

18 November 2014

ASX / TSX ANNOUNCEMENT

## **OROCOBRE COMPANY PRESENTATION**

Attached is the presentation to be used by Company management at road shows across Australia over the coming weeks.

**For more information please contact:**

### **Australia and Asia**

David Hall  
Business Development Manager  
Orocobre Limited  
T: +61 7 3871 3985  
M: +61 407 845 052  
E: [dhall@orocobre.com](mailto:dhall@orocobre.com)

### **North America**

James Calaway  
Chairman  
Orocobre Limited  
M: +1 (713) 818 1457  
E: [jcalaway@orocobre.com](mailto:jcalaway@orocobre.com)

### **About Orocobre Limited**

*Orocobre Limited is listed on the Australian Securities Exchange and Toronto Stock Exchange (ASX:ORE, TSX:ORL), and is building a substantial Argentinian-based industrial minerals company through the construction and operation of its portfolio of lithium, potash and boron projects and facilities in the Puna region of northern Argentina. The Company is building in partnership with Toyota Tsusho Corporation the first large-scale, “greenfield” brine based lithium project in 20 years at its flagship Salar de Olaroz resource, with planned production of 17,500 tonnes per annum of low-cost battery grade lithium carbonate projected to be in production in November 2014. The Company also wholly-owns Borax Argentina, an important regional borate producer. Orocobre is included in the S&P/ASX 300 Index and was named 2012 Mining Company of the Year by Argentine mining magazine Panorama Minero and the Fundacion para el Desarrollo de la Mineria Argentina (“Fundamin” or Foundation for Development of Argentina Mining). For further information, please visit [www.orocobre.com](http://www.orocobre.com)*



# **Orocobre Limited**

**BUILDING A SUSTAINABLE  
INDUSTRIAL CHEMICALS & MINERALS COMPANY**

**Investor Update  
November 2014**

# Cautionary Notes

This presentation has been prepared by the management of Orocobre Limited (the 'Company') in connection with meetings with institutional investors, for the benefit of brokers and analysts and not as specific advice to any particular party or person. The information is based on publicly available information, internally developed data and other sources. Where any opinion is expressed in this presentation, it is based on the assumptions and limitations mentioned herein and is an expression of present opinion only. No warranties or representations can be made as to the origin, validity, accuracy, completeness, currency or reliability of the information. The Company disclaims and excludes all liability (to the extent permitted by law) for losses, claims, damages, costs and expenses of whatever nature arising in any way out of or in connection with the information, its accuracy, completeness or by reason of reliance by any person on any of it.

This presentation contains "forward-looking information" within the meaning of applicable securities legislation. Forward-looking information is often characterized by words such as "plan", "expect", "budget", "target", "project", "intend", "believe", "anticipate", "estimate" and other similar words or statements that certain events or conditions "may" or "will" occur. Forward-looking information may include, but is not limited to, the financing and profitability of the Olaroz Project, the drawing down of project finance from Mizuho Corporate Bank, the completion of construction at the Olaroz Project, the capital expenditure incurred at the time of completion of construction and the timing thereof, the commencement of commercial production at the Olaroz Project and the timing thereof, the design production rate for lithium carbonate and potash at the Olaroz Project, the expected brine grade at the Olaroz Project, the expected operating costs at the Olaroz Project and the comparison of such expected costs to expected global operating costs, the ongoing working relationship between Orocobre and the Provinces of Jujuy and Salta, the future financial and operating performance of the Company, its affiliates and subsidiaries including Borax Argentina, the results of the Olaroz feasibility study, the estimation and realization of mineral resources at the Company's projects, the viability, recoverability and processing of such resources, timing of future exploration at the Company's projects, timing and receipt of approvals, consents and permits under applicable legislation, trends in Argentina relating to the role of government in the economy (and particularly its role and participation in mining projects), adequacy of financial resources, forecasts relating to the lithium, boron and potash markets, production and other milestones for the Olaroz project, the Olaroz project's future financial and operating performance including production, rates of return, operating costs, capital costs and cash flows, potential operating synergies between the Salinas Grandes and Cauchari projects and the Olaroz project, the potential processing of brines from the Cauchari Project and the incremental capital cost of such processing, expansion, growth and optimisation of Borax Argentina's operations, the integration of Borax Argentina's operations with those of Orocobre and any synergies relating thereto and other matters related to the development of the Company's projects and the timing of the foregoing matters.

Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause actual results to be materially different from those expressed or implied by such forward-looking information, including but not limited to the risk of further changes in government regulations, policies or legislation; the conditions to drawdown of project finance are not satisfied and drawdown is delayed or does not occur, that further funding may be required, but unavailable, for the ongoing development of the Company's projects; fluctuations or decreases in commodity prices; uncertainty in the estimation, economic viability, recoverability and processing of mineral resources; risks associated with construction and development of the Olaroz Project; unexpected capital or operating cost increases; uncertainty of meeting anticipated program milestones at the Olaroz Project or the Company's other projects; general risks associated with the feasibility and development of the Olaroz Project and the Company's other projects; risks associated with investments in publicly listed companies, such as the Company; risks associated with general economic conditions; the risk that the historical estimates for Borax Argentina's properties that were prepared by Rio Tinto, Borax Argentina and/or their consultants (including the size and grade of such resources) are incorrect in any material respect; the inability to efficiently integrate the operations of Borax Argentina with those of Orocobre; as well as those factors disclosed in the Company's Annual Report for the year ended June 30, 2014 filed at [www.sedar.com](http://www.sedar.com).

Forward-looking information is based on a number of assumptions and estimates that, while considered reasonable by the Company, may prove to be incorrect. Assumptions have been made regarding, among other things: the Company's ability to carry on its exploration and development activities at its projects and to continue production at Borax Argentina's properties, the timely receipt of required approvals, the prices of lithium, potash and boron, the ability of the Company to operate in a safe, efficient and effective manner and the ability of the Company to obtain financing as and when required and on reasonable terms. Readers are cautioned that the foregoing list is not exhaustive of all factors and assumptions which may have been used. Although the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking information, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such information. Accordingly, readers should not place undue reliance on forward-looking information. The Company does not undertake to update any forward-looking information, except in accordance with applicable securities laws.

# Investment Highlights

## Flagship Olaroz lithium project approaching production

- Commissioning of the lithium carbonate plant commenced in August with the plant expected to be operational by the end of November
- Project expected to be completed on budget
- Stage 1 production of 17,500tpa, high margin/low cost operation
- Large world-class JORC/NI 43-101 resource (6.4mt LCE, 19.3mt KCL, 1.85mt B) enables significant expansion potential
- Sustainable long life project - Feasibility Study considered 40 yrs with only 15% resources extracted
- Battery grade lithium carbonate has been produced at the Olaroz pilot plant since January 2011
- Key partnerships with Toyota Tsusho Corporation and Jujuy provincial government mining company

## Borax Argentina operations

- Substantial JORC resource and historical estimates
- Long standing business (50+ years operation) undergoing rejuvenation. NPAT positive in FY14
- Over 40,000tpa production of boron chemicals & mineral concentrates
- Large asset base of 3 mines, 2 concentrate plants and a refinery operation with significant upside from existing assets
- Boron used in fertiliser as a micronutrient, glass, ceramic frits, glazes and tile bodies, wood treatments, polymer additives, detergents, soaps and personal care products (buffering, source of active oxygen)
- Owner of mining properties of a number of lithium exploration projects with a royalty stream (Cauchari, Diablillos and Sal de Vida)

## Portfolio of Argentinian regional projects with attractive potential

- Proximity of Cauchari & Salinas Grandes brines to Olaroz provides expansion potential & execution flexibility

## Long-term lithium, borates and potash markets look very strong

- Annual lithium market demand growth of approximately 10% forecast
- Continued growth in electric transport and lithium battery use has the potential for large demand growth

# Capital Markets Snapshot (ASX:ORE,TSX:ORL)

## Capital Structure (14<sup>th</sup> November 2014)

Shares on issue	132,041,911
Options on issue	1,901,092
Share price ASX/TSX	A\$2.64/C\$2.62
Market Capitalisation	A\$348m
Cash*	A\$22.9m
52 week share price range (close):	
ASX	A\$2.08-A\$3.20
TSX	C\$2.00-C\$3.30

\* Cash net of all funding obligations for Oloroz as at 30 September 2014

## Shareholders

Executives and Directors	~10.3%
Acorn	6.8%
Institutions	~50%

## ORE - 1 year share price & volume chart



## Investor Relations Contacts

David Hall  
Business Development Manager

Tel. +61 7 3871 3985  
M: +61 407 845 052  
dhall@orocobre.com

James Calaway  
Chairman

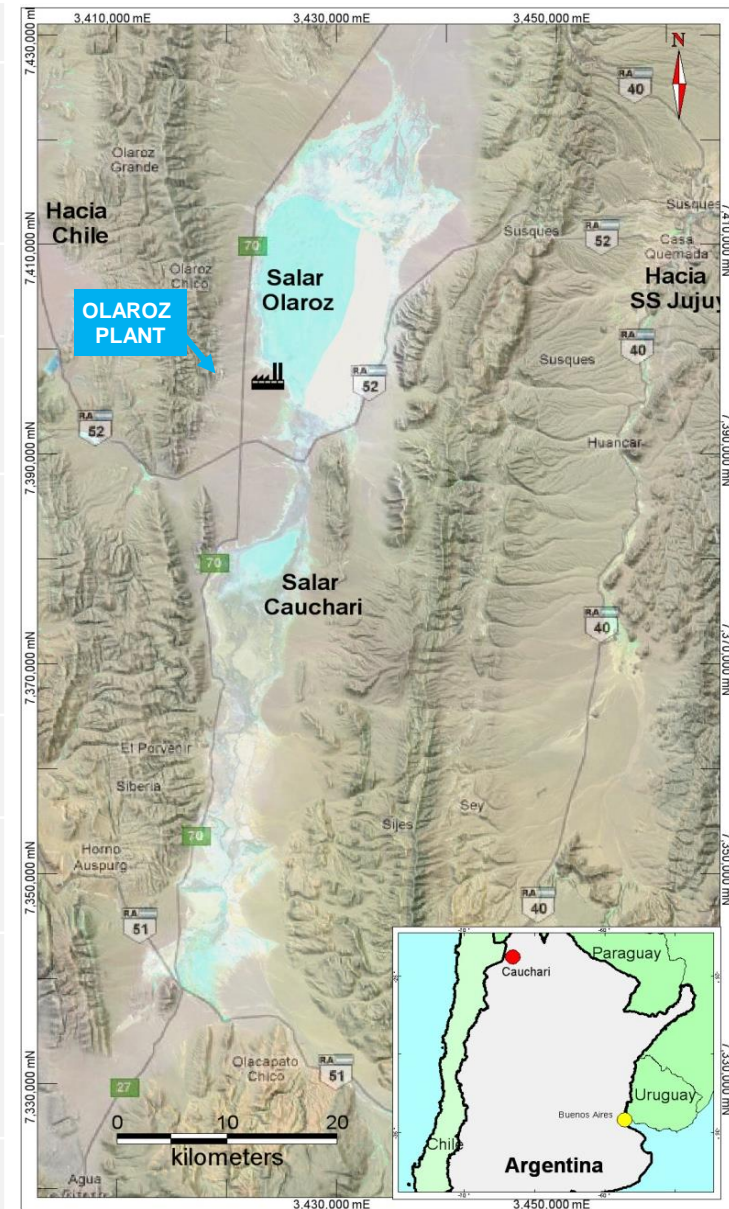
M: +1 (713) 818 1457  
jcalaway@orocobre.com



# Olaroz Project Summary

For more information on Olaroz

<b>Location</b>	<ul style="list-style-type: none"> <li>Salar de Olaroz, Argentina</li> </ul>
<b>Large resource</b>	<ul style="list-style-type: none"> <li>Large measured and indicated resource:                             <ul style="list-style-type: none"> <li>6.4 Mt LCE, 19.3 Mt KCl &amp; 1.85Mt B to only 200m depth</li> </ul> </li> <li>High lithium resource grade of 690mg/l Li</li> <li>Low Mg/Li ratio of 2.4</li> </ul>
<b>Capex</b>	<ul style="list-style-type: none"> <li>Low US\$229.1m CAPEX, capital efficient project</li> <li>Fully funded through to production</li> </ul>
<b>Production</b>	<ul style="list-style-type: none"> <li>Stage 1 of 17,500tpa battery-grade lithium carbonate</li> <li>Optional 20,000tpa KCL</li> <li>Potential for boric acid production via solvent extraction</li> </ul>
<b>Excellent economics</b>	<ul style="list-style-type: none"> <li>High margin project with cash operating unit cost of approximately US\$2,000/t of lithium carbonate at full production rate (excluding any potash credits) vs long term expected pricing of ~US\$5,000-\$7,000/t</li> <li>Material operating cost advantage - hard rock operating costs are significantly higher than brine production costs</li> </ul>
<b>High specification battery-grade LCE</b>	<ul style="list-style-type: none"> <li>Lithium carbonate produced on-site for more than 3.5yrs</li> <li>Product exceeds minimum battery-grade specification</li> </ul>
<b>Exploration potential</b>	<ul style="list-style-type: none"> <li>Thick continuous sand sequence intersected by drilling (to &gt;300m) beneath the current resource. Geophysical surveys indicate depth potential of 600m</li> </ul>
<b>Life of mine and expansion</b>	<ul style="list-style-type: none"> <li>40 year mine life utilises only ~15% of existing resources</li> <li>Sustainable long life project. Expandable production rates for lithium carbonate, potash and boron</li> <li>Expansion for Li at 40% discount per tonne of capacity compared to original capital cost</li> </ul>
<b>Infrastructure</b>	<ul style="list-style-type: none"> <li>Excellent infrastructure: road, gas pipeline, water</li> <li>Local workforce</li> </ul>



# Strong Partners - Government

## Government Agreements

- June 2012: The Olaroz Project was presented to the Argentine President along with the Governor of Jujuy and various Provincial and National Government officials
- It was announced that Orocobre had entered into an agreement with provincial government owned Jujuy Energía y Minería Sociedad del Estado ("JEMSE") and that the Olaroz Project had been approved. Key terms of the JEMSE agreement:
  - JEMSE granted 8.5% equity interest in Olaroz
  - JEMSE's share of construction financing to be loaned by Orocobre and repayable out of 33.3% of dividends received by JEMSE



Ministerial approval for the Olaroz Project

# Strong Partners - Toyota Tsusho, JOGMEC, Mizuho - Fully Funded

<b>Project Capital Cost</b>	<ul style="list-style-type: none"> <li>US\$229.1 million including \$22.1m contingency</li> </ul>
<b>Equity Financing</b>	<ul style="list-style-type: none"> <li>Orocobre 66.5%, TTC 25%, JEMSE 8.5% (funded by Orocobre)</li> <li>Total project equity of US\$82.8 million</li> </ul>
<b>Debt Financing</b>	<ul style="list-style-type: none"> <li>US\$191.9 million based on US\$229.1 million CAPEX</li> <li>~4.5% fixed rate, term of 10 years after grace period</li> <li>Dividends payable twice yearly after debt service</li> </ul>
<b>Guarantees / Commitments</b>	<ul style="list-style-type: none"> <li>JOGMEC guarantee for 82.4% of drawn debt post completion</li> <li>Additional guarantees from TTC</li> </ul>



## Toyota Tsusho partnership

- Toyota Tsusho Corporation ("TTC") is 22% owned by Toyota Motor Corporation & 11% owned by Toyota Industries, and is one of Japan's leading global trading houses
- Definitive Shareholders Agreement executed in October 2012 for a JV to develop the Olaroz Project
- The effective Olaroz Project equity interest by TTC is 25.0%
- Low cost financing package from Japan facilitated through TTC and arranged by Mizuho Corporate Bank ("Mizuho")
- Debt package covers 70% of CAPEX - guaranteed by the Japanese government's Japan Oil, Gas and Metals National Corporation ("JOGMEC")
- TTC has agency rights (on a commission basis) for lithium carbonate production from the first stage





# Strong Partners – Local Business and Community

## EPCM Implementation & Investment

- Strong Jujuy based owners team
- Argentine construction management company
- 89% of the total spend on the Olaroz project has been within Argentina
- Local spend includes ~54% spent in Jujuy Province and ~20% in Salta Province



## Community and Shared Value Policy

- Working closely with local suppliers and contractors to provide the best results to maximize local involvement, employment and economic impact in the local economy
- Working with the community and personnel to provide health and education services
- Jujuy Province residents comprise ~90% of the permanent Olaroz workforce and over 60% of the current construction workforce



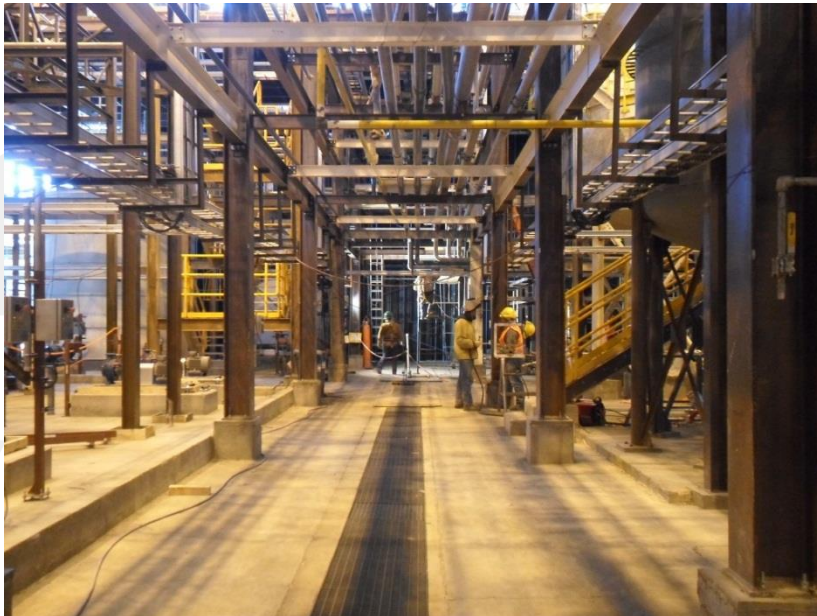
## Benefits of Local Focus

- Benefits of strong local management and utilisation of local companies include:
  - Knowledge of local laws, requirements and procedures expedites progress and ensures we minimise procurement and construction risks
  - Knowledge of local producers ensures the engineering design is suited to support local industry and reduces lead times for materials
  - Knowledge of local conditions and possible problems allows forward planning to occur to prevent delays

***Managing and partnering with local companies reduces our risk exposure and gives us greater confidence in achieving our goals for the successful implementation and long-term continuity of our projects.***

# Olaroz Lithium Project Construction Progress

- Project construction is in the final stages of completion
- Commissioning of circuits is occurring as they are released from construction
- Plant expected to be operational during November
- Inventories of brine building with pumping from the bore fields operating at 200l/s compared with design rate of 180l/s
- Liming Plant operating at 230l/s compared to design rate of 200l/s
- Project expected to be completed on budget





# Olaroz Project - The Construction Journey



# Lithium – Strong Market Fundamentals

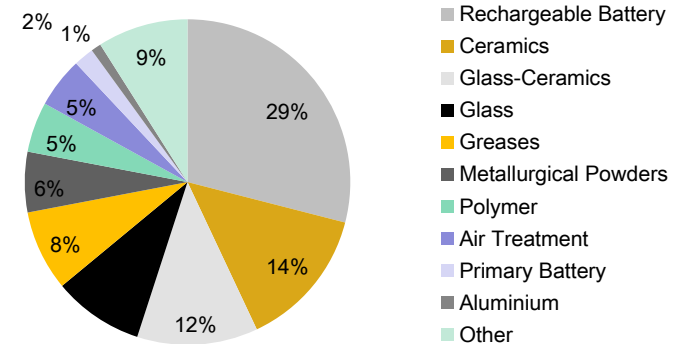
## Lithium uses – batteries, ceramics and glass driving growth

- Lithium has experienced significant market growth:
  - It is increasingly in demand for its electrochemical properties in batteries, however there has also been significant growth in other markets such as ceramics, glass and greases
  - The CAGR since 2000 has been approximately 7% including the impact of the economic downturn of 2008-09
- Use of battery-grade lithium portable electronic devices has grown at ~20% per year since 2000
- Mass production of hybrid and electric vehicles represents the most significant “step change” for lithium demand

## Lithium supply is limited

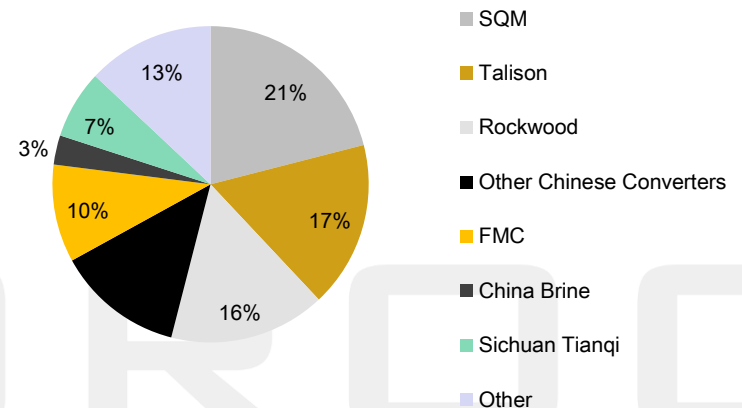
- Limited number of known economically extractable lithium resources
- Global production highly concentrated: ~80% of world supply comes from Chile (SQM and Rockwood), Argentina (FMC Corp) & Australia (Talison)
- Commercial lithium production comes from two sources:**
  - Brines & Minerals (Hard rock) - Production from brines is typically much lower in cost than hard rock (~half)
- Supply response from existing brine producers is constrained by development challenges and declining grades
- Orocobre will be the first developer of a large scale lithium brine mine in 20 years***
- Large end users are actively seeking supply alternatives to meet rapidly growing needs

## Current Lithium Demand by Market



Source: Roskill Information Services Ltd, 2014 estimates

## Current Lithium Supply by Company



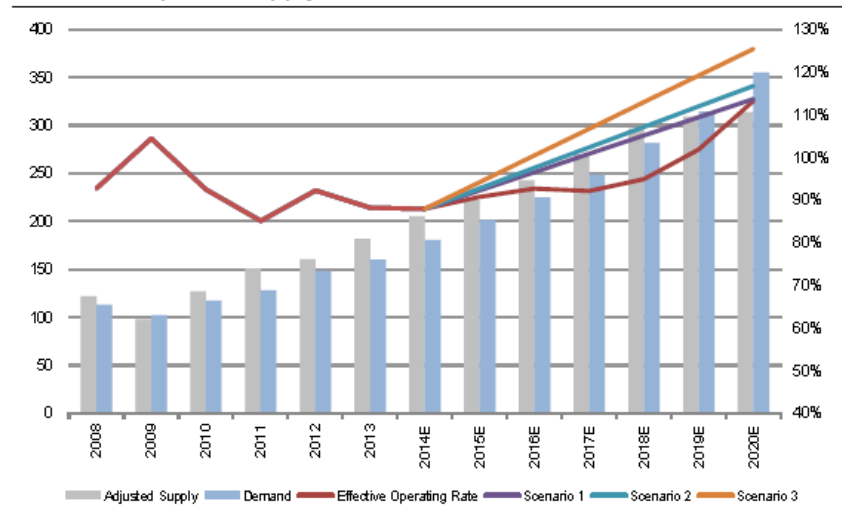
Source: Roskill Information Services, 2013



# Lithium – Demand, Supply, Pricing

- **“Demand to be robust:** Driven by power storage demand (everything from power tools and handheld devices to electric vehicles), the global lithium industry should, we believe, enjoy a **CAGR of roughly 12%** through the end of the decade (starting in the mid/high single digits and accelerating afterwards as the EV market enjoys further penetration)”
- **“We estimate lithium consumption in 2013 was of the order of ~160k tonnes of LCE “**
- **“Supply will be short:** There have been investor concerns about the supply side of the equation given a number of announced projects in the lithium industry. Upon a detailed review of the projects, we believe the risk is that demand will actually outstrip supply as we approach the later part of the decade, with **demand potentially as high as 125% of total capacity”**
- **“We estimate the global nameplate capacity of the lithium market at 185k metric tonnes of lithium carbonate equivalent units”**
- **“Pricing has risk to the upside:** ...without significant incremental investment from the lower-cost producers (beyond the announced projects) pricing will need to push higher to facilitate investment in higher-cost projects/methods of lithium production (the way rising oil prices facilitated ultra-deep water and oil sand projects/investments)”
- **“Industry checks suggest lithium carbonate pricing could test \$7,000-8,000 per tonne in 2020”**

Exhibit 1: Adjusted Supply-Demand w. Scenarios



Source: Credit Suisse Report, 2014

**“Bottom Line:** Demand growth is projected to grow 12% annually compounded looking out to the end of the decade. While there are a number of capacity projects planned to come up during this time frame, we believe a number of them will be either delayed or potentially even cancelled suggesting a **noticeable spread between theoretical capacity and effective capacity**. Should this scenario play out, lithium pricing should see upward pressure looking forward with certain industry checks suggesting 2020 prices could be ~40-60% higher than today”

Source: Credit Suisse Equity Research  
American Region Specialty Chemicals 27 May  
2014

# Lithium – Market Outlook

## Rockwood:

*"I think that, worldwide, the demand for lithium products will probably grow by 15% to 20%. The issue for Rockwood is going to be, can we actually supply it? Because we are getting close to being sold out, and that's why we want to bring the new plant on stream, but that plant is not going to come on stream until 2015."* (Rockwood 03 March 2014 Conference Call)

*"Like everybody else, I think we're all operating kind of at a full capacity sort of level. And you're going to see -- and especially in the Asian markets, **higher prices would be a good thing for us and for everybody.**"* (Rockwood Q3 2014 Results Commentary)

## FMC:

*"Lithium Demand Growth of 9% CAGR expected through 2020"* (FMC Investor Marketing Dec 2013)

*"FMC Corporation announced today that effective December 1, 2014, or as contracts permit, **it will increase global pricing for all grades of lithium carbonate and lithium salts including lithium hydroxide, pharmaceutical carbonate and specialty salts by 10 percent.** The increases apply to all standard and non-standard pricing."* (PRN Newswire 4<sup>th</sup> November 2014)

## SQM:

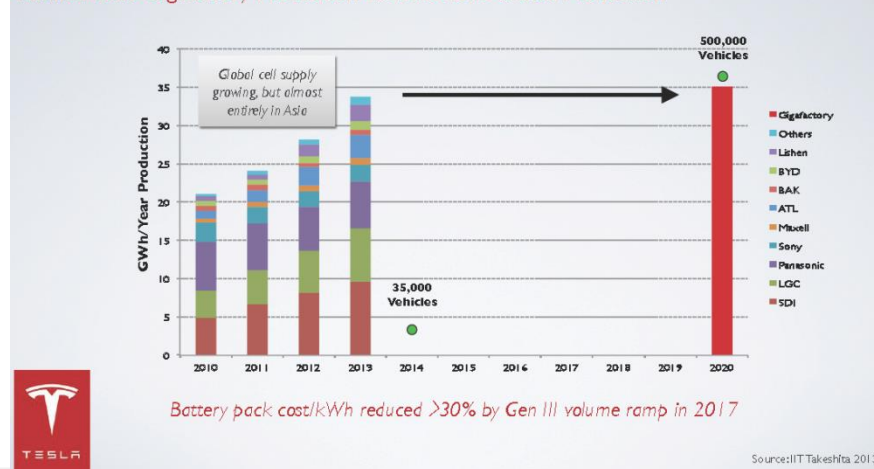
*"We believe the lithium market is positioned to grow in the short and long term resulting from the development of new technologies, as well as due to the strong growth in industrial applications. Lithium market demand should grow between 8-10% in 2014."* (SQM Media release 04 April 2014)

## Tesla:

*"**Tesla** is also pushing ahead for a "gigafactory" with 35 gWh of production that would equate to ~25k tonnes of lithium carbonate equivalent demand"* (Credit Suisse Equity Research American Region Specialty Chemicals 27 May 2014)

*"The Gigafactory is designed to reduce cell costs much faster than the status quo and, by 2020, produce more lithium ion batteries annually than were produced worldwide in 2013".* (Tesla Motors March 2014)

Planned 2020 Gigafactory Production Exceeds 2013 Global Production



# Lithium – Orocobre, Right Place, Right Time....

## We believe the market is currently in balance:

- The market demand in 2013 is estimated at approximately 165,000tpa with an anticipated CAGR of ~10%
- The market can be segmented into two segments, China & the Rest of the World (ROW). The ROW market is fundamentally in balance in 2014

## Current producers face challenges:

- SQM volume down over 20% (prices up 12%) in 2013. No plans for expansion
- Rockwood 20KT expansion 2015? Subject to environmental licence approvals at Atacama
- Talison volume is supplied predominantly to China (Ownership 51% Tianqi, 49% Rockwood)

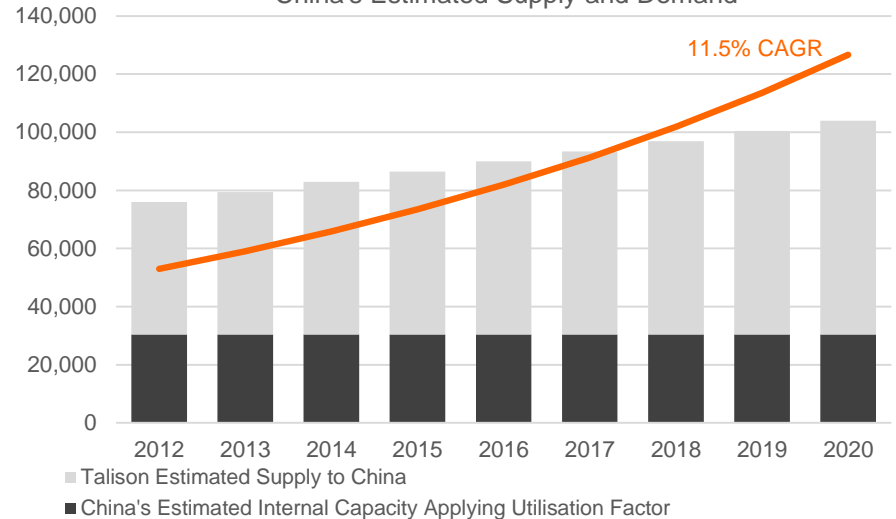
## What are the sources of new supply?:

In the short term, new supply will come from Orocobre and Rockwood (subject to licence approvals)

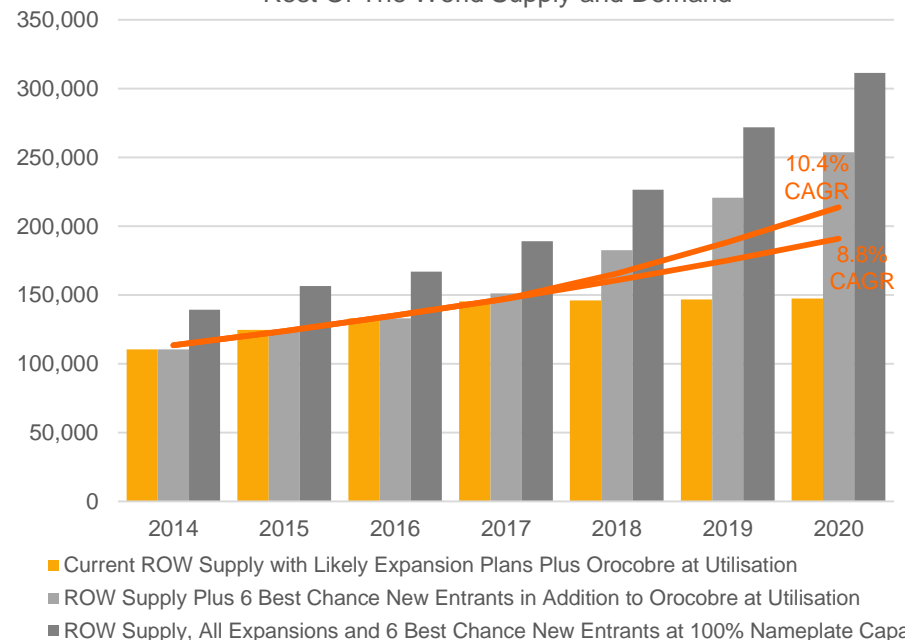
The market inflection point, where supply meets demand, is forecast to occur in 2017 for China and 2016-17 for the ROW.

***Orocobre has a large, low cost, expandable resource and a strategy to expand in line with market growth***

China's Estimated Supply and Demand



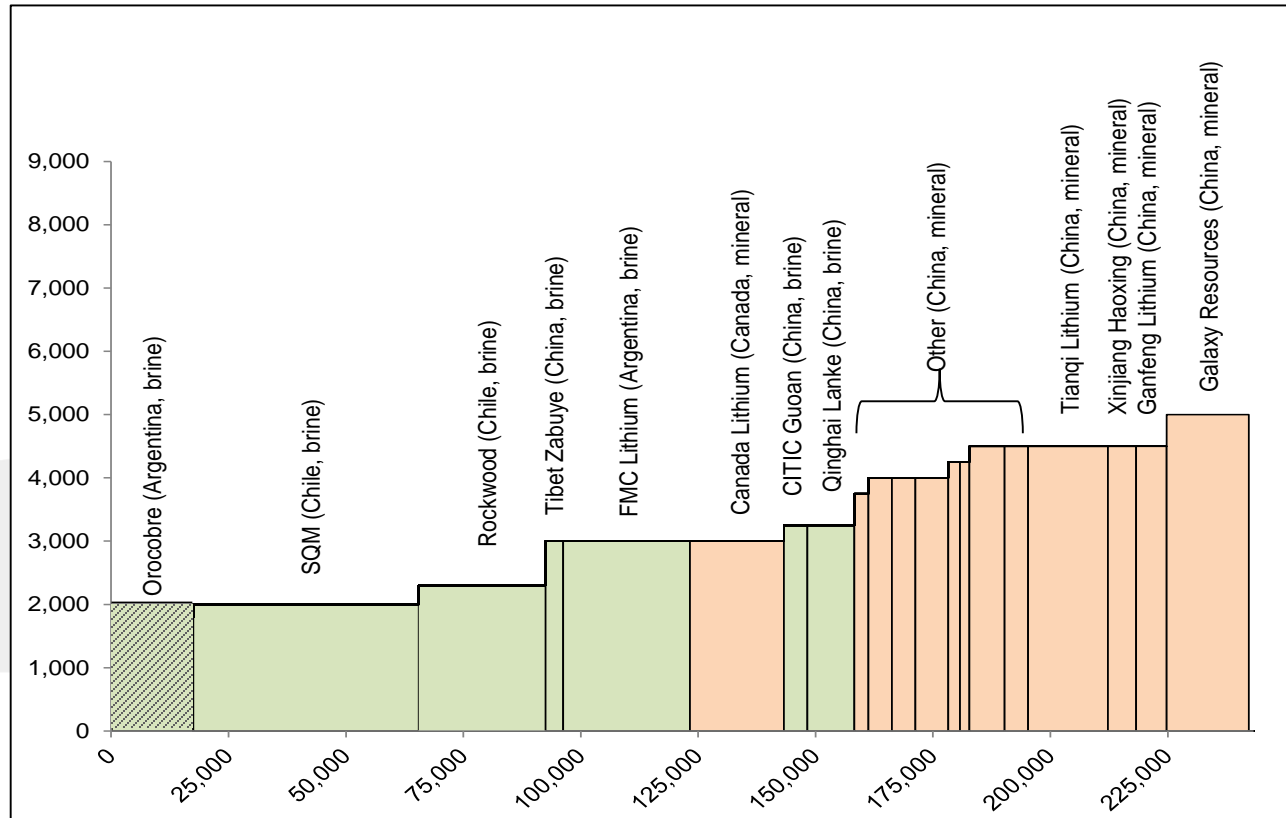
Rest Of The World Supply and Demand



Source: Company websites, analyst reports and Orocobre estimates.  
Utilisation factors applied @ 85% for ROW and 60% for China

# Operating cost comparison with existing producers

The Olaroz Project is forecast to have a bottom quartile unit cost of production at nameplate capacity



Source: Roskill estimates 2013

Notes: Includes carbonate, hydroxide and chloride

Orocobre will not produce any significant volume of lithium compounds in 2013 and is included for comparative purposes only



# Borax Argentina Operations

[For more information on Borax Argentina](#)

- Borax Argentina is a long established (50+ years) boron minerals & refined chemicals producer, and owns one of the few important borate deposits globally
- Three product streams: borax, boric acid and boron minerals
- Annual production in excess of 40,000t of boron chemicals & mineral concentrates
- Operations include three open pit mines and concentration plants in Tincalayu, Sijes & Porvenir
- Refinery operations at Campo Quijano have historically produced various boron chemical products including boric acid, borax decahydrate, borax pentahydrate and anhydrous borax
- Reliable supplier of high quality products with long-term relationships with key South American industrial and agricultural customers
- Substantial JORC compliant resources at Tincalayu and Porvenir and historical estimates on other deposits (RTM)
- Sijes is the next location to be upgraded from a historical estimate to a JORC compliant resource



# Borax Argentina Operations

## Three main open-pit mining operations:

- Tincalayu
- Porvenir
- Sijes

## Tincalayu - Borax product stream

- Tincal mineral was previously mined and concentrated at Tincalayu and transported to Campo Quijano for refining
- Borax chemical plant relocated to Tincalayu with a 100tpd borax decahydrate production capabilities

## Porvenir – Boric acid

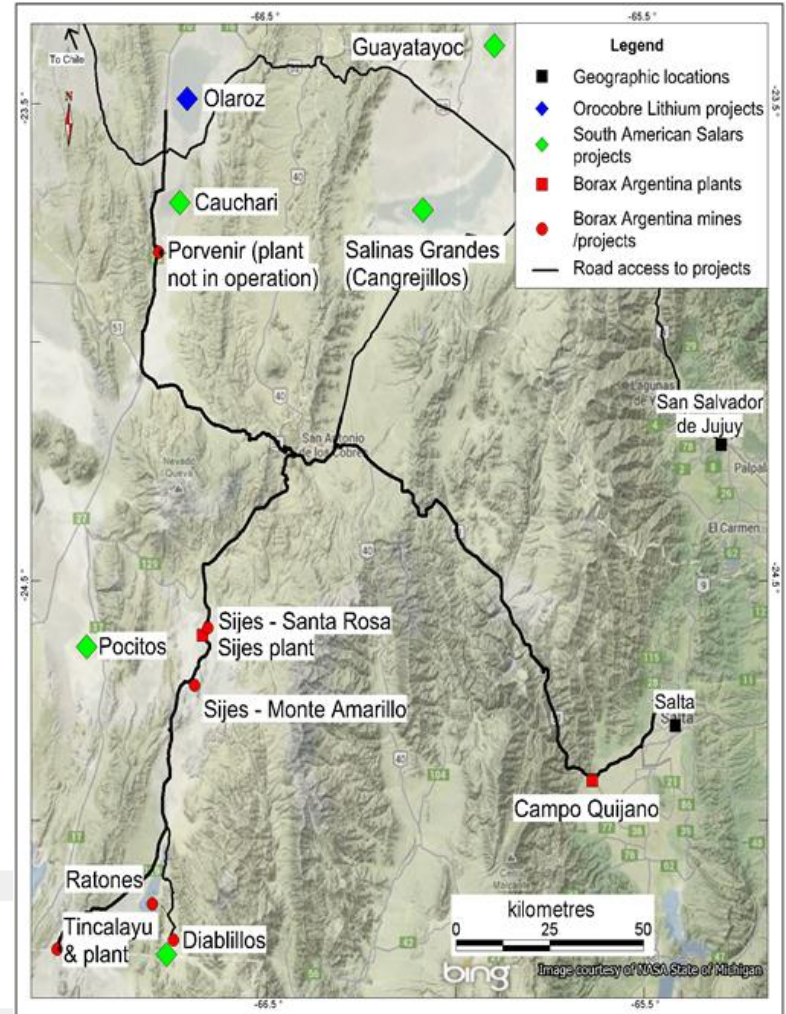
- Ulexite mineralisation mined at Porvenir
- High grade feed of ulexite mineralisation is upgraded by drying and hand sorting onsite before processing at the 9,000tpa Campo Quijano plant, 300km away
- PFS completed on construction of a new boric acid plant in Olacapato, 40km south of Porvenir, to produce up to 25,000tpa of boric acid

## Sijes – Borate minerals

- Principally produces hydroboracite and colemanite
- Two open cut mines (Santa Rosa & Monte Amarillo)
- A concentrator is located at Sijes

## Plants

- Borax refining successfully relocated on time and within budget from Campo Quijano to Tincalayu
- Boric acid plant located at Campo Quijano



# Borax Argentina Products & Markets

Product streams	Main products	Production per annum	Use	Pricing	Approx. Size of global market B2O3 equiv.	Key competitors
<b>Borax</b>	<ul style="list-style-type: none"> <li>Borax Decahydrate</li> <li>Borax Pentahydrate</li> <li>Borax Anhydrous</li> </ul>	Plant capacity: >30,000tpa of borax decahydrate equivalent (currently 60% utilised)	Glass, ceramics, technical grade fibreglass, insulation grade fibreglass, fluxes & fertilisers	Different for each product. Price range approx. US \$550-1100/t FOB	1,578k t global trade in 2013	Eti RTM SVM Russian Bor
<b>Boric acid</b>	<ul style="list-style-type: none"> <li>Boric acid</li> </ul>	Plant capacity: 9,000tpa PFS completed on a 25,000tpa plant at Olacapato	Glass, ceramics, fertilisers and wood preservatives	Price range approx. US\$750/t to \$1,250/t CIF over the past 5 years (industrial grade)	825k t global trade in 2013	Eti RTM Russian Bor MSR INKABOR QUI BORAX
<b>Borate minerals</b>	<ul style="list-style-type: none"> <li>Hydroboracite</li> <li>Colemanite</li> </ul>	25,000tpa processed borate minerals	Ceramics and agriculture	Price range approx. US \$200-\$600/t FOB dependent on quality/specification/application	803k t global trade in 2013	Eti Russian Bor



with a variety of market uses  
**GROWING**  
 on average  
**4-6%** pa

**EVERYTHING**

from what we **eat**  
 to where we **live**  
**RELIES ON**  
 quality supply of  
**boron** products

# Borax Argentina Initiatives

## Borax /Tincalayu

- Relocation of Bx10 refining plant from Campo Quijano to Tincalayu mine completed June 2014 and now in ramp-up. This will result in greater efficiency with mineral utilisation and lower cost per unit of production. Plant is now able to treat run of mine mineralisation which will improve output
- Tincalayu mine upgrade from historical estimates to JORC compliance completed with resource estimate much larger than expected
- Indicated and Inferred Resource of 6.5 million tonnes at 13.9% B<sub>2</sub>O<sub>3</sub> is estimated at the marginal cut-off of 5.6% B<sub>2</sub>O<sub>3</sub> appropriate to the current production capacity of 30,000tpa borax decahydrate.
- At a marginal cut-off of 2.8% B<sub>2</sub>O<sub>3</sub> , appropriate for a possible expanded production rate of 100,000tpa borax decahydrate there is an Indicated and Inferred Resource of 17.8 million tonnes at 11% B<sub>2</sub>O<sub>3</sub>.
- Whittle 4D modelling indicates that for both scenarios there is a potential mining life in excess of 30 years based on optimum discounted cashflow criterion. Technical studies have been initiated to investigate expansion options.

## Borate Minerals

- Work will now commence on upgrading the Sijes hydroboracite deposit from historical estimates to JORC compliance
- Life of Mine Study planned for Tincalayu

## Boric Acid

- The Porvenir Historical Estimate was recently upgraded to JORC compliance (refer announcement on 29th April 2014 & Appendix 1)
- A pre-feasibility study ("PFS") has been completed to investigate the construction of a new boric acid plant in Olacapato, only 40 km south of the Porvenir mining operations, to produce up to 25,000tpa of boric acid

***These initiatives will contribute to positioning the Borax Argentina operations for growth***



# Borax Argentina – Complements Lithium Focus

- Extensive operations and landholdings provide potential increased financial and production performance
  - ✓ Near-term – improves made to performance via process recovery and asset utilization changes
  - ✓ Longer-term – potential to increase operational scale through use of available mineralisation and increases to downstream product offerings
- Promising organic growth prospects given its large asset base, strong production infrastructure and capable management team
- Aligns with Orocobre's salar focused industrial minerals development strategy
- Boron minerals and chemicals production complements Orocobre's potential future production of boron chemicals from brines at Olaroz and elsewhere
- Well-established regional operating presence & local expertise complements existing Orocobre management in Jujuy and Salta provinces
- ***Demand growth outlook for boron products remains strong, both regionally and globally***



# Depth in additional mines and projects

## Cauchari (Li, K, B) - Exploration

- Lithium-potash-boron property immediately south of planned Olaroz plant
- Inferred Resource 470Kt LCE, 1.6Mt KCL & 122Kt B
- Incremental production for Olaroz

For more information on Cauchari

## Salinas Grandes/Cangrejillos (K, Li, B) - Exploration

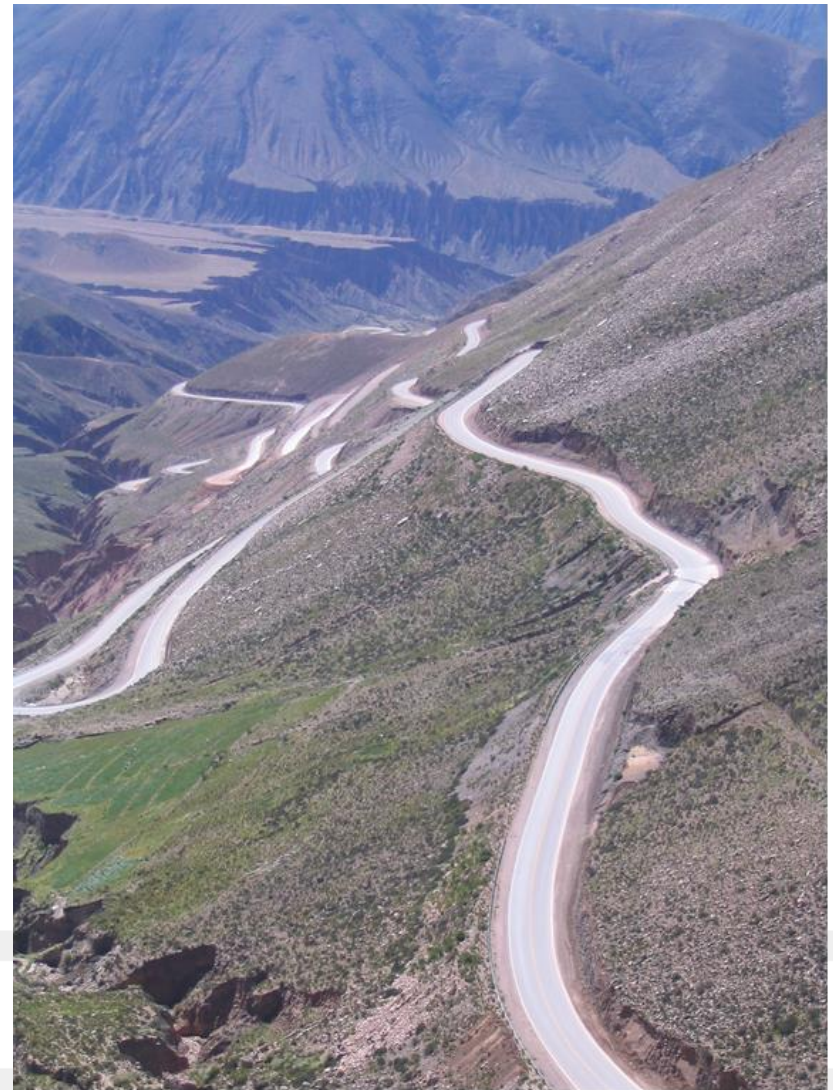
- Li-K project -Drilling shows excellent grades & chemistry
- Inferred Resource 240,000t LCE, 1.0Mt KCL & 12Kt B
- Synergies with nearby Olaroz

For more information on Salinas Grandes

## Guayatoyoc & Others (Li, K, B) - Exploration

- Includes “K” discoveries – not yet drilled

For more information on Guayatoyoc



The conversion rate used is 5.32 tonnes of lithium carbonate equates to 1 tonne of lithium metal and 1.91 tonnes of muriate of potash equates to 1 tonne of potassium metal.

# Conclusion

- Olaroz Project construction is on budget with plant operational November 2014
- Strong long term partnerships
  - Government
  - TTC, JOGMEC, Mizuho Corporate Bank
  - Local Business and Community
- Minimising and managing risk through the Community and Shared Value Policy
- Olaroz is a high margin, sustainable, expandable, low cost business
- Attractive high growth markets for lithium carbonate
- Additional value/growth in Li, KCL and B in brines and minerals (Cauchari, Salinas Grandes, Borax Argentina)



## Tesla Model S

Range of 300 miles (480 km)

Recharge time:

- Battery swap in 90 seconds
- “Supercharge” 50% of battery capacity in 30 minutes
- “High Power” wall charge (240V, 80A) 4 hours 43 minutes

Source: Tesla Motors Website







## APPENDIX 1 – RESOURCE STATEMENTS

OROC



# Olaroz – Resource Estimate Summary

- Olaroz Project has very large resource base which has potential to support long project life
- Combined Measured and Indicated Resource of:
  - 6.4 million tonnes of lithium carbonate
  - 19.3 million tonnes of potash (potassium chloride)

Resource Category	Area	Thickness	Mean specific yield	Brine volume	Concentration			Tonnes of Contained Metal		
					Lithium	Potassium	Boron	Lithium	Potassium	Boron
	sq. kms	metres	%	cubic kms	mg/L	mg/L	mg/L	Million Tonnes	Million Tonnes	Million Tonnes
Measured Resource	93	54	8.4%	0.42	632	4930	927	0.27	2.08	0.39
Indicated Resource	93	143	10.0%	1.33	708	6030	1100	0.94	8.02	1.46
<b>Measured and Indicated Resource</b>	<b>93</b>	<b>197</b>	<b>9.6%</b>	<b>1.75</b>	<b>690</b>	<b>5730</b>	<b>1050</b>	<b>1.21</b>	<b>10.10</b>	<b>1.85</b>

The resource model and brine resource estimation on the Salar de Olaroz was undertaken by John Houston who is a Chartered Geologist and a Fellow of the Geological Society of London. John Houston has sufficient relevant experience to qualify as a competent person as defined in the 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. He is also a "Qualified Person" as defined by Canadian Securities Administrators' National Instrument 43-101.

The conversion rate used is 1 tonne of lithium metal produces 5.32 tonnes of lithium carbonate and 1 tonne of potassium produces 1.91 tonnes of muriate of potash



# Salinas Grandes Resource Estimate Summary

- An inferred resource has been estimated for the shallow brine body to approximately 13 m as 56.5 million cubic metres of brine at 795 mg/L lithium and 9,550 mg/L potassium which is equivalent to 239,200 tonnes of lithium carbonate and 1.03 million tonnes of potash (potassium chloride) based on 5.32 tonnes of lithium carbonate being equivalent to 1 tonne of lithium and 1.91 tonnes of potash being equivalent to one tonne of potassium as shown in the table.

	Brine body parameters				Average resource concentrations			Tonnes contained metal		
Resource Category	Area km <sup>2</sup>	Average thickness m	Mean specific yield %	Brine volume Million m <sup>3</sup>	Lithium mg/l	Potassium mg/l	Boron mg/l	Lithium	Potassium	Boron
Inferred resource	116.2	13.3	4.1%	56.5	795	9,547	283	44,960	539,850	12,100

- The resource estimate was prepared by Murray Brooker. Murray Brooker is a geologist and hydrogeologist and is a Member of the Australian Institute of Geoscientists. Murray has sufficient relevant experience to qualify as a competent person as defined in the 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. He is also a “Qualified Person” as defined by Canadian Securities Administrators’ National Instrument 43-101.

OROC

# Salar de Cauchari Resource Estimate Summary

- An inferred resource has been estimated in two adjoining areas of the salar, with a total 230 million cubic metres of brine at 380 mg/L lithium and 3,700 mg/L potassium. This is equivalent to 470,000 tonnes of lithium carbonate and 1.6 million tonnes of potash (potassium chloride) based on 5.32 tonnes of lithium carbonate being equivalent to 1 tonne of lithium and 1.91 tonnes of potash being equivalent to one tonne of potassium.

Inferred Resource Area	Brine body parameters				Average resource concentrations			Tonnes contained		
	Area km2	Average thickness m	Mean specific yield %	Brine volume Million m3	Lithium mg/l	Potassium mg/l	Boron mg/l	Lithium	Potassium	Boron
North 170 m deep	19.69	170	6.1%	204.5	399	3,833	547	81,497	783,829	111,901
South 50 m deep	11.35	50	4.6%	26.0	264	2,502	421	6,851	64,932	10,916
Combined	31.04			230.4	383	3,683	533	88,348	848,761	122,817
LCE/potash Equivalent								470,009	1,621,134	

- The resource estimate was prepared by Murray Brooker. Murray Brooker is a geologist and hydrogeologist and is a Member of the Australian Institute of Geoscientists. Murray has sufficient relevant experience to qualify as a competent person as defined in the 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. He is also a "Qualified Person" as defined by Canadian Securities Administrators' National Instrument 43-101.

OROC

# Porvenir Resource Estimate Summary

- A measured and indicated resource of 2.3 million tonnes at 20.4% B<sub>2</sub>O<sub>3</sub> is estimated at the current 16% mining cut off grade. The resource extends to a maximum depth of 2.9m and is easily exploited by low cost strip mining. A measured and indicated resource of 6.9 million tonnes of 14.9% B<sub>2</sub>O<sub>3</sub> is estimated at a 9% B<sub>2</sub>O<sub>3</sub> mining cut off grade.

Classification	Cut-off grade	Tonnes	Grade% B <sub>2</sub> O <sub>3</sub>	Tonnes B <sub>2</sub> O <sub>3</sub>
Measured	9%	4,907,877	14.5	710,672
Indicated	9%	1,942,433	16.0	310,517
<b>Measured &amp; Indicated</b>	<b>9%</b>	<b>6,850,000</b>	<b>14.9</b>	<b>1,020,000</b>
Classification	Cut-off grade	Tonnes	Grade% B <sub>2</sub> O <sub>3</sub>	Tonnes B <sub>2</sub> O <sub>3</sub>
Measured	16%	1,474,341	20.0	295,117
Indicated	16%	804,595	21.0	168,776
<b>Measured &amp; Indicated*</b>	<b>16%</b>	<b>2,278,937</b>	<b>20.4</b>	<b>463,992</b>

- The resource estimate was prepared by Murray Brooker. Murray Brooker is a geologist and hydrogeologist and is a Member of the Australian Institute of Geoscientists. Murray has sufficient relevant experience to qualify as a competent person as defined in the 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. He is also a “Qualified Person” as defined by Canadian Securities Administrators’ National Instrument 43-101.



# Tincalayu Resource Estimate Summary

- An Indicated and Inferred resource of 6.5 million tonnes at 13.9% B<sub>2</sub>O<sub>3</sub> at the a marginal cut-off of 5.6% B<sub>2</sub>O<sub>3</sub>, which increases to 17.8 million tons of 11.0 % B<sub>2</sub>O<sub>3</sub> , at a marginal cut-off grade of 2.8 % B<sub>2</sub>O<sub>3</sub>.

	Current production 30 Ktpa			Expanded Production 100 Ktpa		
	Cut-off	Tonnes (Mt)	Soluble B2O3 (%)	Cut-off	Tonnes (Mt)	Soluble B2O3 (%)
<b>Global Resource (not limited to a pit shell) - with Marginal Cut-off</b>						
Indicated	5.6	6.9	13.9	2.8	6.9	13.8
Inferred	5.6	9.9	10.2	2.8	13.8	8.5
Indicated + Inferred	5.6	16.8	11.7	2.8	20.7	10.3
<b>Maximum DCF In-pit Resource - with Marginal Cut-off</b>						
Indicated	5.6	5.1	14.7	2.8	6.8	13.8
Inferred	5.6	1.4	11.0	2.8	11.0	9.3
Indicated + Inferred	5.6	6.5	13.9	2.8	17.8	11.0

- The resource estimate was prepared by Murray Brooker. Murray Brooker is a geologist and hydrogeologist and is a Member of the Australian Institute of Geoscientists. Murray has sufficient relevant experience to qualify as a competent person as defined in the 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. He is also a “Qualified Person” as defined by Canadian Securities Administrators’ National Instrument 43-101.

# Historical Borax Argentina resources (announced 21st August, 2012)

Mine/Project	Material	Historical Estimate	Tonnes	Grade% B2O3	Tonnes B2O3
<b>Current Soft Rock mines</b>					
<b>Sijes - Hydroboracite</b>	Hydroboracite	Measured	3,099,998	22.8	706,800
<b>Sijes – Colemanite</b>	Colemanite	Inferred	200,000	20.0	40,000
<b>Total &amp; average</b>			3,299,998	22.6	746,800
<b>Undeveloped Ulexite Deposits in Salt Lake Sediments</b>					
<b>Ratones</b>	Ulexite	Indicated	364,663	18.0	65,639

The historical estimate at Diablillos is not being re-stated as the raised phreatic surface caused by 3rd party drilling may affect the ability to mine some of this mineralisation.

Footnotes: The historical estimates are in equivalent categories to those used by the JORC and CIM reporting codes. However, these estimates did not satisfy either current JORC or CIM/NI 43-101 requirements for the reporting of resources and were considered to be historical resources (see Orocobre ASX/TSX announcement August, 2012).

**A qualified person did not do sufficient work to classify the historical estimates as current mineral resources or mineral reserves, and the Company did not treat the historical estimates as current mineral resources or mineral reserves. It is uncertain whether following evaluation and/or further exploration any of the historical estimates will ever be able to be reported as current estimates in accordance with the JORC code or NI 43-101.**

# Historical Borax Argentina resources (announced 21st August, 2012)

---

There is no new information that impacts on these historical estimates. Note that material mined in 2012-2014 is not accounted for as depletion in the figures above, with approximately 35,000 tonnes at Sijes the estimated annual production of mineralised material at the time this information was originally released in 2012.

Relevant reports from which the above summary of historical estimates is drawn include the following:

## **Sijes:**

- July 1998; Borax Argentina S.A.; Environmental and Operational Studies, Phase 1, Initial Geotechnical Appraisal; Knight Piesold Limited, England. Includes a Historical estimates Chapter;
- July 1998; Borax Argentina S.A.; Environmental and operational Studies, Phase 2; Geotechnical Appraisal; Knight Piesold Limited, England;
- May 1999; Borax Argentina S.A.; Hidroboracite Project, Raul Gutierrez Solis; August 1999, Borax Argentina S.A.; Sijes, Monte Amarillo 2 Mine. Historical Estimation, Mine Design & Planning Report. Knight Piesold Limited, England.

## **Ratones:**

The project was acquired by Borax Argentina circa 1987. The previous owners had conducted an estimate of contained mineralised material. This has not been validated by Borax Argentina, who consider the status of this material to be of the indicated category.

# Competent Person's and Qualified Person's Statement & Technical Information

---

The resource estimation of the Salar de Olaroz stated in this report was undertaken by John Houston who is a Chartered Geologist and a Fellow of the Geological Society of London. John Houston has sufficient relevant experience to qualify as a competent person as defined in the 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. He is also a "Qualified Person" as defined by Canadian Securities Administrators' National Instrument 43-101("NI 43-101").

The Feasibility Study on the Olaroz project was prepared by Mr. Houston (Consulting Processing Engineer) and Peter Ehren (Consulting Processing Engineer), together with Sinclair Knight Merz and the Orocobre technical group. Mr. Houston and Mr. Gunn prepared the technical report entitled "Technical Report – Salar de Olaroz Lithium-Potash Project, Argentina" dated May 30, 2011 (the "Olaroz Report") under NI 43-101 in respect of the Feasibility Study, and each of Messrs. Houston and Gunn was a Qualified Person under NI 43-101, and independent of the company, at the date such report was prepared. Mr Peter Ehren is a Member of the Australasian Institute of Mining and Metallurgy and Chartered Professional and is a consulting mineral processing engineer with significant experience in lithium brine deposits. Mr Gunn is a Member of the Australian Institute of Mining and Metallurgy and is consulting mineral processing engineer with approximately forty years' experience.

The technical information relating to Salinas Grandes and Cauchari has been prepared by Murray Brooker in conjunction with Mr Peter Ehren regarding Salinas Grandes. Murray Brooker is a geologist and hydrogeologist and is a Member of the Australian Institute of Geoscientists. Murray has sufficient relevant experience to qualify as a competent person as defined in the 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. He is also a "Qualified Person" as defined in NI 43-101. Mr Peter Ehren is a Member of the Australasian Institute of Mining and Metallurgy and Chartered Professional and is a consulting mineral processing engineer with significant experience in lithium brine deposits. He has acted as a consultant on the company's Olaroz and Cauchari lithium projects as well as consulting extensively for other clients. Mr Ehren is responsible for the mineral processing and metallurgical testing statements in section 15 of the Technical Report on the Salinas Grandes Lithium Project effective April 16th 2012. This report was reviewed and updated to include a statement of Peter Ehren's responsibilities on August 12th 2013 as a result of a review by the Ontario Securities Commission and refiled on [www.sedar.com](http://www.sedar.com) with an accompanying media release over the Canadian disclosure network on August 23rd 2013. Mr Ehren is also a "Qualified Person" as defined in NI43-101.

Continued on next page.



# Competent Person's and Qualified Person's Statement & Technical Information

---

The information in this report that relates to mineralisation at Borax Argentina sites has been prepared by Mr Murray Brooker. Murray Brooker, an independent consultant to Orocobre, is a geologist and hydrogeologist and is a Member of the Australian Institute of Geoscientists. The other information in this report relating to the boric acid plant pre-feasibility study has been approved by Mr. Peter Ehren. Peter Ehren, an independent consultant to Orocobre at the date of the announcement, is also a Consulting Processing Engineer. Each of Mr. Brooker and Mr. Ehren has sufficient relevant experience to qualify as a competent person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves and as a "Qualified Person" as defined in NI 43-101.

The Company confirms that it is not aware of any new information or data that materially affects the information included in the references above and that all material assumptions and technical parameters underpinning the resource estimates continue to apply and have not materially changed. The Company also confirms that the form and context in which the Competent Person's findings are presented have not been materially modified. The Company also confirms that the form and context in which the Competent Person's findings are presented have not been materially modified.

A previous announcement was made on the 21/08/12 regarding the superseded historical resources at Porvenir and Tincalayu. The company is not in possession of any new information or data relating to historical estimates that materially impacts on the reliability of the estimates or the company's ability to verify the historical estimates as mineral resources, in accordance with the JORC Code. The supporting information provided in the initial market announcement of 21/08/12 continues to apply and has not materially changed.

Additional information relating to the Company's projects is available in the Olaroz Report; the "Technical Report – Salar de Cauchari Project, Argentina" dated April 30, 2010, which was prepared by John Houston, Consulting Hydrogeologist; and the "Technical Report on the Salinas Grandes Lithium Project" dated April 16, 2012, which was prepared by Mr. Brooker. These are available on SEDAR.com or the Company's website.

Additional information relating to the Company's projects is available on the Company's website.



# **Orocobre Limited**

**BUILDING A SUSTAINABLE  
INDUSTRIAL CHEMICALS & MINERALS COMPANY**

**Investor Update  
November 2014**