised drilling allows proper exploration of the deeper parts of the mineralisation. Continuity of the bauxite mineralisation (Rx SiO<sub>2</sub><10%) was confidently assumed to the edge of that topographic feature with the higher grade contour (Rx SiO<sub>2</sub><5%) lying inside and constrained by the drilling results. The Rx SiO<sub>2</sub> 5% contour was extrapolated using a 200m range of influence (or shape of similar area) around <5% RxSiO<sub>2</sub> grade boreholes and only where not constrained to a lesser distance by the geologic model. Geostatistical analyses of of the exploration data prepared by Mark Noppe of Xstract Group show that the 200 m spacing of samples is sufficient to support the assumption of geological and grade continuity between the sample points, particularly for Available Alumina and, although less certain, probably also Reactive Silica. • Volume calculations were made using the surface area defined by the 5% reactive SiO<sub>2</sub> bauxite grade contour as indicated by the drilling and topographic constraints multiplied by the average bauxite thickness of 1.4m calculated for the modelled area. It is known that that the true average thickness must lie somewhere in between 3m (SJAC052, the deepest hole) and 1 to 1.5m (the thickness encountered routinely in the unbottomed holes. For modelling the the Indicated Resource, those holes that end in bauxite and are less than the average bauxite thickness of 1.4 m in depth have been extrapolated down to the average bauxite depth. In other areas, the depth of the deepest bauxite intercept has been applied to estimate the thickness of bauxite within that within each 200m range of influence. Selective units were not modelled. Assumptions were made about mineralisation and

grade continuity between holes spaced at 200m and these assumptions considered justifiable because of the similarity of grade values between holes within different parts of the mineralized area as shown by the variograms. The edges of the mineralization were controlled by the geologic model (landform model). Polygon volumes were converted to resource tonnages using a dry bulk density value of 1.43 dry tonnes per cubic metre. This figure is an average of three bulk density tests carried out in different areas across the surface at Camp Creek (Previously it was assumed that the bulk density of the bauxite had an approximate value of 1.8, lying within a reasonable bauxite density range of 1.6-1.9. However following field testing the dry bulk density, these assumptions proved to be too high, with the true dry bulk density being more akin to that of soil). Modelling resulted in a JORC Code Indicated Resource of 1.9Mt of average grade of 29.7% Av Al<sub>2</sub>O<sub>3</sub> 3.2% Rx SiO<sub>2</sub> as shown in Table 2. Calculations were checked manually.

#### Moisture

Preliminary estimates of the “free” or surficial moisture were obtained as part of the oven drying process. These samples were collected from the ground surface during an extremely dry weather period and were weighed before and after oven drying at 110 degrees C for 3 hours. It is clear that these “surface moisture” or “air dried moisture” values calculated at the ground surface will vary with the weather. Loss On Ignition (LOI or water of crystallisation and volatiles lost at a high temperatures - ramped up to 1000 degrees C over a period of 2 hours). Values of between 18.8 and 23.2% were returned from 10 XRF analyses conducted by ALS (including from the 3 one-metre samples of bauxite from hole SJAC 052 which returned 21.71% (0-1m), 23.23% (1-2m) and 23.04% (2-3).)

## Cut-off parameters

A cut-off grade of  $<20\%$  avail  $\text{Al}_2\text{O}_3$  &  $>10\%$  reactive  $\text{SiO}_2$ ) was used to define the edges of bauxite mineralisation as discussed in previous announcements. For the purposes of this modelling exercise, a cut-off grade of Rx  $\text{SiO}_2$   $<5\%$  was used to draw a contour and define an area/volume and tonnage of average grade similar to that used in the scoping study prepared by Sandercock and Associates Pty Ltd, satisfying assumptions that the bauxite will be marketable under current economic circumstances, and therefore suitable for initial mining. The remainder of the bauxite at Camp Creek was not included in the modelling exercise. This cutoff grade gives a surface area of  $0.82 \text{ km}^2$  (excluding sealed and infrastructure calculated to be more valuable than the bauxite itself), and the purposes of volume and tonnage calculations. The model polygons chosen for this analysis and shown on Figures 3 and 5 with the outer boundary being the  $5\%$  rx  $\text{SiO}_2$  contour which encloses all 17 holes with intervals of bauxite with reactive silica lower than  $5\%$ . Twelve polygons were drawn, each enclosing between 1 and 4 holes, and these holes were used to create an average grade and minimum thickness for each polygon. The results of this analysis give a total of  $2.2 \text{ Mt}$  for an average thickness of  $1.64\text{m}$  and average grade of  $29.0\%$  Av  $\text{Al}_2\text{O}_3$  and  $3.4\%$  Rx  $\text{SiO}_2$  and are shown in Table 2. This is a conservative estimate of thickness as the tenement average based on all of the bauxite discoveries in 30 out of the 60 air core holes drilled was  $1.8\text{m}$ . By subtracting various polygons from the model, different tonnage and grade scenarios could be achieved. For the JORC Code Indicated Resource calculation it was decided to include only 10 of the 12 blocks (blocks 3 to 12 on Figure 3) yielding  $1.93 \text{ Mt}$  of grade grade  $29.7\%$  Av  $\text{Al}_2\text{O}_3$  and  $3.2\%$  Rx  $\text{SiO}_2$  (blocks 4 to 12) This cutoff grade and careful selection of modellin block allows an average which meets the requirements of the bauxite modelled in the scoping study by Sandercock and Associates Pty Ltd.

Mining factors or assumptions

Mining factors and assumptions are discussed in the independent scoping study prepared for the Company by Sandercock and Associates Pty Ltd. Mining at South Johnstone will be via simple open cut quarrying operations – top soil stripping ahead of a progressing mining face with progressive rehabilitation and return to agricultural use behind, according to an parameters and costs discussed in the study. Ore will be trucked the short distance to Mourilyan Harbour as a direct shipping ore (DSO) product. The Sandercock report shows the mining operation to be viable based on these assumptions. For the purposes of this modelling exercise, it is assumed that bauxite below existing infrastructure, principally houses and sealed roads, will not be mined. It is also assumed that a surface layer of topsoil and organic matter of approximately 20cm thick will be stripped and stockpiled for rehabilitation purposes prior to bauxite mining.

Metallurgical factors or assumptions

Available alumina and reactive silica results are obtained from low temperature alkali leach techniques used by ALS laboratories simulate conditions found in a bauxite refinery.No further benefits are expected to be achieved via metallurgical treatment, such as magnetic separation, screening of fines and the bauxite is most likely to be mined and shipped without further treatment. High temperature leach trials and XRD work on selected samples, as reported previously, indicate the bauxite to be predominantly gibbsitic.The Sandercock and Associates scoping study shows the mining operation to be viable based on these metallurgical factors assumptions.

Environmental factors or assumptions

No detailed environmental studies have been conducted at present, although the Company is currently engaging an environmental consultancy group to begin work in preparation for mining lease application. The land at Camp Creek is currently being used for large and small acreage agricultural activities (principally sugar cane and bananas) and cattle grazing. It is being assumed that a mining licence would be granted by government for an open cut extraction operation. Areas of forest, buffer zones around creeks, road verges and other infrastructure have been excluded from the resource calculation. Discussions with landowners have taken place concerning access of their land for mining purposes and it is being assumed that no unforeseen environmental difficulties, landholder, or other issues would impact on the mining and processing operation.

#### Bulk density

A dry bulk density value of 1.43 dry tonnes per cubic metre was used for the resource calculations. This figure is an average of three bulk density tests carried out in different areas across the surface at Camp Creek as shown in Table 5. Measurements were made on level areas of hard, compact, unvegetated and undisturbed surface with sample weights approaching 5kg each used to minimise measurement error. Samples were taken with a small spade, weighed on a set of scales with 50 g divisions and bagged. The neat hole was lined with a thin plastic bag and filled to the top with water poured in from a measuring bottle with 10ml divisions. Two of the samples were reweighed following being dried in an oven at 110 degrees C for three hours. It is proposed to test the bulk density through the entire bauxite profile at a later stage.

#### Classification

The JORC Code classification is based on a coverage of holes on a 200m x 200m grid over most of Camp Creek (51 auger holes and 1 aircore hole drilled into a sound geological model with bauxite recovered in most of those) plus an excellent understanding of the Modifying Factors of the Mineral Resource, based on the scoping study prepared by Sandercock and Associates Pty Ltd, that will come into play in planning for a simple open pit quarrying and DSO operation (mining, metallurgical, infrastructure, economic, marketing, legal, environment, social and government). Based on this understanding, a select portion of the bauxite mineralisation at Camp Creek (1.9Mt at 29.7% Av Al<sub>2</sub>O<sub>3</sub> 3.2% Rx SiO<sub>2</sub>) has been classified as a JORC Code Indicated Resource, the middle JORC Code category of confidence.

#### Audits or reviews

The mineral resource estimates and modifying factors have been audited and reviewed in an independent scoping study prepared by Sandercock and Associates Pty Ltd. Variograms of the drilling data from Camp Creek were prepared by Mark Noppe of Xstract Group who also provided advice and reviewed the modelling discussion and assumptions in JORC Code Table 1

Discussion of  
relative  
accuracy/confidence

A range of influence of 200m has been applied between holes based on the interpreted geological and grade continuity and correlation between holes, together with the support of the grade continuity at these distances from preliminary geostatistical analysis. Confidence in these estimates and the accuracy of the geologic model has enabled a JORC Code Indicated Resource estimate of 1.9Mt of bauxite grade 29.7 Av Al<sub>2</sub>O<sub>3</sub> 3.2% Rx SiO<sub>2</sub>. Confidence in the JORC Code Indicated Resource is high because it is based on results from only the upper portion of the bauxite mineralisation in the 17 holes used. It is therefore likely that further work will allow the resource to be indicated to a greater depth with further exploration. The relative accuracy and confidence of the estimate is based on drill holes and landform which involves interpolation and extrapolation (200m range of influence in most cases, or distorted ellipse of approximately same area), although this range is supported by geostatistical analyses of the data.