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HALLGARTEN & COMPANY

Initiation of Coverage

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Xantippe Resources

(ASX:XTC)

Strategy: LONG

Key Metrics	
Price (AUD)	$0.0085
12-Month Target Price (AUD)	$0.04
Upside to Target	371%
12mth hi-low	$0.002-$0.016
Market Cap (AUD mn)	$69.70
Shares Outstanding (millions)	8,200
Options (millions)	600
Fully Diluted (millions	8,800

Xantippe Resources

Advancing in the Land of the Lithium Giants

- + The company has steadily accumulated highly prospective territory in Catamarca province in Argentina's prime Lithium *salar* belt
- + The Carachi Pampa project shares a *salar* with the much-vaunted Lake Resources' Kachi project
- + Drilling in 2017-18 on the concessions now controlled by XTC displayed Lithium grades approximating those recorded by Lake Resources on its portion of the *salar*
- + Argentina has "come in from the cold" with investors as it has risen up the rankings to become the go-to place for new brine lithium developments
- + Lithium prices have been the firmest aspect of the minerals' universe in recent months as almost everything else has retreated in the face of weak equity markets and higher interest rates
- + Xantippe has attracted two of Argentina's most prominent regional families as shareholders/directors
- + The company had around AUD$6mn in cash on hand at the end of the June quarter
- ✘ Argentina is seen as a high-risk jurisdiction when in fact rules have not changed for decades
- ✘ Foreign exchange controls, with a ridiculous parallel exchange rate system, create headaches for inward investment in mining
- ✘ The environment for funding Lithium project builds remains tough

Lithium Rising

The strong attendance at the Lithium Forum in Buenos Aires in late July showed that global doomsters in the equity markets have left the lights in the marquee of the Battery Metals Boom undimmed. The event bordered on a feeding frenzy and the local politics raised nary an eyebrow for participants, which is more than one can say about Chile or Mexico these days.

With Lithium in short supply, at least for now, the investment and development dollars are heading for the jurisdiction that provides most opportunities at the least degree of hassle. Perversely this is Argentina at the current time. It's not perfect, and the foreign exchange issues are a challenge, but these pale in comparisons to the stones that the Chileans and Mexicans are putting in the way of developers.

The Company it Keeps

Notable from Lithium developments in Argentina has been the absence of Argentine economic grouping in the exploration/development phase of Lithium's evolution in the country. While many of the licenses were held by locals they mainly did not explore them and as a result were not visible as developers.

However, in the case of Xantippe it has worked along two local families of national economic prominence in accumulating and now developing the project. These are the Arecco family and the Santos family both of which have substantial shareholdings in XTC and board representation.

The Arecco family have diversified economic interests with their main vehicle being Arecco Ingenieria SA, a civil engineering firm. The family have long held the concession for the port of Bahia Blanca, which is the country's leading grain export facility. [needs more on their activities… Brazil etc]

The Santos family has profound roots in Northern Argentina and throughout the country, and they have long been a major provider of citrus (being the fourth generation of the founders of the San Miguel enterprise) on a global scale. After selling out of San Miguel, the family established Terri Citrus, which cultivates 1,000 hectares with around 354,000 trees. It now has commercial operations in more than 19 countries, as well as being one of the most important companies in soft drinks within Argentina, under the Secco brand.

The Carachi Pampa Project

Carachi Pampa Lithium project is located in the Carachi Pampa basin in the high elevation Puna region of Catamarca province, northwestern Argentina. The project lies within the Lithium Triangle of South America, which encompasses parts of the basins and ranges throughout the Andean Puna Region of Argentina, Bolivia, and Chile, where closed basins have prompted the evolution of numerous lithium and potassium brine deposits.

Through a process of accumulation Xantippe has arrived at a total land holding of owns eight tenements totalling 21,900Ha (21.9 km^2).

The project is located 282 kms northwest of the provincial capital of Catamarca and some 340 kms west-northwest of Caldera in the 3rd Region of Chile, which is the closest commercial seaport on the Pacific Ocean.

Access to the project from the city of Catamarca is across 562 kms by paved roads, including 30 kms of good dirt roads. Travel time is about seven hours. From Copiapó, Chile, access is by well-maintained dirt and paved roads totalling 960 kms. Driving time from Copiapó is about 15 hours.

The Deal

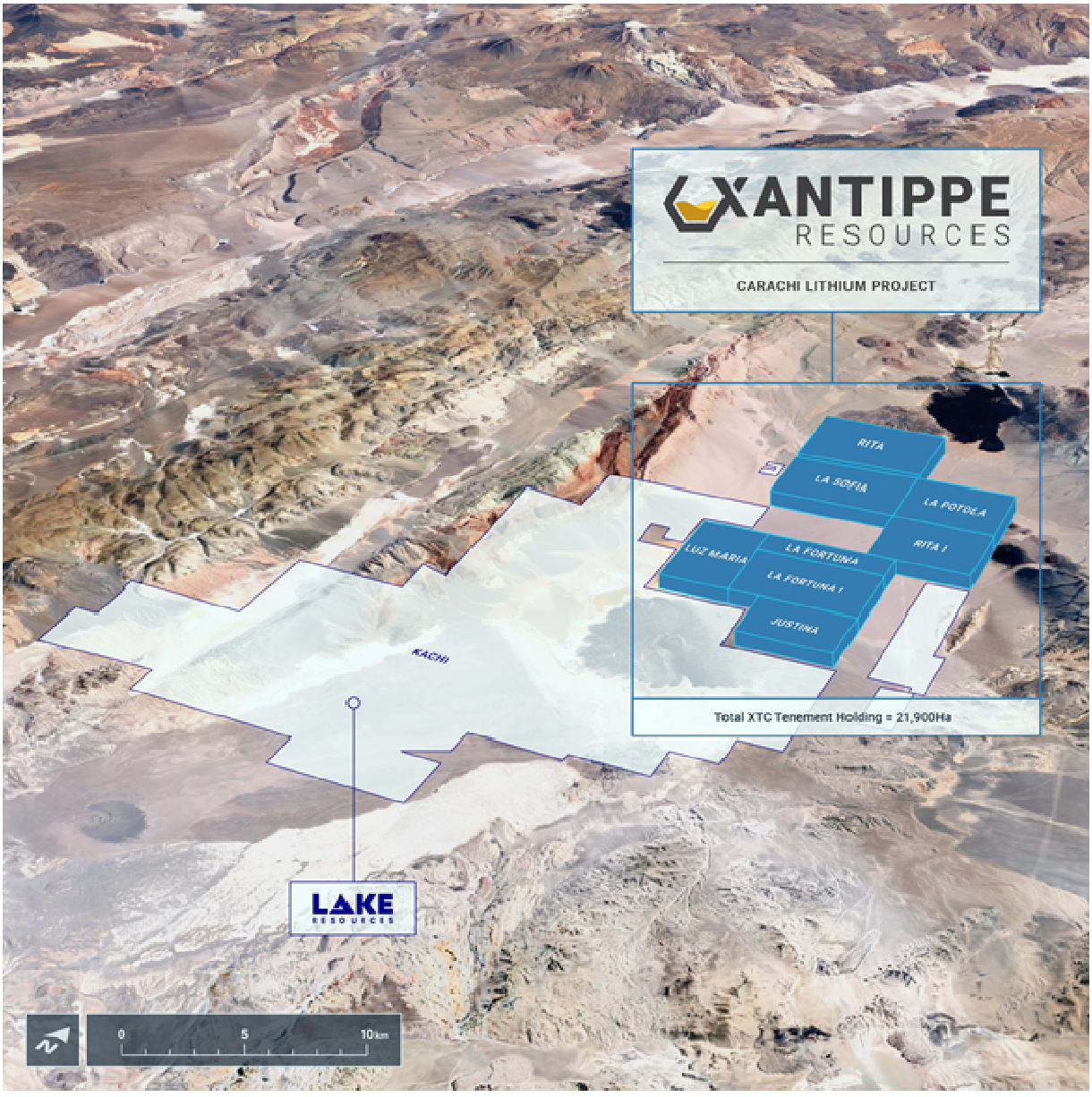
In 2021, Xantippe acquired 100% of a West Australian company, Carolina Lithium (CLi). Carolina Lithium was a privately held company 50%-owned by Arecco Ingeneria SA. CLi holds several lithium tenements in the most prospective area of Argentina. Cli was rebranded to XTC Lithium.

In late June 2022 Xantippe inked a deal that makes Carolina Lithium the beneficial owner of Arlupo SA, a company registered in Argentina that holds the rights to the acquisition of the tenements under an agreement between a number of local tenement holders.

Carachi Pampa *salar* - *Source: Lake Resources*

Xantippe will now purchase its new tenements from Ontario, with 50% of the US$1.5mn (AUD$2.1 million) refundable option fee payable within four business days of offer execution.

A definitive agreement was executed during the due diligence period, and Xantippe paid another US$500,000 (AUD$721,000).



Subject to shareholder approval, Xantippe will issue Ontario Inc a convertible note that denotes that Arlupo will pay US$1.5 million before 31 December 2022 and US$2 million before 30 June 2023.

Each of the notes shall be convertible into Xantippe shares at 1.8 cents each by Ontario at certain dates in 2023 and 2024.

In early June 2022, Xantippe announced a definitive agreement to acquire the key Luz Maria "piece" on the Carachi Pampa *salar*. Pursuant to the Option Agreement, previously announced on 29 November 2021, Xantippe exercised its option to acquire all the issued capital in Carolina Lithium on 7 March 2022. Carolina Lithium is entitled to become the beneficial owner of Arlupo SA, a company registered in Argentina that holds the rights to the acquisition of the Luz Maria tenement under a letter of offer with the owner previously announced on 25 February 2022.

Under the newly executed definitive agreement, the following consideration will be payable by the company to acquire the Luz Maria tenement:

- US$2,180,000 payable to the Luz Maria Owners upon exercise of the Option and signing a definitive acquisition agreement.
- US$10,000,000 payable to the Luz Maria Owners in two separate payments detailed below:
    - US$3,000,000 payable on 14 August 2022; and
    - US$7,000,000 payable on 10 February 2023

Further, XTC will seek shareholder approval to issue shares to the value of US$10,000,000 to the Luz Maria Owner in August 2022.

Crydon SA, a company unrelated to Xantippe, controlled by Senor and Senora Santos, has title on one mining property, Luz Maria. It is useful to note that the Santos family are not latecomers here, but rather have owned the part of the salar for several decades having originally acquired the position not to "play the lithium game" but to exploit diatomite from the property. When the Lithium potential started to become apparent they resisted offers to acquire the property, but rather decided that they wanted to participate in the development of the salar to production. This is in contrast to most other Argentine license holders that had more of a "flipper" mentality.

Prior to the Luz Maria deal, Xantippe's holdings consisted of the Rita & Rita I blocks (that cover more than over 6,000 hectares) the La Sofia block added another 3,000 hectares for a total of 9,000 hectares. The addition of Luz Maria, at almost 3,400 hectares, then raised Xantippe's territory to over 12,000 hectares. The acquisition of the holdings of 1000056634 Ontario and José Luis Fornaciari, in June 2022, with a total area of 9,500 hectares, took the company's total tenement holdings to 21,900 hectares.

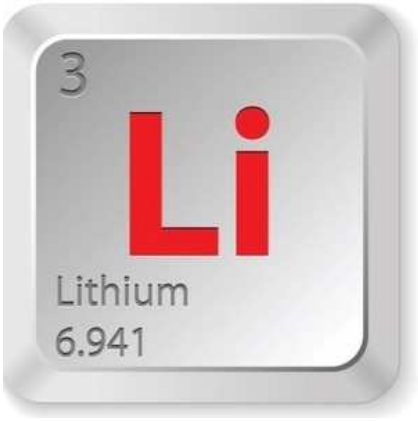
Closeology

The Puna Region of Argentina (provinces of Jujuy, Salta and Catamarca) comprises some 30 *salars*, generally with potential to host lithium-potassium mineralization.

These *salars* include:

- producing operations at Livent's Mina Fenix at the Salar del Hombre Muerto West and Allkem's operations at Salar de Olaroz
- several advanced exploration projects, such as Cauchari (Soquimich sold to Ganfeng), Salar de Ratones-Centenario (Eramine), Salar de Llullaillaco (International Lithium), Rincon (Argosy), Salar de Diablillos (Lithium-X) Salar del Hombre Muerto East (Allkem)
- a number of other projects in development, such as Salinas Grandes (Allkem-Advantage Lithium) and Pastos Grandes (Millennial Lithium sold to Lithium Americas)

Lithium Brines Formation



Lithium (from Greek: *λίθος*, romanized: *lithos*, lit. 'stone') is a chemical element with the symbol Li and atomic number 3. It is a soft, silvery-white alkali metal. Under standard conditions, it is the least dense metal and the least dense solid element. Lithium ranks 27th in rank of elemental abundance.

Even with this relative scarcity there are a fairly large number of both Lithium mineral and brine deposits, but only comparatively a few of them are of actual or potential commercial value.

The deposits have been formed because of lithium's higher solubility in hot water than most other cations, so it sometimes has concentrated in flowing and cooling magma and/or its accompanying aqueous fluids, as well as in evaporating brines. Thus, hydrothermal fluids may be an important lithium source. The high-lithium brines usually have obtained most of their lithium from geothermal waters, with perhaps some of the lithium coming from surface leaching of volcanic ash, clays or other rocks.

However, lithium is very difficult to leach from the lattice structure of all rocks and minerals, so little is dissolved unless the water is very hot. Experimental studies have shown that at ambient temperatures, only 55–170 ppb dissolves from extended contact with granitic rocks, but at 275–600ºC 0.25–2.4 ppm Li can be extracted in the same agitated, long contact-period (Dibble and Dickson, 1976).

Regional Geology

The Puna is a large block of crystalline basement rocks that was uplifted during the Tertiary Period. The intervening valleys are filled by recent clastic and chemical sediments derived from weathering and erosion of the adjacent mountains. The centres of the valleys are often salt lakes that may contain significant quantities of lithium, borates, and sodium sulphate in both brines and crusts. The flanks of the valleys are often alluvial fans which can contain vast sub-surface water resources, important in such an arid region.

Most of the mountain ranges are oriented in a northerly direction, paralleling regional structures. Some of the mountains rise to 2000 meters above the Puna valleys. These valleys, which often contain lithium-bearing brines, have elevations ranging from about 3500 to 4000 meters above sea level. The mountains in general show a rough topography because of their young age and intense weathering caused by the arid, cold and windy climate. Volcanoes, such as Llullaillaco Volcano which rises to 6710 meters above sea level, tend to dominate the landscape in the west. That volcano is a large, isolated conical shaped mountain surrounded by a vast detrital apron. In many of the intermontane basins, extensive saline lakes and dry salt flats are found.

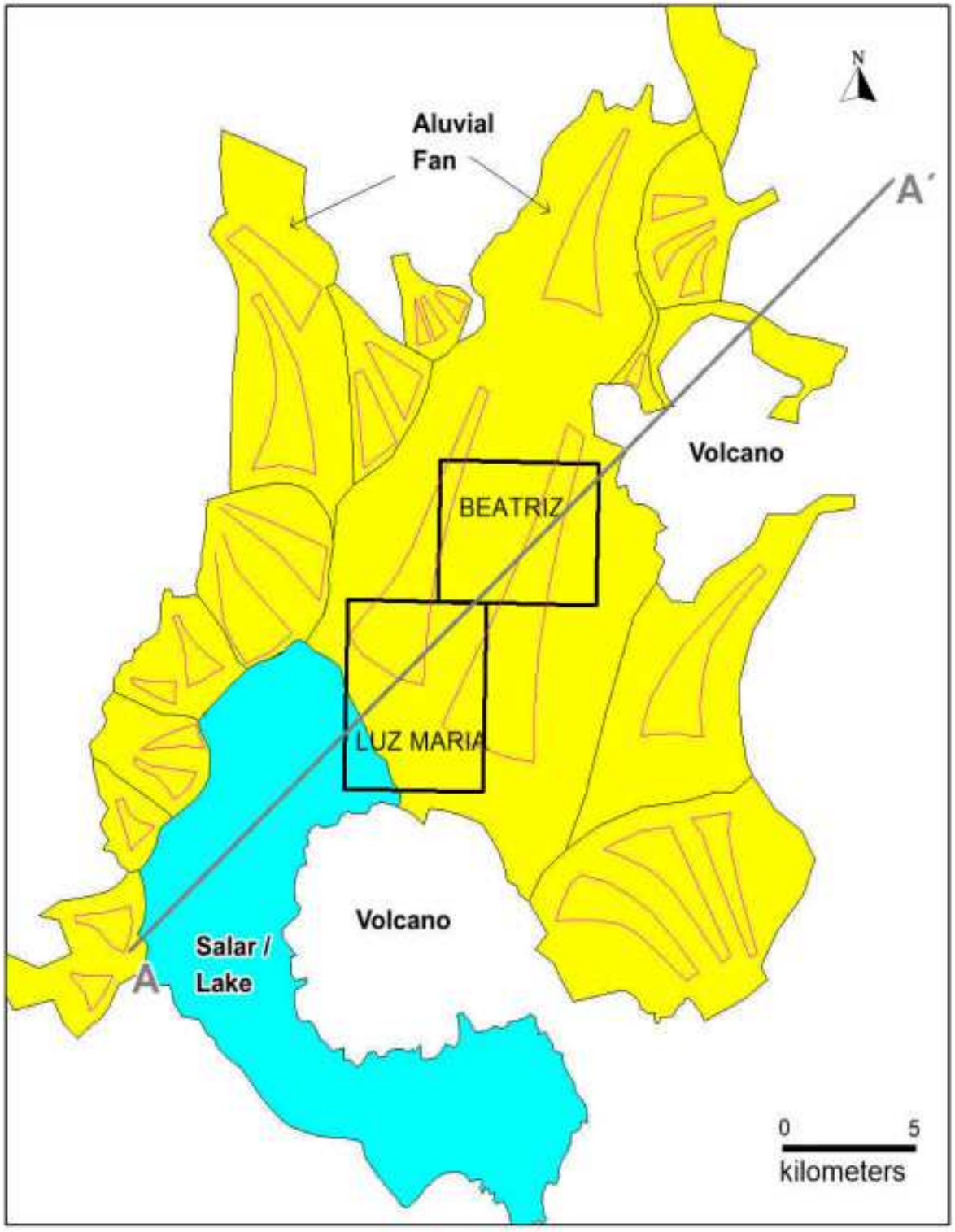
Carachi Pampa Geology

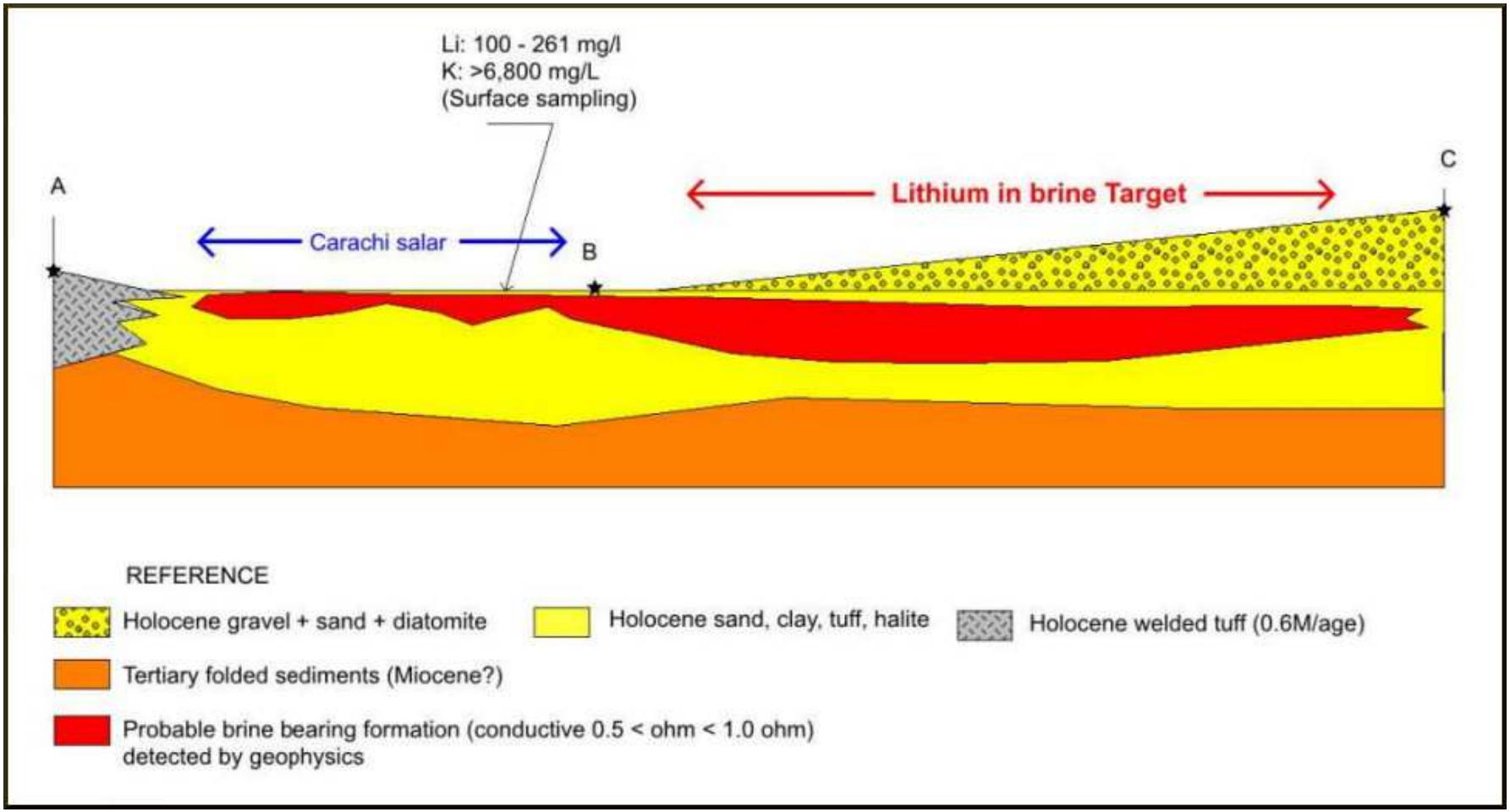
The surface of the Carachi Pampa basin is fairly flat. It is a roughly NW-SE oriented rectangular feature

measuring approximately 17 kms by 10 kms. On the surface, the Carachi Pampa *salar* is presently covered by clay, silt, sand, sodium chloride, sulphates, carbonates and borates. Saline brine fluids are observed in ponds, which are mixed with water from freshwater springs. These fluids are interpreted to be a blend of brine with freshwater influx to the basin.

The *salar* portion of the basin occupies only the southwestern sector of the Carachi Pampa basin, while large alluvial fans covering 24 kms x 11 kms occupy the north-eastern part of the basin. Note that water/brine occurs at the SW corner of Luz María. Expected *salar* extension on the rest of Luz María and on Beatriz are covered by recent alluvial fans.

The map on the following page shows the *salar* and its alluvial fans.


N
Aluvial
Fan
A´
Volcano
BEATRIZ
LUZ MARIA
Volcano
Salar /
Lake
A
0
5
kilometers


Li: 100 - 261 mg/l
K: >6,800 mg/L
(Surface sampling)
A
B
C
Carachi salar
Lithium in brine Target
REFERENCE
Holocene gravel + sand + diatomite
Holocene sand, clay, tuff, halite
Holocene welded tuff (0.6M/age)
Tertiary folded sediments (Miocene?)
Probable brine bearing formation (conductive 0.5 < ohm < 1.0 ohm) detected by geophysics

The cross-section above shows the perceived current nature of the salar and its mineralisation structure.

The oldest rocks cropping out in the Carachi Pampa area consist of Precambrian schists and migmatites interbedded with metamorphosed limestone and amphibolites. These rocks occur along the east and southwest flanks of the Carachi Pampa basin and cover a large flat area that extends more than 20 kms north-south by 15 kms east-west at an average elevation of 3,020 masl.

Evolution

The *playa* deposits represent different sub-environments such as mudflats, sandflats, lakes, and saltpans with the most typical features being reddish sandstones and siltstones. Low-angle cross-bedding, desiccation cracks, interbedded gypsum and halite layers are common. Sheet geometry, large lateral extent, and relatively uniform thickness suggest a prevailing deposition as distal sheetflows.

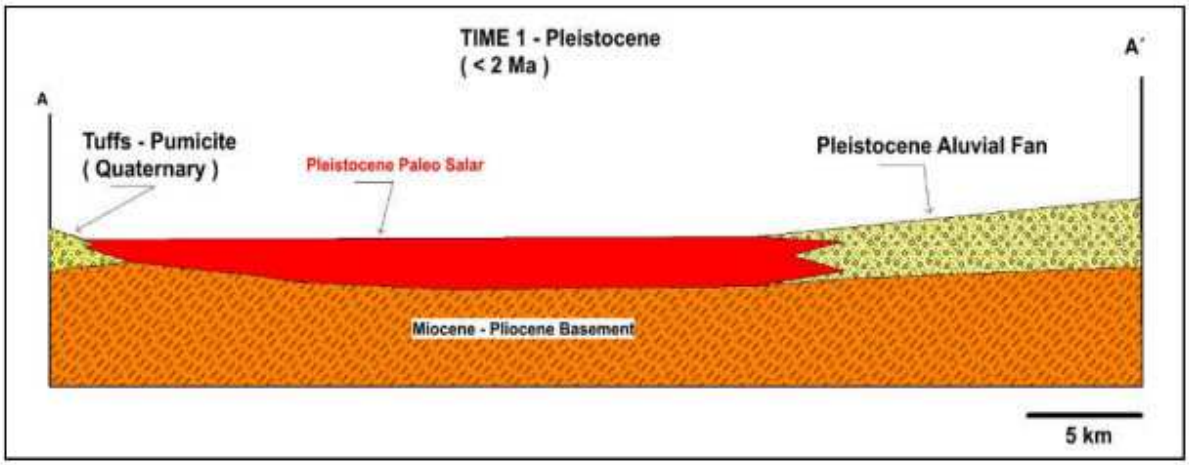
Intercalated in the *playa* mud and sandflat deposits occur saltpan sediments consisting of alternating millimeter- to decimeter-scale layers of halite and mud. They have been deposited in saline lakes producing successive layers of salt by repeated flooding and subsequent reprecipitation. In the central part of the basin, massive halite reaches a thickness of 50 m.

Lacustrine sediments were deposited in marginal parts of the basin. They consist of gypsum horizons, grey marls, and white limestones with frequent stromatolites, pisolites, and oolites.

At the Carachi Pampa basin, a *salar* was probably developed during much of the Pleistocene period (<2.0Ma) reaching an area of at least 700 km^2. The postulated *salar* consisted of clastic and evaporite facies with concentration of soluble elements provided by the extended catchment basin of 6,600 km^2.

The permeable sediments of this paleo-*salar* would contain brines rich in cations and anions such as Na, K, B, Li, Ca, Cl, SO^4, CO^3.

The schematic profile below shows the salar during the Pleistocene, with the active *salar* in red.



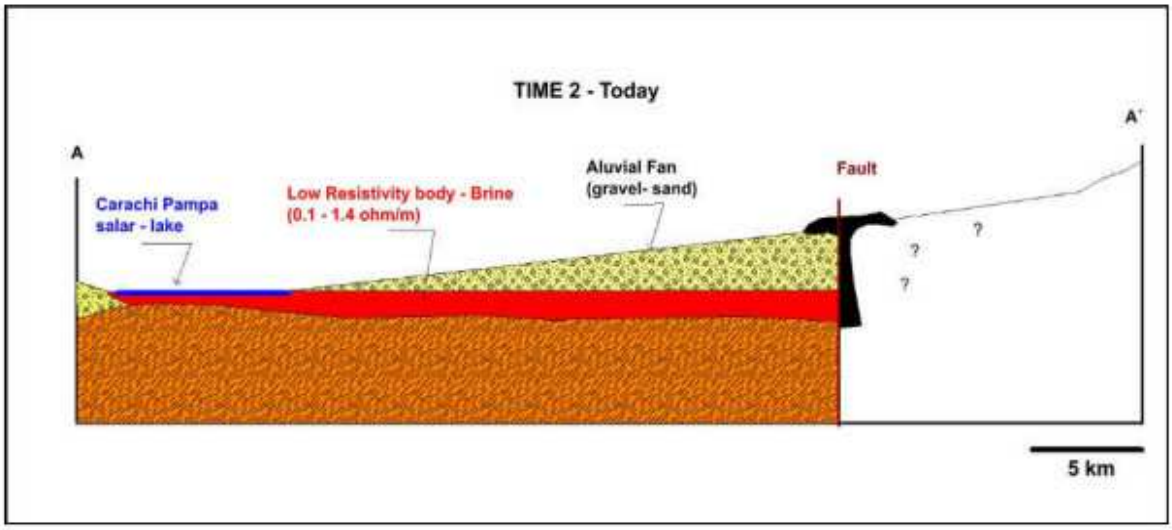
Subsequently, a contraction of the paleo-salar began, and the paleo-salar was buried by coalescing alluvial fans. Only one exposure of the salar remains without burial at the Laguna Carachi Pampa with less than 140 Km2 in surface area.

Target Area

The target area is part of a high-energy basin that is periodically flooded as a result of short rains during the summer season contributing to a build-up of a sandy-salt crust surface with occasional, local water springs and a lake (Laguna de Carachi Pampa).

The "greater" basin occupies some 800 km^2 (some 80,000 hectares) and has been evolving over the last 10-20 million years. The basin contains several compact saline horizons with sediments and porous salty inter-beds, which are potentially favourable for the accumulation of saline brines. The basin collects water along temporary streams from a catchment area of about 6,600 km^2. Chemical elements such as Li, K, B, Mg among others are leached, transported, accumulated and concentrated by evaporation. Holocene erosion and contribution of young alluvial material from the margins of the basin have buried much of the salar. The properties constitute a small, prospective portion of the "greater basin".

Vertical profile A-A' (below) at the present time with the paleo-*salar* covered by alluvial fan gravels.



Past Exploration

Very little exploration and mining activity has occurred in the Carachi Pampa region. Most of the claims in the area are associated with diatomite or diatomaceous earth deposits identified on surface. Owners of the Luz María and Beatriz properties have carried out limited surface exploration in order to define the diatomite resources within each property.

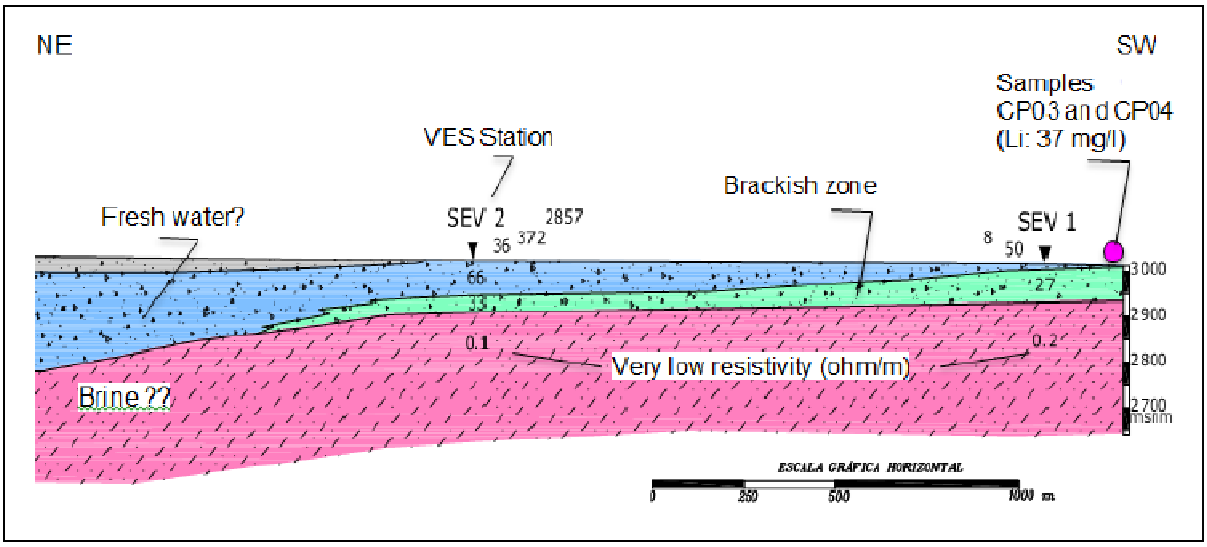
The first known exploration activity related to lithium in brines was completed by Marifil Mines (now

International Iconic Gold Exploration - TSX-v:ICON) in 2009, when a NI 43-101 technical report was filed. Surface sampling was completed at that time, and some of the samples returned values that were anomalous in lithium and potassium. That NI 43-101 report stated “some initial economic model studies showing that an area as small as 1,000 hectares could contain more than 250,000 tons of recoverable lithium from a brine column 25 meters thick, grading 200 parts per million lithium, assuming a porosity of 8%, a brine density of 1.3 grams per cubic centimeter, and an overall recovery factor of 50%”.

The VES Survey

In 2016, NRG Metals (now Lithium South) completed a Vertical Electrical Sounding (VES) geophysical survey that identified a highly conductive horizon that was interpreted to represent a brine target with potential to host lithium. The VES geophysical survey was conducted by Conhidro S.R.L from Catamarca, Argentina. This method has been used extensively in Argentina to successfully delineate potential brine zones below surface.

Based on the VES resistivity data, four separate zones, or units, with distinct resistivity characteristics were posited. Below can be seen a generalized cross section showing Conhidro’s interpretation of the VES data.



Unit 1: A near surface horizon with resistivity values ranging between 95 to 700 ohm/m. Conhidro interpreted this zone as a horizon of dry Quaternary sediments probably consisting of gravel and minor silts/clays.

Unit 2: A semi-resistive layer with moderate resistivity values between 50 to 180 ohm/m, which Conhidro interpreted to be a gravel and sand horizon containing fresh to brackish water. The thickness of this zone ranges from 11 to 227 meters.

Unit 3: A small semi-conductive zone with resistivity values ranging from 27 to 33 ohm/m that is

restricted to the southwest corner of the claim group. This zone is interpreted by Conhidro to represent a sandy horizon containing fresh to brackish water, and it is 36 to 73 meters thick.

Unit 4: This horizon was the target of the investigation. It is a highly conductive zone with resistivity values that range from 0.1 to 1.4 ohm/m interpreted by Conhidro to represent a zone of saturated brines. The zone begins at a depth of 70 meters in the southwest portion of the claim group, and it dips to a depth of 300 meters to the north-northeast part of the claim group. The zone is at least 150 meters thick, and it is open at depth and in all directions laterally.

Sampling

The surprising thing about the NI43-101 prepared by NRG Metals is that they would prepare such a substantial report and yet only undertook one sample for exhibition in the report. Samples of surface and near-surface water were collected from various locations around the Carachi Pampa *salar*. The results of the sampling (shown on the following page) were sent to two labs (Alex Stewart and ALS) to garner two different data sets.

		Li mg/L	Ca mg/L	Mg mg/L	B mg/L	Na mg/L	K mg/L	pH in Lab	Density g/cm3
NICP-002	ALS	55	117	60	<0.06	26,576	1,353	8	1.2
CP-006	Alex Stewart	55	95	455	73	39,729	1,320	8	1.1

Sample NICP-002 is a duplicate of sample CP-006. The was assayed by the ALS laboratory in Lima, Peru.

Like the whole of the Batteries Metals space NRG was becalmed, in the wake of the 2016-17 boomlet, after an ignorant prognostication was published by one of Wall Street Bulge Bracket firms claiming that there would be a massive surplus of Lithium by 2025. The result of this was that limited funds raised during the surge in investor interest had to be eked out is any progress was to be made on projects.

By mid-2018 however it was clear that an upturn in Lithium was still several years off and that something had to give. In NRG's case it resolved to focus down from its two projects, Salar Escondido (essentially the Luz Maria license) and Hombre Muerto Norte. The company opted to carry on with the latter and dropped the licenses on Carachi Pampa.

However in the brief window between funding in early 2017 and this decision to narrow focus the company embarked on a renewed exploration campaign at its Salar Escondido prospect. As these results never crystallised into a NI43-101 in the public eye and understandably NRG stopped talking about the project when it reverted to private ownership the work done in this period has been subliminal as far as investors are concerned. However, it was this work that gives the best idea of the potential of the Luz Maria licenses and the paleo salar (rather than what was in the NI43-101 from 2016).

Here is a summary of the drilling announcements of NRG:

In early December of 2017, NRG announced the discovery of lithium at the Salar Escondido project. In line with the geophysical data and geological model, the target zone of sediments saturated with brine that could contain lithium was intersected, and the first lithium values from near the top of the brine were regarded as “very encouraging”. These are shown in the following table.

		Li	Mg	B	K
Sample number	From / To	mg/L	mg/L	mg/L	mg/L
SE-003	172-198 m (26 m)	189	868	217	3,170
SE-004	183-198 m (15 m)	229	1,033	265	3,990

The samples, which were collected with a single packer, were analysed by the Alex Stewart laboratory in Jujuy, Argentina. Alex Stewart employed Inductively Coupled Plasma Optical Emission Spectrometry (“ICP-OES”) as the analytical technique for the primary constituents of interest, including those shown in the table.

At the time, the technical team noted that the Mg/Li ratios stood at relatively low at 4.6, which they regarded as very encouraging.

The drill hole, which had reached 221 metres at that time, intersected weakly consolidated sandstone and unconsolidated sand horizons with occasional conglomerate and clay layers from a depth of 113 meters to 176 meters, and predominately poorly consolidated conglomerate with occasional clay layers below 176 meters.

Saline brine was found to be present below a depth of 140 meters.

In mid-December the first drill hole reached its maximum depth of 307 meters (due to hole conditions) though the original plan had been to go to 350 metres. The hole bottomed in brine and the brine target remained open at depth.

At a depth of 210 meters the hole was converted from core drilling to tricone rotary drilling due to challenging drilling conditions. Once the hole was terminated, the interval from 307 to 210 meters was to be sampled.

In late January of 2018, samples were reported from 172 to 198 meters and averaged 189 mg/l Li (lithium), 868 mg/l Mg (magnesium), and 3,170 mg/l K (potassium). A sample interval from 183 to 198 meters returned 229 mg/l Li, 1,033 mg/l Mg, and 3,990 mg/l K. Further samples were attempted, however, hole caving and freshwater contamination from drilling fluids prevented the collection of further representative samples.

In addition to discovering lithium in the first hole, another positive characteristic of the basin noted during drilling was the potential for high permeability. The material that hosts the brine zone is comprised of mainly loosely consolidated sand and conglomerates, which should be highly permeable

and allow high pumping and recharge rates. High permeability is an important factor in evaluating the potential of lithium brine bearing salars. The first drill hole ended in sediments so the thickness of the basin remains open at depth along with the potential of these sediments to host lithium bearing brine.

The second phase of the program resumed utilizing tricone or rotary drilling with perforated casing that facilitated sampling of the brine targets defined by the geophysical surveys and the first test drill hole.

In early April of 2018 it was announced that drilling would recommence at the project. NRG contracted with Water Drilling from Catamarca to drill an 8.5-inch diameter rotary hole up to a depth of 400 m. The hole was located approximately one kilometer south of the initial diamond drill hole.

In early May of 2018 the 8.5 inch rotary hole was completed to the target depth of 400 meters. The hole was then reamed to a diameter of 12.25 inches so that perforated casing could be installed in preparation for sampling.

As expected, the hole intersected fine to coarse grained clastic sediments with occasional intercalated clay layers to a depth of 370 meters. The sediments are interpreted to represent alternating dunes, alluvial fans and valley sediments. From 370 to 400 meters the hole intersected an unaltered basalt that may be the bottom of the basin.

After the casing was installed, the hole was given time to stabilize before sampling by a ProHydro Inc. SNAP passive sampler and custom packer equipment.

The company's management commented that the sediments intersected may represent a buried brine deposit.

In late April of 2018 it was announced that drilling on a second test well was progressing at project. This second hole is located approximately one kilometer south of the initial diamond drill hole, which was completed in December 2017.

A rotary drill operated by drilling contractor Water Drilling was contracted to drill an 8.5-inch diameter rotary hole up to a depth of 400 m. The hard basaltic layer encountered in the previous hole was not encountered in this well.

In late June 2018 the company confirmed that the second drill hole was enlarged by reaming, and plastic perforated casing was installed to a depth of 371 meters, which is the depth to volcanic rocks interpreted to be the basement.

Sampling commenced at a depth of 50 meters, but strong artisanal pressure was encountered when pumping started. The initial artesian flow was a dirty brown, foul smelling, salty brine. The flow gradually diminished and stabilized, and after 3.5 hours of pumping, the brine became clear. A total of 1,000 litres of clear brine was collected, and samples were taken from the stabilized brine. After the samples from 50 meters were collected, the hole became blocked at a depth of 100 meters, and a sample was taken at 100 meters using a Snap Sampler™. Because of the blockage at 100 meters, it was

not possible to collect any samples below that depth. The results of the samples are shown in the following table:

Sample Number	Depth meters	Li mg/L	Mg mg/L	B mg/L	K mg/L	Electrical Conductivity (mS/cm)	Density	Mg/Li
SE-18	50	141	1884	250	2597	209	1.17	13.4
SE-20	50	144	2204	279	2765	221	1.18	15.3
SE-19	100	144	1765	243	2626	203	1.17	12.3

The results from the second hole, as well as the hole completed in 2017, confirmed in the view of NRG's technical team the presence of lithium in highly permeable clastic rocks, mainly sandstones and conglomerates. However, due to difficult drilling conditions, no brine samples were obtained in this hole from the primary target zone from 100 to 370 meters.

The samples were assayed by the Alex Stewart Laboratory in Jujuy, Argentina. Alex Stewart employed Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) as the analytical technique for the elements of interest shown in the table.

On Lake Resources (ASX:LKE, OTC:LLKKF) - the Analog

Xantippe's nearest neighbour is Lake Resources, which is developing the Kachi project, comprised of 705 sq km of leases and lease applications over the brine-bearing Carachi Pampa basin - 20km long, 15km wide, and 400-800m deep.

Lake Resources has become in recent times the go-go stock in the Argentine lithium space, briefly reaching a market capitalisation of around AUD$3.5bn before having a rendezvous with reality and its market cap sliced by 2/3rds despite Lithium prices hitting new highs and sustaining its price.

The Resource

In November 2018, Lake announced a maiden JORC resource at Kachi of 4.4 million tonnes of contained lithium carbonate equivalent (LCE), and an exploration target ranging between 8-17 million tonnes of LCE. In Lake's opinion this ranks Kachi as one of the world's top 10 brine resources, though this is somewhat of a moving target these days.

KACHI LITHIUM BRINE PROJECT - MINERAL RESOURCE ESTIMATE

JORC 2012

	Indicated		Inferred		Total Resource	
Area, km2	17.1km2		158.3km2		175.4km2	
Aquifer volume, km3	6		41		47	
Brine volume, km3	0.65		3.2		3.8	
Element Li K Li K Li K	**Li**	**K**	**Li**	**K**	**Li**	**K**
Weighted mean concentration, mg/L	289	5880	209	4180	211	4380
Resource, tonnes	188,000	3,500,000	638,000	12,500,000	826,000	16,000,000
Lithium Carbonate Equivalent (LCE), tonnes	1,005,000		3,394,000		4,400,000	
Potassium Chloride, tonnes		6,705,000		24,000,000		30,700,000

The Preliminary Feasibility Study (PFS)

A "refreshed" PFS was announced by Lake Resources on the 17th of March of 2021. It used the resource above. The original PFS came out at the end of April of 2020 and was based on a conservative flat price of US$11,000/tonne lithium carbonate (CIF Asia) for 25 years. Apart from revised lithium price estimates, all material assumptions in the "refreshed" PFS were unchanged from the original PFS including the assumptions upon which the production target was based.

The PFS was refreshed with an updated lithium price forecast of US$15,500/tonne for battery grade lithium carbonate (CIF Asia). This change in pricing (which of course has now been massively surpassed by the Lithium price move in 2022) produced a post-tax NPV8 of US$1.58 billion (AUD$2.5 billion) and an 35% IRR based on an annual production target of 25,500 tpa LCE. The annual EBITDA for the project is US$260 million (AUD$350 million).

The mooted capex for both versions of the PFS was US$540mn.

Lake's Partners

In April of 2022 it was announced that Ford had signed a non-binding off-take agreement with lithium producer Lake Resources. The agreement provides for the delivery of about 25,000 tons of lithium per year from the Kachi project in Argentina. It was not revealed when a supply to Ford from the Kachi project could start nor the financial scope of a potential binding supply agreement. This implies that Ford would take off about half of the year's (expanded) output.

This represented the second letter of intent on the Kachi project as Japan's Hanwa Co. had previously agreed at the start of the same month, in a non-binding Memorandum of Understanding (MoU), to purchase lithium carbonate from Lake Resources. Under the MOU, Hanwa is to take up to 25,000 tpa of lithium carbonate (+/- hydroxide) over 10 years (with an extended additional 10 years). The buyer would take a minimum of 15,000 tpa LCE to be priced at average quarterly benchmark market prices.

Hanwa intends to co-operate with Lake not only in marketing and distribution in Asian market but also

in coordinating a strategic and sustainable supply chain with its potential customers in battery industry.

Interestingly, Hanwa was reported by Bloomberg to be considering a “meaningful” equity investment to build a solid partnership with Lake Resources as well as other potential financial supports, such as a prepayment on offtake, trade financial facilities and project development supports.

A feasibility study is quoted, according to which Lake has increased the possible production volume from 25,000 to 50,000 tons of lithium carbonate equivalent (LCE). However, this revised feasibility study is still “in the works”.

Nevertheless, Lake still gives 25,500 tons of LCE as planned production. The new resource estimate is based on drill results.

In the Land of the Lithium Giants

Deng Xiao Ping is most famous in mining circles for his oft-repeated aside from the 1980s that whereas “Saudi Arabia has oil, China has Rare Earths”. In some circles, Argentina is now being seen as the “Saudi Arabia of Lithium”.

Argentina has Lithium and in abundance. In theory, for many decades Chile was the place to source Lithium from brine lake Lithium deposits but in a curious own-goal situation, Chile has squandered that advantage by trying to keep a tight control on the number of players and advantaging the two incumbents. Predictions are that Argentina will overhaul Chile in terms of Lithium production by 2030. The result of the Chilean torpor at welcoming new entrants is that the surprisingly more laissez-faire attitude in Argentina has made it the go-to place for those wishing to stake positions in *salares*. Thus, Argentina has become something like, to paraphrase Deng, the Saudi Arabia of Lithium.

The Fluctuating Fortunes of Salares

One of the paradoxes of the middle of the decade was the “talking down” of *salares* as being in some way “too difficult” or too “long term”. Having said that though, several of the highest-flying stories in the First Lithium Boom such as Orocobre, Galaxy and Lithium Americas were *salar*-based. Back in that boom, and its current revival, there was/is a staking boom in the Argentine part of the Lithium Triangle that makes California in the 1850s pale into insignificance. Explorers, quite literally, cannot get enough of Argentine lithium territory.

The caution relating to *salares* exploitation was powered by the mishaps that befell Orocobre and Rincon. However, in both these cases the lessons learnt mean that others will have the benefit of their difficult experiences. The argument that there is a longer lead time for *salar* development (due to the need to kickstart the evaporation process) lacks relevance due to the much longer (and more expensive) drilling and resource estimation phase at a hard rock deposit and the much higher development costs at underground mines.

The downfall firstly of Canada Lithium after the end of the First Lithium Boom and the travails of

Nemaska, at the beginning of the latest recovery, have cast a pall in many investors' minds over largecap underground spodumene mines.

The Road Most Taken

Despite perennial concerns about the Argentina political direction, the metaphorical road to the Argentine *salares* opportunity has become more like a Los Angeles expressway in peak hour, of late.

Argentina has been in the Lithium game for decades, so is no newbie, but was always perceived as playing second fiddle to Chile.

Chile is merely expansion of existing facilities these days. Chile's attachment to an ancient Pinochet regulatory system, that required nuclear regulators (CCHEN) to clear Lithium projects, just showed that Chile could not get out of its own way. This reinforces the view that Chile is not the mining paradise that many would have us believe. Its arcane regulations make it look like they are trying to keep new kids out of the game, and that is just resulting in Argentina making all the running.

With opportunities to enter and develop new projects in Chile finding constant stones in the road, several of Argentina's Andean provinces have become a veritable boomtown for the Great & Good of the global EV revolution. The long-established Livent (formerly FMC) was joined by Orocobre and Galaxy Resources (which then merged to create Allkem (ASX:AKE), and then a stampede of the elephants in the Lithium space occurred with Posco, Ganfeng, Tianqi and most recently Zijin Mining Group reset the bar higher with their stunning move on NeoLithium.

Not to be forgotten is ASX-listed Argosy Minerals (with their Rincon project – not to be confused with Sentient's fraught Rincon project) are now developing their Phase 2 step-up with Mitsubishi as the offtaker.

In November of 2021 TSX-listed miner Lithium Americas offered US$400mn in shares and cash for Vancouver-listed Millennial Lithium, the third offer for the company this year following one by China's largest battery maker CATL and lithium producer Ganfeng Lithium. Then to finish off the year, RTZ snapped up Rincon Mining, a company owned by funds managed by the private equity group Sentient Equity Partners, for US$825mn. A feeding frenzy has begun.

Beyond these majors, there is an array of junior players hoping to replicate the NeoLithium success story.

There is a good case to be made that the relative lack of *salares* moving to production pre-2019 was due to the double negatives of the low lithium price between 2011 and 2016 and the death throes of the first Kirchnerite period making Argentina an unattractive place to advance projects. Pricing has resolved itself and the Argentine government is welcoming Lithium players with open arms. This has not provoked something of a stampede, which is not something we wish to stand in the path of.

Reference Pricing

As we noted in our July Monthly, the Argentine government had introduced a reference price of US$53/kg for Argentine lithium. We commented that it appeared to us to be a shot across the bows of the cartel (and others) playing in the Argentine *salares* space. Transfer pricing has been rife in the mining industry for a couple of decades now and the government is moving in to stymie the practice. No sooner had we arrived in the sometime Paris of the South, than an expose revealed that Livent may very well have been indulging for a very long while in such practices.

Allkem (AKE.ax) stated that the new measure was merely a reference price to be used by regulatory authorities when reviewing lithium export data to counter under invoicing and improve price transparency. Allkem stated that the price is not to be used as a basis to calculate taxes, royalties, duties, nor is it a price cap (as has been suggested in some recent media).

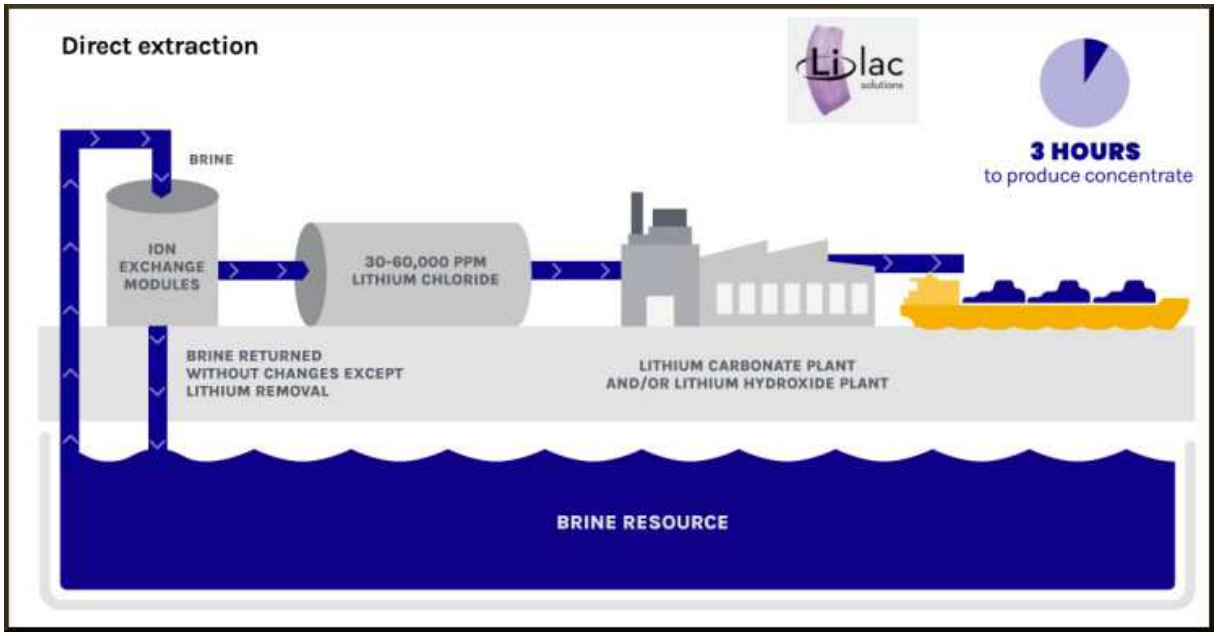
For some perspective, in China, the CIF price for Lithium Carbonate still stands near its record levels, with the product quoted at RMB 476,500 per tonne.

Direct Lithium Extraction (DLE)

Xantippe has resolved to pursue the DLE processing path rather than the more traditional (and time-consuming) evaporative process for Lithium extraction which can take 18 months at the least and often over two years.

We suspect this decision is driven not only by the marketplace's demand for short term lithium supplies but also due to Lake Resources' election of California-based LiLac Solutions as its chosen technology partner. The process developed by LiLac offers a fast-track production process, with lithium brines produced in under three hours with very high purity and with minimal environmental impact.

Lab testing has shown that lithium concentrations of 30-60,000 mg/L Lithium can be produced from brines of ~300 mg/L lithium in a few hours using the LiLac process. LiLac's ion exchange beads and column system together enable a process yielding concentrated high-purity lithium solutions. Testing undertaken in January 2020 confirmed that high-purity lithium carbonate with 99.9% purity could be produced using Lilac's technology. This exceeded industry standard specifications for battery-grade purity (more than 99.5%). The process is graphically depicted below:



Certainly, XTC going with DLE would make an eventual combination of XTC with Lake's endeavours a smoother process.

Concession Ownership History

In June of 2019, Marifil Mines signaled that it was planning to spin out its Carachi Pampa lithium project in Argentina into a wholly owned subsidiary as part of a plan to focus on gold and other precious metals.

The company said it was seeking investors interested in forming partnerships and joint ventures to advance Carachi Pampa and its other properties in Argentina.

The Luz Maria block within the current Xantippe concession then passed to NRG Metals (now Lithium South). As mentioned earlier, the surrendered the license back to the Santos family during the Lithium downturn post-2018.

In 2021, XTC made the move to option this territory as part of its roll-up of licenses on the eastern side of the Carachi Pampa *salar.*

Capital Evolution

The company currently has 7.6bn shares on issue and 603mn options on issue.

Clearly this number will make a quantum leap when the US$10mn shares in XTC are issued to the vendors of the Luz Maria licenses. Our *proforma* shares on issue are based upon the issuance of around one billion shares to satisfy this obligation.

Board & Management

Recent months have seen an overhaul and refocus of the board and management.

John Featherby, the Executive Chairman, has extensive experience in the stockbroking and wealth management industry. He joined Hartley Poynton (now EurozHartleys) in 1987.

Carlos Arecco, a Non-Executive Director, founded Arecco Ingenieria in 1979. He has built a major private conglomerate in the fields of water, gas, industrial installations, airports, communications and the naval industry.

He has presided at the Bahia Blanca Stock Exchange for 40 years and is a Director of the Argentine Chamber of Commerce. He is also a member of the board of the Buenos Aires Argentina Stock Exchange; represents Argentina in Mercosur at the European Union; and was appointed as a strategic partner of the UK company British Gas in 2005.

Imants Kins, Non-Executive Director, has a Bachelor of Economics from UWA and Master of Arts (Futures Studies) from Curtin University. He has extensive experience at a senior level in Government and since 1986 the private sector in natural resources sector as a senior manager, corporate economist and Director of ASX listed companies.

Carolina Arecco, Non-Executive director, is the Commercial Director of Arecco Ingenieria SA. She has experience in managing American companies, where she has successfully opened a number of new markets particularly in business development for markets in Argentina, Chile, and Spain.

Over the past two decades she has successfully played a substantial role in the coordination of the natural gas network in Brazil together with Arecco's strategic partner, British Gas.

Luis Maria Santos, Non-Executive director & Director of Catamarca Operations. He studied management of agro-industrial companies. He's General Manager of Grupo Santos. A group of companies with activities in logistics, soft drinks industry, citrus producer and exporters, mining, construction and real estate.

President of Unaje (Argentine Chamber of Young Entrepreneurs). Awarded for their excellence in management by Forbes, Galicia and BBVA Banks and other institutions.

Jose Luis Fernandez, Chief Geologist, is literally steeped in the mining scene in Argentina having worked for the Who's Who of mining in northern Argentina for several decades now. Amongst the roles he has held are:

- Manager of RSE Lithium South Development Argentina
- New Business and Corporate Relations Manager - NRG Metals
- Representative in Catamarca of Galaxy Resources.

- Government Relations Manager - Agua Rica LLC
- General Manager - Minera Agua Rica LLC
- Development Manager Minera Agua Rica LLC (Northern Orion)
- Consulting Geologist (Rio Tinto Mining & Exploration)
- Project Generation Geologist (Rio Tinto Mining & Exploration)
- Rio Tinto/Comsur JV Manager, Bolivia
- Senior Geologist (Rio Tinto Mining & Exploration)
- Head of Geology (Minera Aguilar)
- Mine Geologist (Minera Aguilar)

Beyond this he also is a Professor at the Technical School of Mining.

Risks

The whole Lithium industry finds itself in a different world, with some constants from the previous "boom", but also quite a few things have changed. However, it is worth enumerating some of the risks that may be faced:

- A return to weak Lithium prices
- The Lithium market is still dominated by a group of large players, the majority of which were formerly components of the long-standing cartel in the Lithium space
- Financing difficulties for mine build
- Failure of demand to match rising production (i.e. build it and no-one comes)
- Excessive number of competing projects could crowd the scene and investors' attention in the event that Lithium prices remain robust

Prices retreated somewhat in late 2016 and then recovered in 2017 despite several projects moving into production. Supply is unlikely to suppress prices at this point as demand is expanding with significant vigour and, as in Lithium 1.0, many of the "likely" projects will not be built as they are in the hands of pure promoters.

Financing is not coming from markets but from end-users or processors. In the case of Xantippe we would see the offtaker being most likely a player in the battery/Gigafactory space allied, or not, with an automaker. One should not discount that the Japanese either as they have been late to the party but will eventually try to engage in catch-up with the Chinese (and Koreans).

Conclusion

The Battery Metal boom has reached a frenzy as the pipe dreams of promoters have morphed into the grim reality that government mandates, with strict timelines, have run into the roadblock of a mining community for these metals that was running on empty (financially) until very recently. The lithium, cobalt and graphite spaces were largely unfunded from 2011 to 2017, and then had a brief renaissance before erroneous Wal Street projections on "satisfied demand" pulled the rug again until 2021 brought a massive wake-up call.

The traditional long lead time of 5-10 years on major projects across the mining space has had to be jettisoned as majors (end-users/offtakers/processors/battery makers) have jockeyed to get positioned, frequently having to take the reins to ensure timelines are compressed to match the voracious unsatisfied demand for lithium, in particular.

In this process the complications of spodumene extraction and processing have created a major pivot towards Argentina, which is now being seen as the Promised Land of Lithium as a largely benign approach from the Federal government has appealed to Lithium hunters seeking an open-door to lean upon.

The story at Xantippe is relatively straightforward as it has effectively gazumped the last remaining pieces of the Carachi Pampa *salar*, which it now shares with the go-go Lake Resources, seen as the last major playing piece in Argentine lithium *salares* since Neolithium and Sentient's Rincon assets were snapped up by majors. The recent eye-watering valuations put on Lake Resources make even more poignant the current lowly capitalization of Xantippe and beg the questions of who will move in to close the arbitrage opportunity this presents.

Thus, we initiating Xantippe with a **LONG** rating on Xantippe and have posited a 12-month target price of AUD 4 cts.


AU:XTC Daily
10/21/22
0.02
0.01
0.00
Volume
©BigCharts.com
400
300
200
100
0
Millions
Nov
Dec
22
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct

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