

# HALLGARTEN & COMPANY

## Initiation of Coverage

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## Lithium Power Intl (ASX: LPI, FFT:24L, OTC: LTHHF ) Strategy: LONG

Key Metrics	
Price (AUD)	\$0.460
12-Month Target Price (AUD)	\$1.90
Upside to Target	313%
12mth hi-low	\$0.23 - 0.68
Market Cap (AUD mn)	<b>\$119.922</b>
<b>Shares Issued &amp; Tradable (millions)</b>	210.4
<b>Shares Escrowed</b>	50.3
Listed Options (July 2019)	34.6
Unlisted Options (June 2021)	35.3
<b>Fully Diluted (millions)</b>	<b>330.6</b>

# Lithium Power Intl

## The Rising Lithium Power in Chile

- + The Salar de Maricunga project looks certain to be the “next cab off the rank” in the Chilean Lithium space
- + First mover advantage at Maricunga goes to Lithium Power as the other two stakeholders in the *salar* are essentially inactive
- + Infrastructure is exceptional for such an “isolated” location with power to site (courtesy of Kinross) and road access to ports being upgraded at government expense
- + Recently released PEA reveals an NPV of USD\$1.05bn
- + LPI’s share of CapEx is estimated at USD\$183mn
- + Projected production of 20,000 tpa of Lithium carbonate (LCE) and 74,000 tpa Potassium Chloride (KCl) makes the project a Lithium major **and** a mid-sized fertilizer producer
- + Recent financing takes project through to development decision and ensures LPI rises to its 50% share in the Maricunga JV
- + Peace has broken out between the Chilean government and SQM, with the likelihood of Chile once again being perceived as the leader in the Lithium space
- ✗ Financing is subject to the offtakers more than the equities market these days
- ✗ A number of overblown stories exist in the markets that, currently correcting, are pulling down temporarily the value of the serious players

### The Power of Persistence

Chilean Lithium prospects have been relatively overshadowed in recent years by the rising Argentine Lithium scene. This has been because the Chilean scene was perceived to be locked up between the majors of the now moribund “cartel” and because there were a plethora of undeveloped *salares* on the Argentine side of the Andes. However in a case of quality over quantity the Chilean side had relatively few available areas to stake but has more ideal climatic conditions and better access and infrastructure. It was this aspect that prompted Lithium Power International (LPI) to farm out its Argentine assets and focus its attentions on the Salar de Maricunga JV.

The *salar* that Lithium Power International intends to exploit lies at over 3,750 metres above sea level near to the Argentine border in the high Atacama desert, one of the driest places on the planet, with attendant advantages for evaporation rates, while enjoying the heightened confidence that investors have in the Chilean mining regime. The recent Chilean presidential elections also resulted in a swing towards a more business-friendly regime with a President with past connections to the mining sector having been elected.

The project had been long mired in the financial misfortunes of a TSX-listed entity called Li3 Energy which had lacked the funds to advance the project beyond some initial exploration that petered out

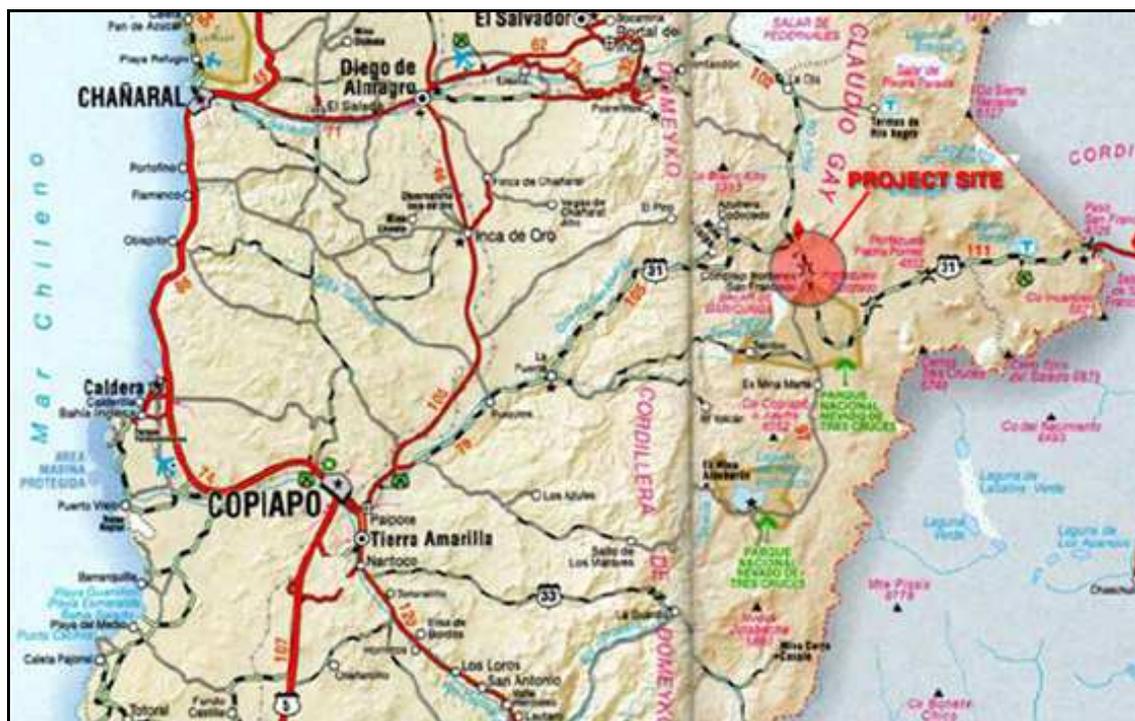
several years ago. Meanwhile exploration of the rest of the *salar* was non-existent as it was held by the long disinterested majors, CODELCO and SQM. This has changed in recent times with CODELCO (the massive state-owned copper miner) having decided to energise interest in its holdings on the salar by putting them out to public tender.

LPI signed its JV earn-in agreements relatively recently (in the second half of 2016) and has since been in a frenzy of upgrading data and “mine”-planning that has taken it in just over year to the point where a production decision is within sight and the project is in a state that potential offtakers can have confidence that Maricunga is one of the *real* projects in a universe of over-promoted projects that have little prospect of coming to fruition.

In this review we shall go over the specifics of the project and the dynamics of Chile without reiterating the obvious on the current evolution of the Lithium demand space.

### The Project

Maricunga is the most advanced undeveloped lithium project in Chile. Its direct comparable is the famed Atacama lithium brine deposit (exploited by SQM and Albemarle) which is over 300kms to the north.



The Maricunga *salar* is located 170km north-east of the mining town of Copiapó and 250km from the Chilean coast. In addition, it is adjacent to International Highway 31, which connects northern Chile and Argentina.

### The Background to the Maricunga JV

In July 2016, Minera Salar Blanco, which had hitherto been a JV between the Borda family interests and Li3 Energy (now absorbed into the TSX-V-listed Bearing Resources), entered into a binding and exclusive agreement with LPI to form a joint venture to explore and develop the Maricunga Project.

Li3 Energy and MSB contributed their Maricunga lithium brine assets to a new Maricunga JV and LPI was to contribute \$27.5 million in staged cash payments to the Maricunga JV to cover exploration and development costs until the completion of a Definitive Feasibility Study in late 2018.

Following the completion of the transaction, Li3 was to own a direct 17.67% equity interest of the Maricunga JV, with LPI and MSB owning 50% and 32.34%, respectively. Li3 was entitled to appoint one director to the board of the Maricunga JV (so long as it maintains stake of at least 10% of the equity interest in the joint venture), with LPI and MSB holding three and two director seats, respectively.



Additionally, MSB agreed to sell three options over the San Francisco, Salamina and Despreciada tenements in exchange for 16mn shares in LPI, voluntarily escrowed until June 2018.

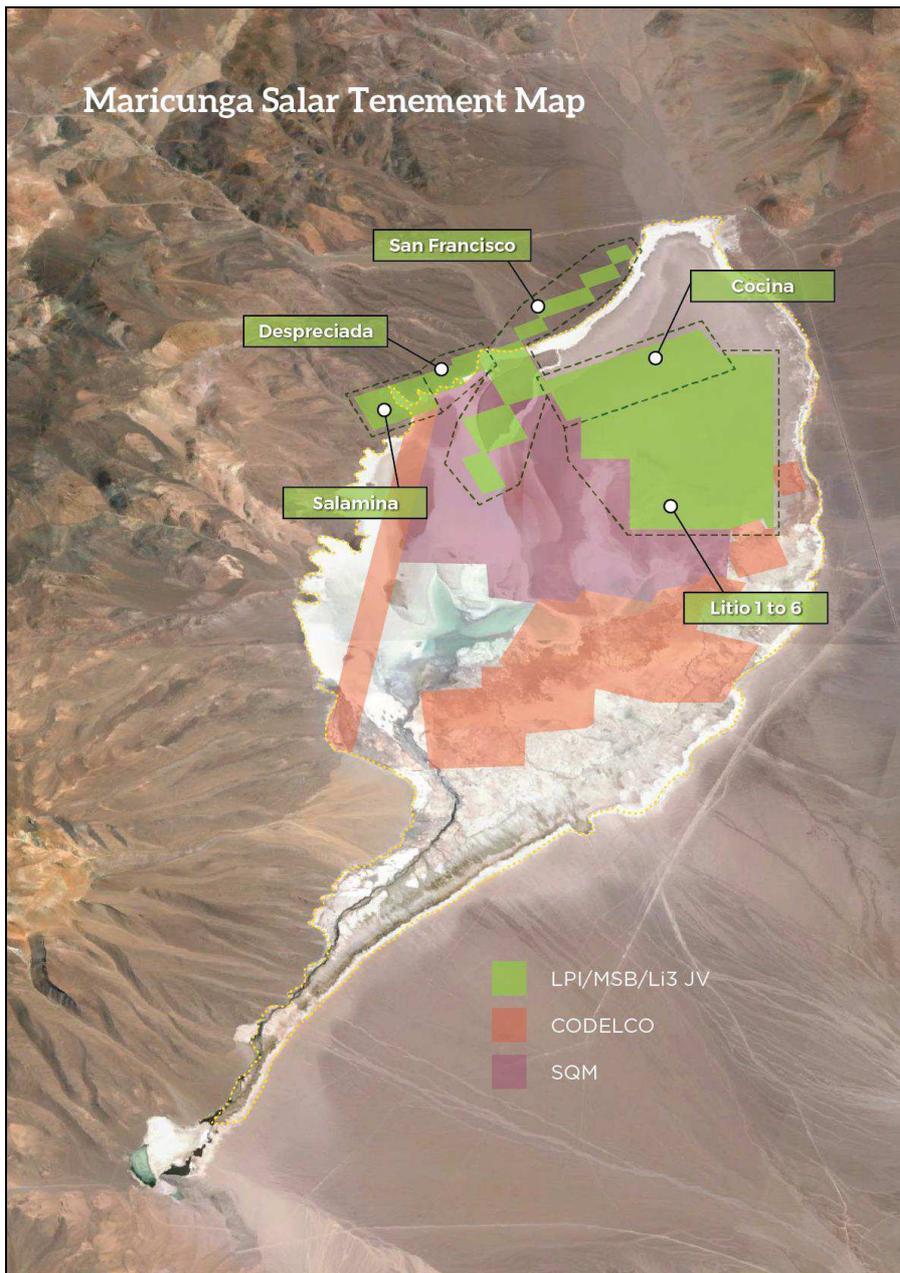
On the 1<sup>st</sup> of September 2016, LPI announced that it had satisfactorily completed the legal and technical due diligence regarding the Maricunga JV.

### Minera Salar Blanco

This company which holds 32.3% of the Maricunga project is owned by Martin Borda Mingo. He is Executive Director & Founding Partner at Multiexport Foods SA, Chairman at Salmones Multiexport SA, and Chairman at Multiexport Pacific Farms S.A. He is regarded as the “king” of Chilean salmon farmers and seaweed/algae processors.

He is on the Board of Directors at Multiexport Foods SA, Cia Molinera San Cristobal SA, and Alimentos Multiexport Ltda. He also served on the board at Scotiabank Chile, which is the latest incarnation of Banco Sudamericano that his family sold to Bank of Nova Scotia. The family, of Basque origins, were also the largest bread bakers in the country until they sold those interests over to Grupo Bimbo of Mexico.

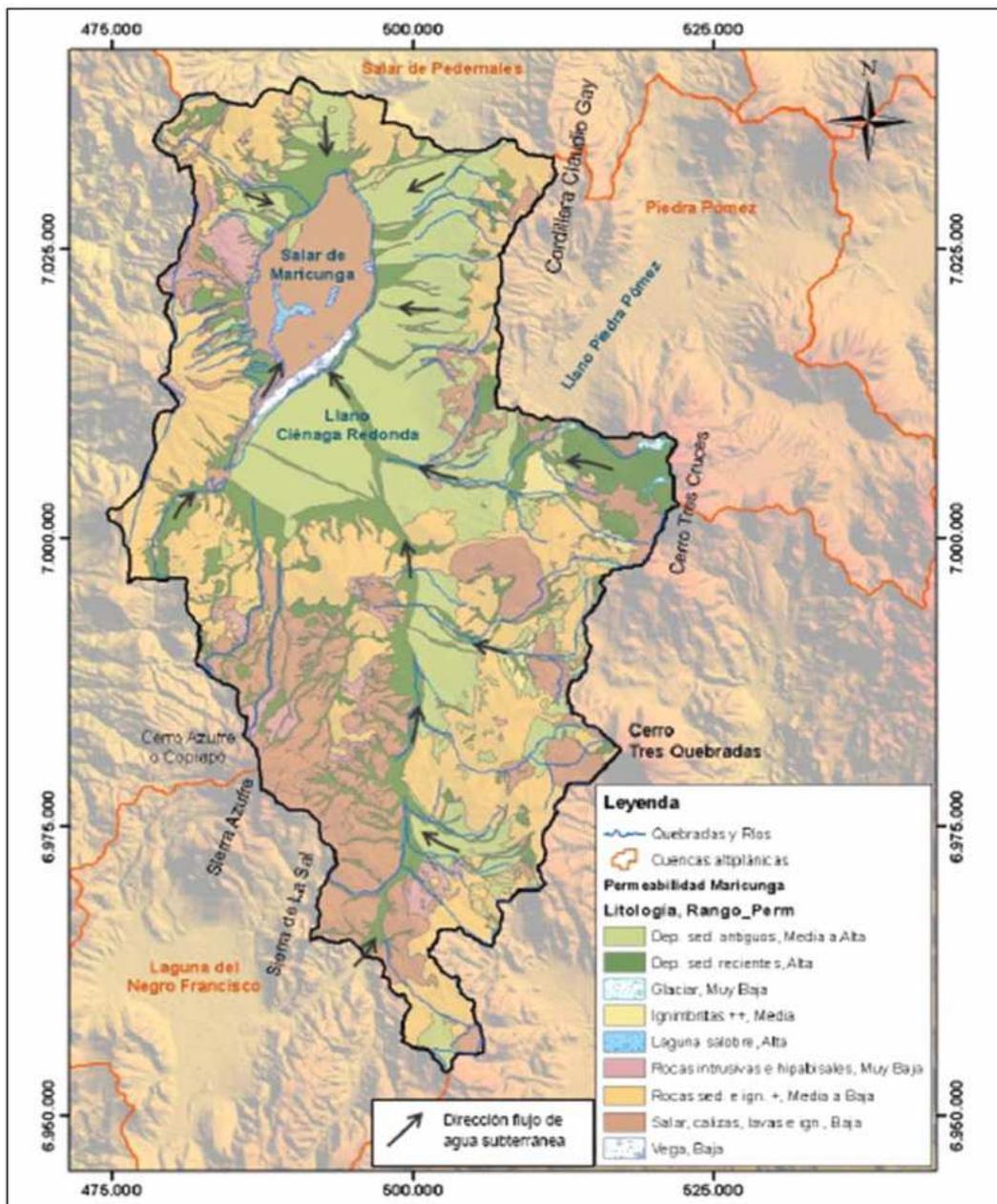
In the relatively tightly-knit heights of the Chilean economy his connections have proved to be indispensable for advancing the project thus far (and into the development phase).



The surface area is covered by concessions held by LPI's JV, SQM and Codelco. In total, the Maricunga Lithium Project consists of the Lito 1-6 (1,438 ha) and adjacent Cocina 19-27 (450 ha), San Francisco, Salamina and Despreciada (675 ha together) mining properties.

### Geology

The project is located in the Maricunga Basin within the Pre-Andean Depression. The salar is the topographic low point within the basin. The drainage basin is shown in the following map.



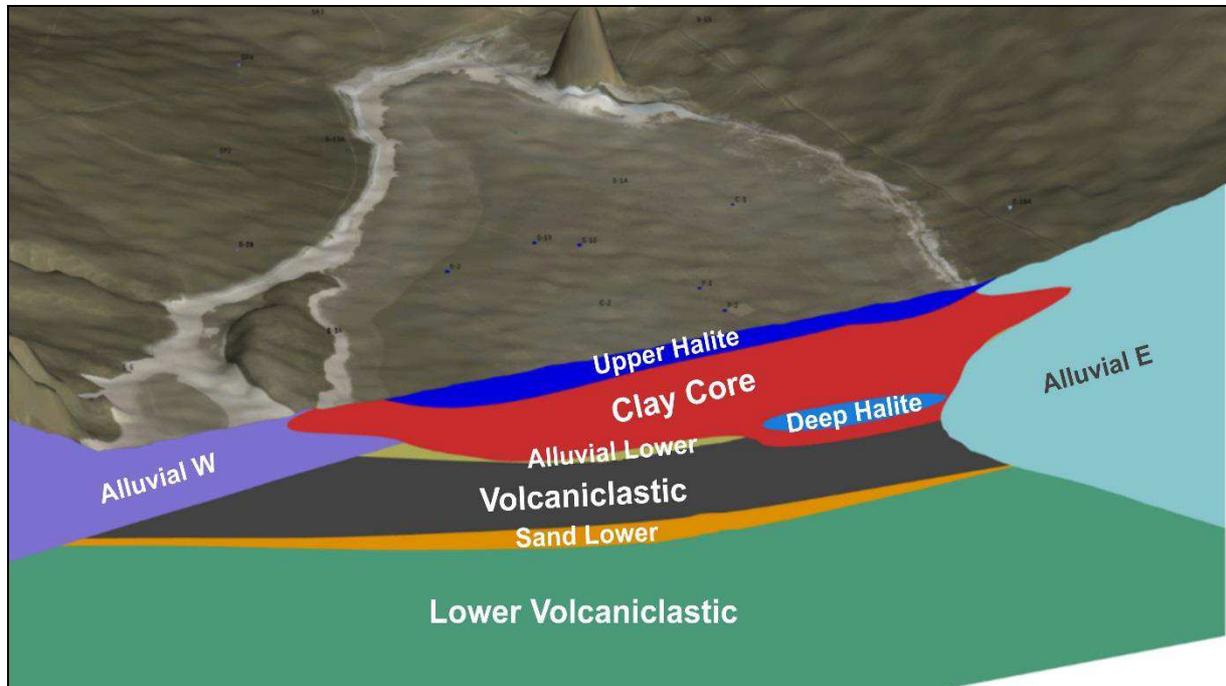
Uplift and denudation should have produced a large amount of sediments during the Cenozoic era. Nevertheless, only the Maricunga and Pedernales Basins preserve a large amount of sediments while in the Precordillera and Central Depression only a thin blanket of Miocene sediments (Atacama Gravels) form the infill of a Tertiary paleovalley network. The geodynamic framework and geological evolution that makes possible the formation, thickening and preservation of the Maricunga basin is present in five stages inside the project area.

The *salar* itself is surrounded by alluvial fans which drain into the *salar*. The floor of the *salar* in the north and northeast is composed of chloride facies consisting of flat halite crust (where more recently flooded) and coarse irregular- and pinnacle-shaped halite blocks (due to the absence of recent flooding). The floor of the *salar* in the southeast is composed of boric and sulphate facies. In the nucleus of the *salar* the water table can be within approximately 5cms of the surface. At the right can be seen the *salar* with the shallow coverage of water during the snow-melt period.



The Salar de Maricunga is a mixed-style *salar*, with a halite nucleus of up to 34m in thickness in the central northern part. The halite unit is underlain by a clay core on the eastern and central part of the *salar*. The clay is locally interbedded with silt and silty sands. The *salar* is surrounded by relative coarse grained alluvial and fluvial sediments. These sedimentary fans demark the perimeter of the actual *salar* and at depth grade towards the center of the *salar* where they form the distal facies with an increase in sand and silt. At depth, two unconsolidated volcanoclastic units have been identified that appear quite similar. These two volcanoclastic units are separated by a relatively thin and continuous sand unit which may be reworked material of the lower volcanoclastic unit.

Below can be seen the various deposit horizons.



The core displays on the recent site visit highlighted, in a tangible form, the various layers of the deposit that have accumulated through paleohistory and the way the different layers help (or hinder) extraction due to their differing porosities. The wide variance in porosity between the different layers is evidenced in the table below:

Geological Model	Drainable Porosity
Upper Halite	6.5%
Clay Core	2.2%
Deep Halite	5.3%
Alluvial NW	14.8%
Lower Alluvial	6.3%
Lower Sand	6.0%
Upper Volcaniclastic	10.3%
Lower Volcaniclastic	10.3%

### Exploration

The Chilean government's development corporation, CORFO, under the aegis of the *Comite de Sales Mixtas*, conducted a major study of the northern Chilean *salares* in the 1980s with the objective of determining the economic potential of the *salares* for production of potassium, lithium, and boron.

With the concessioning of some *salares* the main driver for exploration became private groups. One of these was the TSX-V-listed Li3 Energy, which was born out of the first Lithium boom at the end of last decade. At its apogee in 2011/12, Li3 carried out an initial brine resource investigation program on the Lito 1-6 claims that consisted of the following components:

- Six sonic boreholes (C-1 through C-6) were completed to a depth of 150 m. Undisturbed samples were collected from the sonic core at three meter intervals for porosity analyses (318 samples). Brine samples were collected during the sonic drilling at 3m intervals for chemistry analyses (431 primary samples and 192 QA/QC samples). All sonic boreholes were completed as observation wells on completion of drilling
- A total of 915m of exploration RC drilling was carried out for the collection of chip samples for geologic logging, brine samples for chemistry analyses and airlift data to assess relative aquifer permeability. The RC boreholes were completed as observation wells for use during future pumping tests. Two test production wells (P-1 and P-2) were installed to a total depth of 150 m each for future pumping trials

Minera Salar Blanco initiated a phased work program in August 2016 to complete a PEA, then a FS and EIA for the Maricunga JV. The first phase of this work program consisted of exploration drilling and well-testing focused on the Cocina, San Francisco, Salamina and Despreciada mining claims.

Based on the drilling campaigns carried out in the *salar* between 2011 and 2016, ten major geological units were identified and correlated from the detailed geological logging of drill cuttings and undisturbed core to a general depth of up to 200m. One deep borehole (S-19) was drilled to a depth of 360m. No boreholes reached bedrock.

Our site visit in October included a display (pictured at right) of some representative core from the *salar*. Core had been obtained by sonic drilling rather than the more standard methods used elsewhere. The



reason for this was to maintain as much of the liquid in the core to gauge the porosity of the material and to minimize the contamination that arises from the use of drilling mud and fluids in other drilling techniques.

The sonic drilling involves the lifting of core in short sections (three metres) after it's been drilled with plastic tubing being inserted around the core to keep the essentially crumbly material intact for analysis. This is then capped at the ends to keep the liquid component within the sample and preserve it from the desiccating environment at the high altitudes of the project site.

The 2016-17 drilling program expanded the project resources with Measured and Indicated resources (published in August 2017) comprising 80% of the updated resource, with the Inferred category the remaining 20% of the total 2.15mn tonnes LCE resource, defined to only 200m.

Marincunga JV - Resource Estimate											
Category	Unit	Measured		Indicated		Inferred		M&I		Total Resource	
Area		18.88 km2		6.76 km2		14.381 km2		25.64 km2		25.64 km2	
Element		Li	K	Li	K	Li	K	Li	K	Li	K
Mean concentration	ppm	1,174	8,646	1,071	7,491	1,289	9,859	1,143	8,292	1,163	8,512
Resource	tonnes	170,000	1,250,000	155,000	1,100,000	80,000	630,000	325,000	2,235,000	405,000	2,980,000
Lithium Carbonate Equiv.	tonnes	900,000		820,000		430,000		1,720,000		2,150,000	
Potassium Chloride	tonnes	2,400,000		2,100,000		1,200,000		4,500,000		5,700,000	

One deep hole (S19) was drilled to 360m, which together with the seismic, AMT and gravity geophysics executed over the area, gave the JV partners a high degree of confidence there is a continuation to a depth of around 500m of the aquifers hosting lithium resources above 200m.

The JV completed a year of evaporation test work at the project site and is at the pilot plant stage of optimising the lithium and potassium extraction processes, working with major equipment providers Veolia, GEA, Andritz and FLSmidth. Test work is continuing to refine the process and quantities of chemical reagent use, to improve estimates of project operating costs.

The partners expect to increase the project's resource (and by implication its reserves) within the next months as part of the development works. The partnership is now moving towards a full feasibility study in 2018 and getting the environmental approval for the project, following the positive outcome of the PEA.

### Mineralisation

The brines from Maricunga are solutions saturated in sodium chloride with an average concentration of total dissolved solids (TDS) of 311 g/L. The average density is 1.20 g/cm<sup>3</sup>. The other components present in the Maricunga brine are K, Li, Mg, Ca, SO<sub>4</sub>, HCO<sub>3</sub> and B. Elevated values of strontium (mean of 359 mg/L) also have been detected.

Maricunga has a moderate Mg/Li ratio of 6.5 brine (comparable to the Atacama *salar*) with a low SO<sub>4</sub>/Li

ratio of 0.8, and a relatively high Ca/Li ratio of ~12. Ergo calcium removal will be necessary for lithium production.

Analyte	HCO <sub>3</sub>	B	Ca	Cl	Li	Mg	K	Na	SO <sub>4</sub>	Density
Units	mg/L as CaCO <sub>3</sub>	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	g/cm <sup>3</sup>
<b>Maximum</b>	2,730	1,193	36,950	230,902	3,375	21,800	20,640	104,800	2,960	1.31
<b>Average</b>	471	596	13,490	190,930	1,123	7,337	8,237	85,190	709	1.2
<b>Minimum</b>	76	234	4,000	89	460	2,763	2,940	37,750	259	1.1

Potassium chloride (KCl) fertilizer production will be a secondary product, commencing three years lithium carbonate production.

At the time of our site visit there were eleven trial evaporation pools (pictured below) of which there were ten containing liquids at that time in various stages of concentration.



It was evident that the reduction process will be driven not only by solar evaporation but also by wind evaporation as winds were quite gusty at times on site.

### **The Preliminary Economic Assessment (PEA)**

In mid-December the company published its awaited PEA on the Maricunga Lithium Brine project. The PEA was completed by leading consultancy, WorleyParsons. Key production metrics from the PEA are:

- 20,000 tpa production of Lithium carbonate (LCE) and 74,000 tpa Potassium Chloride (KCl) fertilizer
- A mine-life of over 20 years

Key financial metrics from the PEA are:

- Projected pre-tax NPV (at 8% discount rate) estimated to be US\$1.049bn
- An IRR of 23.4%
- Payback in just under three years, based on a 2-year ramp up period
- Lithium carbonate production cost of US\$2,938 per tonne (FOB in Chile) in lowest quartile of current projects on offer
- OpEx reduces to US\$2,635 per tonne with by-product credits from KCI
- CapEx estimated at US\$366mn (LPI's 50% share estimated at US\$183mn) excluding KCI (US\$23mn), plus indirect costs of 14.2% (US\$55mn) and 18.6% (US\$83mn) contingency
- Accuracy of operating and capital cost estimates expected within a +/- 25% range

Using different discount rates the before-, and after-, tax NPVs pan out as:

<b>NPV discount rate</b>	<b>Before Tax US\$ mn</b>	<b>After Tax US\$ mn</b>
NPV 6%	1,425	1,013
NPV 8%	1,049	731
NPV 10%	770	521
IRR	23.4%	20.4%
Project payback	2 yrs 11 mths	3 yrs 3 mths

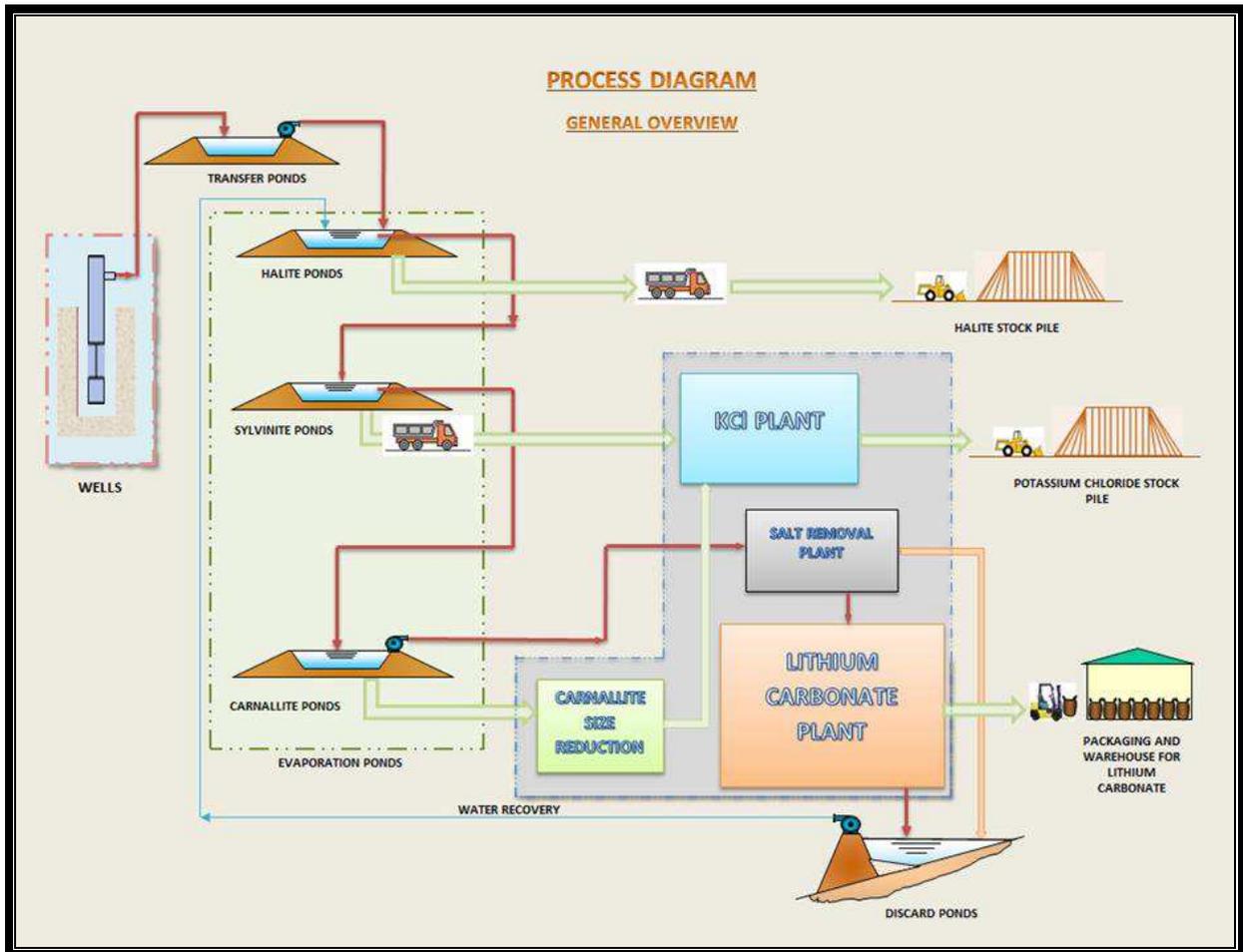
In light of rising interest rates at the current time we prefer to regard the 8% discount rate as the most appropriate at this time particularly as some debt funding will be needed to keep at bay potential percentage creep by an offtaker inserted at the project level. The project shows a robust return at either 6% or 8% discounts with a good margin of return over CapEx.

### **Production Scenario**

The site of the eventual full-scale evaporation ponds and processing plant should cover an area of around 17 sq kilometres in total, not all of which will be constructed pond area. Unlike other projects that locate the ponds on the *salar*, LPI and partners have decided to locate them on the alluvial fans above the *salar*. These are almost flat, though not quite, however minimal grading should be required and the material is easily gradable. Brines will need to be pumped up into the ponds but that is not considered a challenge for a brine operation. The processing plant will be at the farthest distance from

the solar effectively at the top-end of the pond complex, beside the road that leads to the port where products will be exported and imported.

The project is planned to produce 20,000 tpa of lithium carbonate (LCE), with production of 74,000 tpa of potassium chloride (KCl) from Year 3 of the project, when potash salts have accumulated to a level where continuous processing can be carried out.



The study was based on extraction of an average 222 litres per second (l/s) of brine throughout the project life of 20 years. The brine commences approximately 10cm below the *salar's* surface and extends below the base of the proposed bore field at 200m below the surface. Brine will be extracted from a minimum of 13 individual wells, pumping via a central collection pond to the evaporation ponds.

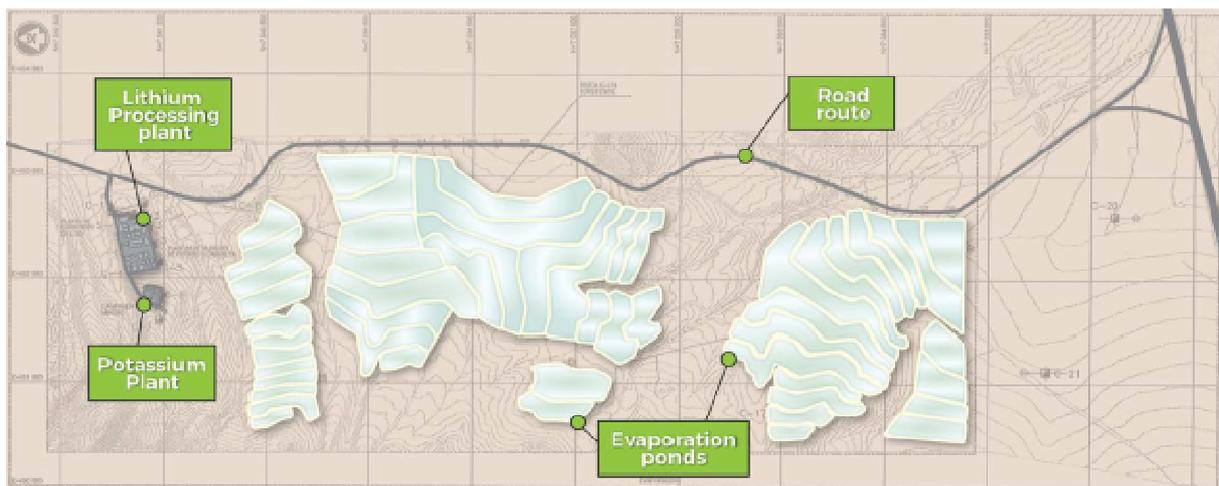
In the evaporation ponds, the brine shall be concentrated through evaporation and chemical saturation, with precipitation of different salts, such as halite, sylvinite and carnallite. All salts that precipitate would be periodically harvested from the ponds, and stored in designated stockpiles. The sylvinite and carnallite salts would be sent directly to the KCl processing plant, where through processes of size

reduction and classification, flotation, leaching, drying and packaging, KCl fertilizer is obtained.

Concentrated lithium brine from the evaporation ponds shall be pumped to the reservoir ponds, from which a Salt Removal Plant shall be fed. This plant will remove calcium impurities as calcium chloride and tachyhydrite from the brine. This shall be achieved through consecutive evaporation and crystallization steps giving a higher concentration of Lithium in the brine.

The concentrated Lithium brine obtained from the Salt Removal Plant will then be fed to the Lithium carbonate plant, where purification, solvent extraction and filtration processes remove remaining impurities including Calcium, Magnesium and Boron (all of which can potentially be marketable in their own right). The concentrated lithium brine shall then be fed to a carbonation stage, where through the addition of soda ash, the Lithium carbonate precipitates. This precipitated Lithium carbonate is then fed to a centrifuge for water removal, and final drying, size reduction and packaging. The Lithium and potash products are expected to be exported from ports in the second region of Chile, near Antofagasta.

Below the site map for the evaporation ponds and the processing plants is shown. North is to the left side of the map while the salar is to the south of the pounds (just off the right of the plan).



The pond design is novel with sinuous shapes dictated by the landscape as compared to the largely rectangular designs that one sees at most existing lithium operations.

### **Project Infrastructure**

As part of the PEA WorleyParsons carried out initial designs and calculated costings for the project infrastructure, the project construction facilities, and long term camp facility. The processing complex consists of:

- Accommodation camp and offices, laboratory, parking, workshops, general warehousing, weigh station and local access roads

- Reagent preparation building (includes solvent extraction reagent warehouse, hydrochloric acid reception, caustic soda preparation), storage and preparation of soda ash
- Fuel plant and station
- Storage and distribution of sulfuric acid and Lime plant
- Compressors room, boiler room; water conditioning plant
- Lithium carbonate and potassium chloride production plants

### **Wells and pipelines**

A minimum of 13 wells bores are planned for the production scenario, with this number based on the flow rates observed in pump tests to date. This number of wells includes additional wells that allow for normal mechanical and electrical availability and utilization purposes.

Production wells will pump brine from both the upper halite aquifer and the lower aquifer (gravel, volcanoclastic units). The details of the pumping will be confirmed by simulations with the yet to be completed hydrogeological model. Operation of the wells will also require periodic maintenance to clean wells and pumps due to a build-up of crystalline salts. The brine from individual wells will be pumped via a centralized open pond location, then to the pond area for evaporation and later processing.

### **Evaporation Pond Design**

As part of the PEA study, geotechnical studies and site evaluation were undertaken in the area where the evaporation ponds will be located to finalise pond design.

The well-established method of open air evaporation in ponds will be employed to concentrate the brine, before final processing to produce lithium carbonate and potassium chloride for sale.

WorleyParsons designed the evaporation ponds, working with Peter Ehren of PEC. The ponds are to be located around 5kms to the north of the salar, where they can be constructed taking advantage of the modest natural slopes, and gravel and sand that can be easily shaped into pond embankments prior to lining with an impermeable HDP membrane. The membrane specification will ensure resistance to impacts and punctures for operation long term as non-harvestable and harvestable evaporation ponds.



### Salt Removal Plant

The brine that comes from the ponds is in a first instance fed to the Salt Removal Plant, which, through the processes of evaporation and crystallization, allows the concentration of the lithium contained in the brine, and at the same time enables the elimination of excess calcium and other impurities from the brine in the form of tachyhydrite and calcium chloride. This stage allows feeding of more concentrated brine to the rest of the stages, improving their efficiency and producing salts that may have market potential. It additionally generates water recovery that is used in the process.

### Process Plants

MSB is working with experienced suppliers Veolia, GEA, Andritz and FLSmidth and their laboratories, who are undertaking pilot plant test work using Maricunga brine. Stage 1 is now complete reaching a 5% lithium concentration. Stage 2 is underway with first lithium carbonate and potash (KCl) production samples expected in early 2018. Test work aims to optimise lithium extraction and potassium production and develop the lowest cost process, with highest possible lithium recovery. Test work is well advanced and in the coming months final adjustments will be made to optimise the brine polishing sequence. The simplified process flow sheet diagram is subject to ongoing optimisation.

### Capital Costs

In the PEA the capital equipment costs were amassed from in-house data and solicited budget price information. The estimates were expressed in US\$ as of November 2017. No provision was included to offset future cost escalation since expenses, as well as revenue, are expressed in constant dollars. Accuracy of the estimate is expected to be within a +/- 25% range.

Our suspicion is that these estimates are to the high side, particularly for the ponds, and we would not be surprised to see them come down in actuality.

The capital costs include direct and indirect costs for:

- Brine production bore fields and the pipeline delivery system
- Evaporation ponds, platforms, cutting and filling

<b>Maricunga JV - CapEx</b>		<b>USD \$ mn</b>
<b>Direct Costs</b>		
Brine Extraction Wells		25.637
Evaporation Ponds		134.065
Massive Soil Movements		6.246
KCl Plant		23.396
Salt Removal Plant		29.928
Lithium Carbonate Plant		77.396
General Services		29.898
Infrastructure		<u>62.816</u>
<b>TOTAL- DIRECT COSTS</b>		<b><u>\$ 389.38</u></b>
TOTAL INDIRECT COSTS @ 14.2%		55.216
CONTINGENCIES @ 18.6%		<u>82.708</u>
<b>TOTAL PROJECTED BUDGET</b>		<b><u><u>\$ 527.31</u></u></b>

- Salt removal plant
- Lithium carbonate and the potash plant
- General services
- Infrastructure

The capital investment for the project is in the middle of the ballpark of current estimates for projects in the lithium solar space. But as no project is the same as another most of these comparisons are meaningless in any case. LPI, interestingly, has decided to include its KCl production facility in the CapEx while many prefer to leave by-products to one side as this confuses their promotional efforts. LPI instead has grasped the nettle because potash will be an important and sought after component of its output.

### **Operating Costs**

The PEA's operating cost estimate is based upon process definition, laboratory work, tests at equipment suppliers and reagents consumption rates all provided or determined by the JV partners. This work is currently at a relatively preliminary stage. The consultants used vendor quotations for reagents costs. Expenses estimates, as well as manpower levels are based on WorleyParsons' experience with further data provided by the JV partners. Energy prices, mainly electricity and diesel fuel and chemical prices, correspond to expected costs for products delivered at the project's location and the discussions carried out with Kinross.

Chemical reactives and reagents are the major operating cost of the project, followed by energy costs. Over 80% of the chemical costs correspond to Soda Ash, of which 42,000 tpa are required to produce 20,000 tpa of LCE. Other important expense items are manpower and maintenance. If KCl income and expenses are netted, unit LCE production costs are reduced from US\$2,938/t to US\$2,635/t.

### **Infrastructure**

Extremely isolated locations usually come with the baggage of poor or non-existent infrastructure. One of the curses of the *salares* on the Argentine side is that many have no settlements in any reasonable proximity, so there are no roads or any other type of utility infrastructure. The situation for Maricunga is starkly different with good road access and a power line to site.

### **Road Access**

As mentioned previously the road issue is solved by being on one of the important border crossings to northern Argentina and back down to the Chilean coast in two directions.

The Ultramar Logistics Group was hired to provide initial advice on haulage and storage options for materials being transported to and from the Maricunga project, including lithium carbonate and potash products, and particularly inbound soda ash. This recommended potash can be shipped from site in bulk

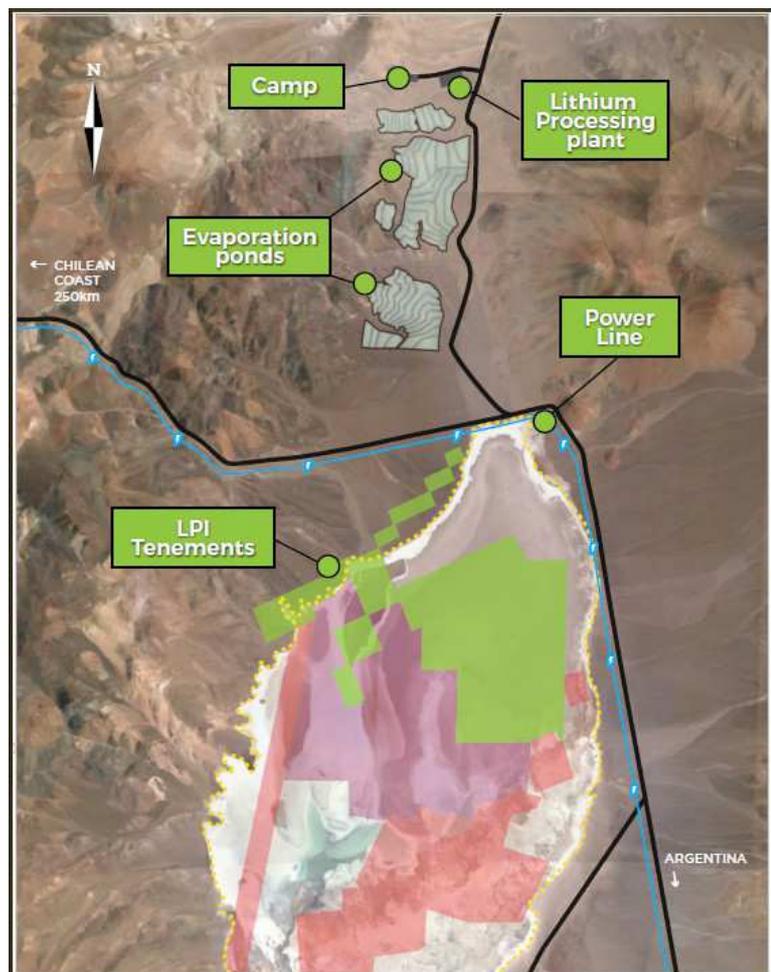
haulage transport and potentially sold to SQM. The lithium carbonate exports can be made through the port of Angamos and the sodium carbonate (soda ash) imports can be made through the port of Antofagasta. Existing public roads for heavy haulage are available close by for the Maricunga project's needs to and from the coast.

In October, while we were at site, it was announced that the Chilean government has resolved to pave the existing good, but unpaved, road which heads north and will be the main access road to the ports for the export product.

### Power Supply

The Maricunga project initially has projected demand of 8 MW of electrical power. Studies contracted by MSB indicate that the best supply alternative, from a technical-economic point of view, would be the connection through an existing 23 KV transmission through a sectioning substation.

As for power the company is very well served by a transmission line owned by Kinross that runs right by the site of the production plant site (the light blue line on the map below), skirting the north and east side of the salar. A 23 Kv line from the grid was originally constructed to the Kinross gold mine at La Coipa, which is closer to Copiapo. An 8 Kv extension from La Coipa then runs (via the *salar*) to a pumping plant. It is this extension from which the JV will draw power.



Under Chilean law the owner is obliged to share the infrastructure with users such as the JV. In any case the Kinross mine is currently on care & maintenance pending a decision to go underground at what has hitherto been an open pit.

The image below left shows the line from the grid to Coipa while the image at the left shows the extension that will service the Maricunga project site.



The tariff will contain both a fixed and variable payment but this should average out at around US\$47 per MWh or around \$2.5mn per annum. There will be a USD\$10mn upgrade cost which shall be borne by the JV.

### **Water Supply**

According to the PEA a well, or wells, in the vicinity of the Salar de Maricunga can provide water for the project operations and construction. Industrial water consumption is estimated at approximately 28 litres/second. Industrial water will be treated in a *reverse-osmosis* plant located inside the processing complex. This plant will feed tanks that will supply soft water to the process that require clean, but not potable, water.

### **Next Steps**

In light of the favourable outcome of the PEA the company is now working towards a target of completing a Definitive Feasibility Study in the second half of 2018 and securing the project environmental and operating permits will take the JV partners to the point of final decision to proceed and then work on marshalling the financing required.

### **Chile**

Chile is a known quantity in mining circles but has shown some signs of tarnishing in recent times with the many and various travails of Pascua-Lama and the tussles between SQM and the government. On the 19th of November the first round of the Chilean presidential elections took place with the candidate of the centre-Right, Sebastian Piñera, gleaning the largest share of the votes with 36% against a divided Left (which fielded two serious candidates). This was initially viewed as a poor result as he had been mooted to obtain over 40% of the primary vote, but support was drawn off by a lesser candidate on the Right, who was knocked out of the second round.

Due to the economic lassitude in recent times the Left-wing government looked to be on thin ice with many viewing an oscillation to the Right as the most likely outcome. Piñera is a billionaire businessman,

with an affinity for the mining sector, who was president from 2010-14.

In the second round of the Presidential contest Piñera defeated Alejandro Guillier, the centre-left opponent, by a wide margin of 54.6% to the centre-right and 45.4% to the centre left. Piñera will be sworn into office in March 2018, for a four-year term. This is a major plus for Chilean mining and a goal of the new administration will be to put Chile back in the Lithium limelight, and it is through projects such as Maricunga that this goal can be achieved.

### **Chilean Mining Law**

As mentioned earlier the Maricunga Lithium Project consists of the Lito 1-6 (1,438 ha) and adjacent Cocina 19-27 (450 ha), San Francisco, Salamina and Despreciada (675 ha together) mining properties. The Cocina 19-27, San Francisco, Despreciada and Salamina concessions were constituted under the 1932 Chilean mining law and have “grandfathered” rights for the production and sale of lithium products; unlike the Lito 1-6 concessions which were constituted under the 1983 Chilean mining law and require additional government permits (CEOL) for the production and sale of lithium.

Chilean regulation requires that the Chilean Nuclear Energy Commission (CCHEN in Spanish) authorizes a quota of production and commercialization of Lithium salts (products) for any company in the country. Minera Salar Blanco has applied for this CCHEN permit and an approval regarding this matter is awaited.

### **Royalties**

According to MSB’s interpretation of the relevant legislation, the 1932 Chilean mining law concessions are exempt from any special royalties on Lithium carbonate production, and would be subject to royalties under the general mining regime. If this is the case, and if MSB could extract 100 % of the brine required for the plant from the “old” properties, yearly royalties would amount to approximately US\$ 3.3 million per year. This is equivalent to about 1% of annual sales.

The Chilean government is currently reviewing a future regime for Lithium production for the country which will probably include a royalty structure. The consultants noted that MSB fully owns its mineral concessions and, as such, would not be exposed to additional payments such as long term lease payments similar to those that CORFO, owner of the Atacama Salar, collects from SQM and Albemarle. For the PEA, a conservative potential royalty rate was applied for the project of 7.5% of sales. The economics would be substantially enhanced from those published in the PEA should the royalty actually come in closer to the 1% of sales mentioned earlier.

### **Other Taxes**

Income tax rate for corporations such as MSB has been set at 27 %. In the case of long lead projects, such as MSB’s, Chilean VAT law allows for direct recovery from the government of VAT paid during the construction period. Additionally, in the case of companies that export all or nearly all of their production, they can recover directly from the government VAT paid on all supplies.

### **The “New” Deal with SQM and CORFO**

One of the inevitable results of the Piñera election victory was that peace would break out in the ongoing tensions between SQM and the Chilean government. In mid-January this is exactly what happened and the listed Lithium universe was briefly turned upon its head. The panic merchants became confused by what is likely to be a long-term Chilean challenge to the easy ride that Argentine contenders have enjoyed over the last 18 months. They conflated it into a massive rout of the Lithium price imagining a fanciful avalanche of extra product out of Chile. This concept is ludicrous as the demand dynamics have not changed, it just means that marginal projects will be knocked out of contention.

To begin with the harsh reality of all lithium *salar* projects also rules in this case. SQM cannot have a massive surge in production in the short term because it takes 18 months to two years for the evaporation process to yield extra production, presuming that SQM do decide to max out their potential at Salar de Atacama. Additionally they will need to have the pondage to do so, which implies also a build-time.

Another factor that has not been considered is that Albemarle, when it came to its recent accommodation with the Chilean government, committed to allocate a large proportion of its output for further up-processing within Chile. The implication of this is that SQM will also have to make a similar commitment which implies processing plant build-time for SQM, or its onshore processor, and commensurately less unelaborated product for the export market.

This latest “upset” frankly came at a time when various over-hyped projects, particularly in Argentina and Australia, were starting to have valuation issues raised by investors. The latest news thus was an overdue letting off of steam. However, due to the ignorant nature of the markets on most Lithium matters, stocks like Lithium Power were also caught in the downdraught that took down the likes of Lithium Americas and Neolithium that were ripe for correction.

### **Financing**

In late November the company announced that its placement of shares to institutional, existing and new investors had been achieved with strong oversubscription interest. Additionally the arranger had agreed to fully underwrite the exercise of all the quoted options that were due to expire on the 24<sup>th</sup> November 2017. The placement raised AUD\$15mn before cost at an issue price of AUD\$0.55 per share. As a result the company is issuing approximately 27.27mn new shares.

As a result of this funding, the company now claims to be fully funded through to a production decision. Specifically, funds raised through the placement (and the exercise of options) shall be utilized for:

- Expediting payment of the remaining US\$7.5mn earn-in, thereby finalising LPI’s 50% ownership

in the Maricunga JV. These payments were due in three instalments up to September 2018

- Contribute to pre-construction programs within the Maricunga Joint Venture
- Other strategic initiatives associated with the Maricunga Joint Venture
- Exploration activities at LPI's Western Australia tenements
- Provide general working capital

There are approximately 37.53 million Options on issue and accordingly a total of approximately A\$20.6 million (before costs) will be raised through the exercise and underwriting of the Options. This will result in the issue of 37.53 million new shares.

On completion of the placement and underwriting of the options, LPI will have approximately 260.7 million fully paid ordinary shares on issue.

### **Chinese Ride onto the Scene**

When we visited the site most of the talk was of the potential for Japanese traders and battery producers funding the project to ensure a share of the offtake. This need was particularly acute after the Japanese were wrong-footed with the flow of product from Galaxy in Australia. However, again it might prove to be the case that torpor in Japanese management lets the prize go to the Chinese.

In a case of the press jumping the gun, in recent weeks the Chilean financial press published articles stating that the Chinese group, Sichuan Fulin, was in talks with the consortium that controls Maricunga. This revelation thus prompted LPI to make an announcement to the effect that talks were occurring. The seriousness of this approach will only be known in the fullness of time. It does however put any Japanese suitors on the alert due to their vulnerability of being shut out of another Lithium source by Chinese competitors.

Sichuan Fulin Industrial Co had already been mentioned in connection with Chile's lithium resources last July when the government's Economic Development Agency (CORFO) and InvestChile, called a tender of interested parties in producing lithium salts, metallic lithium, lithium cathodes, ingots and battery foil and materials for cathodes within Chile.

At that time a dozen companies from China, South Korea, the United States, Canada, Belgium and Russia as well as two Chilean companies have expressed interest in participating in the tender designed to create a value-added lithium products industry in Chile.

The opportunity to industrialize Chilean lithium arose as a result of an agreement signed recently by CORFO and Albemarle (ex-Rockwood). The new contract with the non-metallic mining company establishes that "25% of the lithium extracted must be processed in Chile through the manufacture of

products that permit the export of products with greater value added and the development of an industry related to this mineral.”

The companies that opt to invest will obtain preferential prices for lithium produced in the Salar de Atacama by Albemarle.

With such a crowded field expressing interest in the downstream, Sichuan Fulin would appear to be, potentially, doubling up their bets on Chile’s lithium future by trying to insert themselves into the Salar de Maricunga ownership structure. Maybe they are also signaling to the government their commitment to wade into upstream Chilean lithium production (pardon the pun) with maximum seriousness.

### **Other Projects**

The company had, and has, several other projects in the Lithium space in Argentina and Australia. There have been corporate actions related to these recently which we elaborate below.

### ***Greenbushes***

Lithium Power holds granted exploration tenements extending over 400km<sup>2</sup> in the Greenbushes region of southern Western Australia. They are adjacent to the world’s largest hard rock lithium mine, owned and operated by Tianqi/Albermarle. The Greenbushes area was first discovered as a resource of alluvial tin in the late 19th century. Subsequently, the source of the tin was recognized to be a series of pegmatites, which also contain tantalite and spodumene. The Talison hard rock mine was established in 1983, initially focused on tantalum production, however the primary product is now Lithium. The most recent public lithium resource for the Talison mine was 119.4mn tonnes @ 2.42% Li<sub>2</sub>O as at 30 September 2013. Talison was taken over by Chinese lithium producer Chengdu Tianqi and Rockwood in 2012.

The tenement portfolio at Greenbushes comprises the Balingup project, a large tenement extending north and west of Talison’s mine and the Brockman Highway project, which is south of Talison’s mine and divided by the Brockman Highway. These granted exploration tenements are 100% owned by Lithium Power.

### ***Pilgangoora, Pilbara / Tabba Tabba***

LPI’s exploration tenements cover 203km<sup>2</sup> across the Pilbara region of northern Western Australia. The Pilgangoora-Houston Creek Project is the largest of the three Pilbara tenements. Historically, the Pilgangoora area has been recognised for tin, tantalum, and gold mining.

In the general vicinity there are the projects of:

- Pilbara Minerals (PLS.ax) project contains one of the world’s largest spodumene resources and one of the largest tantalite resources. This globally significant project is forecast by some to become a low-cost supplier of lithium and tantalum

- Altura Mining (AJM.ax) has defined a significant rare metal pegmatite resource in the Pilgangoora area

These two deposits lie just 2.5km and 3.5km east from LPI's Pilgangoora-Houston Creek tenement. LPI's exploration tenements are 100%-owned by Lithium Power. LPI aims to commence drilling on the Pilbara properties in the second half of 2018, with the recent financing having part of its proceeds directed towards this goal.

### **Argentina**

Through its Argentinian subsidiary, Lithium Power held six granted tenements in the Centenario lithium brine salar in Salta province, covering an area of 61.5 km<sup>2</sup>. The majority of the other tenements in the Centenario *salar* are owned by Eramet, a major French mining & chemical company.

In September 2017 the company confirmed that it had agreed to vend its interests in the Centenario project to an Australian company, Albertson Resources Pty Ltd.

In the first instance it gave Albertson exclusive due diligence rights for an agreed period of 45 days, in consideration of a non-refundable fee of \$150,000. The purchase price payable by Albertson is:

- ✓ \$850,000 cash payment on entry into the long form agreement (completed and paid)
- ✓ \$2,750,000 on completion of the long form agreement, which is payable in cash or a minimum mix of 50% cash and shares
- ✓ an additional success fee of \$375,000 payable on finalisation of a maiden JORC resource above 250,000 tonnes of Lithium Carbonate Equivalent
- ✓ a royalty of 1.5% on gross revenue from Centenario for a period of 20 years from completion of a DFS

The last aspect is interesting because it essentially puts the pressure of Albertson to get the project moving along rather than spin the wheels. Albertson will be responsible for costs associated with maintaining the Centenario project tenements in good standing from the date of entry into the long form agreement.

While some may think that retreating from the frenetic Argentine lithium fray might be a mistake we can see after visiting Maricunga why these Argentine projects pale into insignificance in comparison.

### **Our Thesis**

As we have noted recently our thesis on the Lithium space is that we are in the middle of what we call the Lithium 2.0 phase. The first phase was the Lithium 1.0 beginning in 2009 which saw most players vaporize and less than a handful survive. Indeed it is these survivors (e.g. Neometals, Galaxy, Orocobre)

who are making up the producers of the first part of the Lithium 2.0 cycle.

The current cycle might be said to have moved to Lithium 2.1, in which the mere promoters have been weeded out by the brutal retreat in prices and investor interest in late 2016. Interestingly Lithium Power is built out of the work done by one of those that did not survive the post-2011 burn-out, namely Li3 Energy. This cycle looks to be one in which a slightly greater number of survivors will make it through to production and from what we have seen Lithium Power will be one of this hardy band.

In a Lithium market where some still believe that the largest market capitalisations indicate the greatest chance of success, few seem to recall the fallacy of this doctrine in the Rare Earth “boom”. While the Canadian market is still in somewhat of a swoon, the surfeit of investable cash in the Australian market has resulted in a severe disconnect in valuations where mediocre “advanced” spodumene projects are given ludicrous valuations, while cashed-up producers like Neometals have retreated and serious contenders in the *salar* space like Lithium Power are not (yet) rendered their due.

### **Management**

The Chairman, **David Hannon**, commenced his commercial career as a stockbroker/Investment banker in 1985. He later became a Director of a private Investment bank specialising in venture capital with a focus on the mining sector. Mr. Hannon has operated a private Investment group, Chifley Investor Group Pty Limited for over 15 years.

His other listed mining company experience involves being a founding Director of Atlas Iron Limited in 2004. He remained a member of the board of Atlas for 10 years and was Chairman while it maintained its position as a member of the ASX 100 Index with a market capitalisation of over A\$2b. Throughout this period he held various positions including Chairman of the Audit Committee and of the Nominations and Remunerations Committee. While Atlas embarked upon an iron ore growth strategy of its Pilbara assets it became the fourth largest iron ore producer in Australia.

The Chief Executive Officer, **Martin Holland**, has 11 years’ management experience focusing on the mining exploration sector. Previously he was CEO of gold explorer Stratum Metals Limited from 2010 to 2014, which listed on ASX in 2011. He is Chairman of the private investment company, Holland International Pty Limited, which has strong working relationships with leading institutions and banks across Australia and the Asia Pacific region.

**Russell Barwick** is a non-executive director and is an internationally well-known mining executive and engineer with over 43 years technical, managerial and corporate experience in various commodities. He initially worked for Bougainville Copper (for CRA, now RTZ), Pancontinental Mining (its Jabiluka Uranium mine) and CSR’s Hail Creek Coal project. Following this, he spent 16 years with Placer Dome occupying a number of development, operational and corporate roles in numerous countries culminating in being appointed Managing Director of Placer Nuigini.

He then served as Chief Executive Officer of Newcrest Mining. For the four-year period, up to 2007, he was the COO of Wheaton River Minerals and Goldcorp (during which time the market capitalization grew from several hundred million dollars to CAD\$22 billion and became the third largest gold company in the world by market capitalization).

**Reccared (Ricky) P. Fertig** is a non-executive director is a senior executive with 30 years' international commercial experience across mining, property, healthcare and services sector. He is the CEO of Adrenna Property Group, a property fund listed on the Johannesburg Stock Exchange. He is also chairman of Quyn International Outsource, a South African-based human resource group that has over 3,000 employees in Southern Africa, servicing the mining, construction and commercial industries; RMS Corporate Solutions, one of the leading property and facilities management companies in Southern Africa; and East Sydney Private Hospital in Sydney, Australia, which he co-founded.

**Andrew Phillips** is a non-executive director, the Company Secretary & Chief Financial Officer. He has over 25 years of commercial and financial experience internationally. He previously held senior management roles with Aristocrat, Allianz, Hoya Lens and Sequoia, with additional board experience in the small cap resources sector.

The company's Latin America Regional Manager, **Dr. Luis Ignacio Silva**, is also a non-executive Director & with has over 40 years' experience in mining exploration and environmental studies, which includes the lithium sector over the last 10 years. He has managed projects in Chile and Panama and has additional experience in Argentina, Bolivia, Costa Rica and Peru. He was previously Deputy Manager of Geology at SERNAGEOMIM (the Chilean Geological Survey) for two years, from 2012 to 2014. Prior to that he was the Exploration and General Manager for Talison's Salares-7 lithium project from December 2009 to December 2011. He has worked with some of the largest mining companies in the world, including Talison, Freeport, Amax, Barrick, Lundin, Homestake, Cyprus, Phelps Dodge, Pegasus, Cominco, CNC, and Codelco and the Chilean Nuclear Energy Commission.

### **The Fading Relevance of Bearing Resources**

This TSX-V listed entity is the final resting place (well, for now) of the remnant of the Li3 stake in the Maricunga project. It currently has a market capitalization of around CAD\$44mn. In September of 2017 it received approval to acquire via a stock issuance all the shares of Li3 Energy Inc. Assuming completion of the transactions contemplated by the Li3 Definitive Agreement, Bearing will hold an undivided 17.7% interest in the project, with Lithium Power International earning into the project by funding project expenditures to through to the delivery of a Definitive Feasibility Study. The talks to cement the Li3 takeover dragged on for around a year with the stock of BRZ peaking at over \$1.50 per share in February and now standing at just over half that level. While Bearing has a free carry until LPI's expenditure commitment is fulfilled (around \$9mn is still required to be spent) after that point Bearing will have to invest pro-rata in all works, or face dilution. The recent financing by LPI makes BRZ's dilution now a certainty.

This stock is clearly over-valued in comparison to LPI. If one puts an enterprise value of \$52mn (market cap plus cash plus residual share of LPI earn-in) on BRZ for a 17.7% stake then LPI with 50% of the project should have an enterprise value of nearly \$160mn, which is 50% higher than its current valuation.

## Risks

We would note the following risks:

- ✘ Lithium prices retreat
- ✘ Financing of Lithium project's capex proves to be problematical
- ✘ Spoiling action by SQM

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 Lithium Power we would see the offtaker being Japanese as the Chinese have seriously wrong-footed the Japanese (witness the Galaxy "bait and switch" with Mitsubishi).

SQM would have been a definite risk two years ago but it has become a rooster converted to a feather-duster these days due to its *macho* posturing to an unimpressed Chilean government. A change of government should lower the tone of the shoving match but the "national champion" has definitely been taken down a peg (or two) and the arrival of more players, like Lithium Power, enhances Chile's chances of maintaining its status in the Lithium space against Argentina.

It is worth mentioning that local communities do not constitute a risk in any form. The area is largely free of inhabitants and the very few that exist have been kept well-informed of developments by LPI and its partners. It is envisaged that some form of *ex gratia* royalty will be paid to indigenous locals for their inconvenience and collaboration.

## Conclusion

Chile was once (in very recent memory) synonymous with Lithium production from *salares*. Argentina was a sideshow with companies buffeted by changing rules and fractionated licenses that had been sliced and diced into infinitesimal pieces with multifarious owners of varying degrees of seriousness. Chile let the ball drop because it was perceived to be "cartel" territory (i.e. at the mercy of the diktats of the Big Three) and also that the prospective follow-up properties were in the hands of the majors (SQM and Codelco), the distracted (Talison post-takeover by Tianqi/Rockwood) and the moribund (Li3 Energy). Quite simply Chile fell off the map of future places for Lithium and was regarded as the Lithium past.

Such an assessment was set upon its end by Lithium Power’s intervention into the lacklustre cabal that had sat “dog in the manger”-like on the Salar de Maricunga for so long. In a relatively short span of time LPI has revived Maricunga and put Chile back in contention in the Lithium race. The project is now on the final lap of the developer circuit with a recent sizeable financing taking it to its full earn-in potential and funding the project through to the development decision, which seems almost a foregone conclusion at this juncture.

With ideal evaporative conditions and a plethora of good infrastructure (roads and power in particular) the project puts most of the offerings on the other side of the border “in the shade” to mix a metaphor.

In light of the rapidly shortening timeline to the construction phase, the highly positive outlook for the lithium price, the attractive NPV from the PEA, the lack of seriousness of many competing players and the contrasting seriousness of LPI’s management intent we have added Lithium Power International as a **Long** in the Model Mining Portfolio and we are raising our initial twelve-month target price of AUD\$1.10 cents to AUD\$1.90.



## Important disclosures

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