TECHNICAL REPORT ON THE

CAUCHARI PROJECT

JUJUY PROVINCE, ARGENTINA

NI 43-101 REPORT PREPARED FOR
OROCOBRE LTD.
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BY

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3. **SUMMARY**

Orocobre Ltd, through its 85% owned subsidiary South American Salars SA (collectively, "the Company"), hold just over 300 km^2 of mining tenements over the Salar de Cauchari and its surroundings (the "Project") in northwestern Argentina. These properties cover aquifer(s) that host a brine body with elevated levels of lithium, potassium and boron.

This Technical Report details the reconnaissance studies undertaken to date, the initial results and provides recommendations for further investigations aimed initially at establishing an Inferred Resource.

This report is prepared according to the requirements of the Canadian Securities Commission National Instrument 43-101 and the Canadian Institute of Mining Best Practice Guidelines. It is authored by John Houston who is a Qualified Persons under NI 43-101, and independent of the Company.

The salar (dry salt lake) of Cauchari is located in the high altitude Puna region of northwest Argentina, an area renowned for its lithium- and potassium-rich brine resources (for example, the existing lithium production operation at FMC's Hombre Muerto Project).

Brine resources are unlike most mineral deposits for one obvious reason: they are fluid. Thus they have the potential to move and mix with adjacent fluids once extraction, or exploitation, begins. The evaluation of brine deposits, therefore, requires special considerations not normally applied to mineral resource evaluation. There are three key factors that determine an in-situ brine resource: the geometry of the host aquifer, its effective porosity, and the brine grade or concentration. In addition there are three further key factors required in order to determine a recoverable resource: the permeability of the host aquifer, its specific yield (the unit volume of fluid that will drain under gravity), and its water balance (fluid inputs – surface and groundwater inflows, and outputs – evaporation).

The reconnaissance investigations carried out to date are not adequate to establish a resource estimate. Nevertheless, the data suggest that the Cauchari salar is underlain by a structurally-controlled sedimentary basin that forms an aquifer probably over 250 km^2 in area, and asymmetric, with maximum depths from 100 - 500 m along the eastern margins. No effective porosity determinations have yet been made on the aquifer matrix, but by analogy with similar aquifers may be in the region of 10-20%.

Surface pitting and sampling suggest that the southern areas and the margins of Cauchari, contain relatively low concentrations of all salts including Li and K whilst the central areas of the salar contain higher values (Li >1000 mg l^{-1}; K >4000 mg l^{-1}), similar to the Salar de Olaroz to the north. However, since these values are confined to the narrow central nucleus, it might be expected that operational issues (significant dilution of grade) might develop as a result of pumping during a project lifetime.

Insufficient data is yet available to assess the in-situ or recoverable reserves.

Despite the possible operational issue discussed above, information to date suggests that the Salar de Cauchari may have some potential as a supplementary brine feed to a plant at Olaroz. It is therefore recommended that an investigation program be mounted in order to establish the in-situ resources. The scope and timing of such investigations is detailed in the Technical Report, and their cost is provisionally estimated at approximately US$0.9 million.

4. INTRODUCTION

4.1. Authorship and Terms of Reference

The author was contracted by Orocobre Ltd. for the purpose to author this NI 43-101 Technical Report. The author is also contracted as an expert hydrogeological consultant by Orocobre to advise on the methodology for the assessment of its brine projects, including the Salar de Cauchari Project, and is responsible in this role for provision of technical advice including hydrogeological and resource aspects. The author has visited the Project on a number of occasions.

Reconnaissance exploration and evaluation data has been made available by Orocobre Ltd. to the author for the Project area, consisting of surface pitting results, and sample data. Subsequently, the author provided to the Company detailed technical specifications for investigations that will lead to an Inferred Resource at the Project. As of the date of this report the first phase investigation to evaluate an Inferred Resource is planned to start during 2011. Numerous sources of geologic and climatic data have been compiled for the project area, as indicated in the bibliography. The author has also reviewed published reports and has undertaken the analysis of data collected through the end of 2009.

The author's experience with similar brine resource projects in the area is highly relevant to the current Orocobre prospects. The scope of the personal involvement of the author is planned to include ongoing technical oversight of the investigation and evaluation programs.

4.2. The uniqueness of brine prospects

It is vital to understand the difference between brine and base/precious metal prospects. Brine is a fluid hosted in an aquifer and thus has the ability to move and mix with adjacent fluids once extraction starts. An initial in-situ resource estimate is based on knowledge of the geometry of the aquifer, and the variation in porosity and brine grade within the aquifer. In order to assess the recoverable reserve, further information on the permeability and flow regime in the aquifer, ***and its surroundings*** are necessary in order to predict how the resource will change over the project life. These considerations are examined more fully in Houston and Evans (*in prep.*)

As a consequence, in this and future reports on the Project, Section 8 (Deposit Types) deals with the host aquifer, and Section 9 (Mineralization) deals with the brine and its chemistry, whilst Section 16 (Mineral Processing and Metallurgical Testing) will cover aspects relating to the water balance, brine extraction and processing.

5. RELIANCE ON OTHER EXPERTS

The author relies on property reports prepared by independent lawyers, Vargas Galindez of Mendoza, Argentina for information regarding the legal status of the properties, the property agreements, permits and environmental status.

6. **PROPERTY LOCATION AND DESCRIPTION**

6.1. **Location**

The Cauchari Project is located in the Puna region of the provinces of Jujuy and Salta (Figure 6.1), at an altitude of 3900 m above sea level, 230 km west of the capital city of Jujuy.

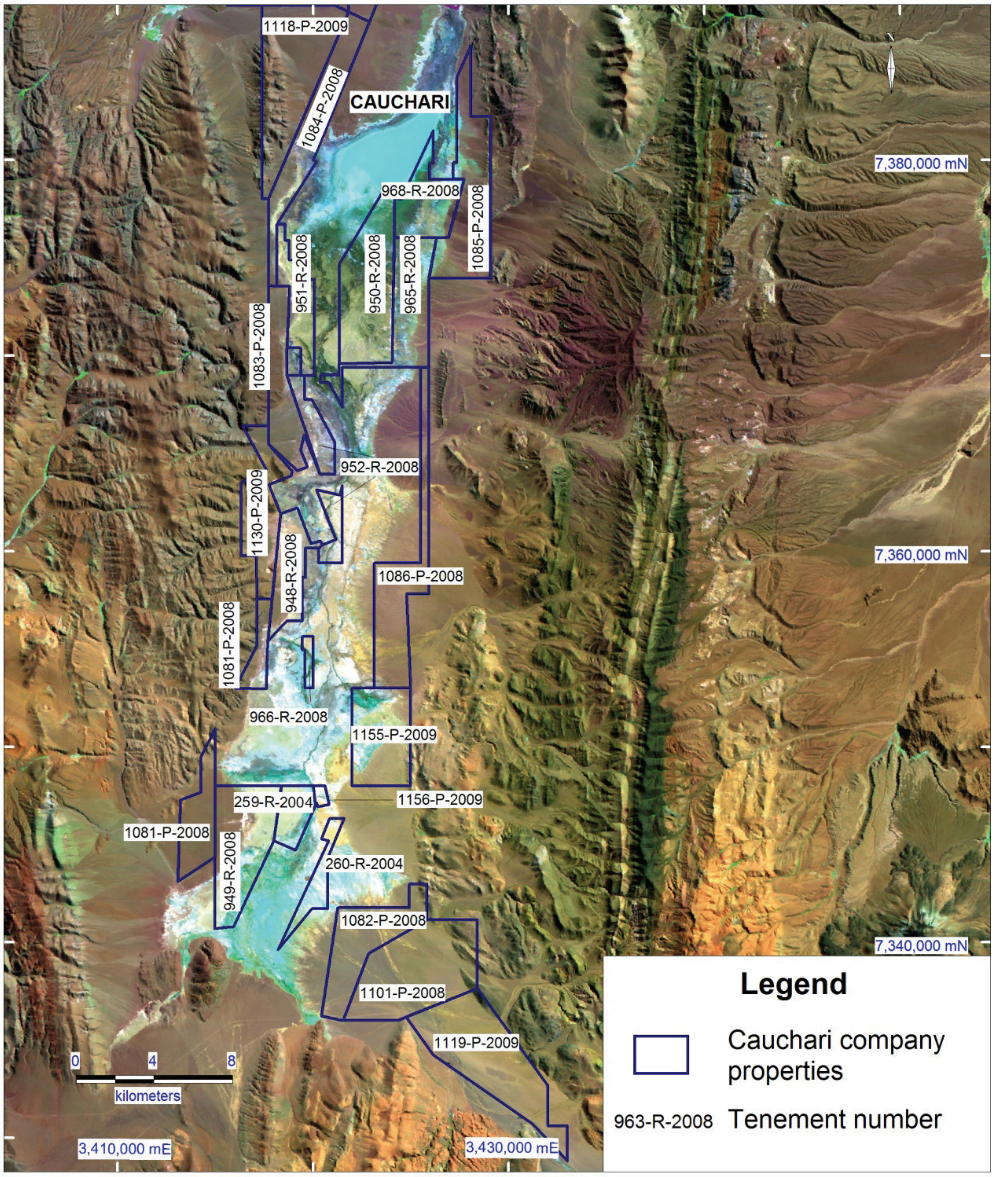
Figure 6.1 Location of the principal Orocobre tenements in Northern Argentina. Small squares indicate villages in the area. Orocobre Cauchari properties are shown with a black outline.

6.2. **Exploration and exploitation licences**

6.2.1. *Types of licences and co-ordinate system*

The location of Orocobre licences is shown in 6.2, with tenement information presented in Table 6.1. Tenement co-ordinates (and all other co-ordinates used in this report) are given in the Argentine coordinate system, which uses the Gauss Krueger Universal Transverse Mercator (UTM) projection, and the Argentine Posgar 94 datum. Claims "In process" refers to those that have been submitted to the regulatory authorities and are awaiting approval. This is standard procedure and no problems are anticipated with the granting of such claims.

Figure 6.2 Tenements held by Orocobre Ltd and South American Salars SA.



There are two types of tenure under Argentine mining regulations; *Cateos* (Exploration Permits) and *Minas* (Mining Permits). Exploration Permits are licenses which allow the property holder to explore the property for a period of time following grant that is proportional to the size of the property. The basis of the timeframe is that an Exploration Permit for 1 unit (500 hectares) has a period of 150 days. For each additional unit (500 hectares) the period is extended by 50days. The largest Permit is 20 units (10,000 hectares) and has a period of 1,100 days. The period commences 30 days after grant of the permit. The canon payable is ARG$400 per 500 hectares upon application.

Mining Permits are licenses which allow the holder to exploit the property subject to regulatory environmental approval. They are unlimited in duration so long as the holder meets its obligations under the Mining Code which include paying the annual canon (rent) payments, completing the survey, submitting a mining investment plan, and meeting the minimum investment commitments which is equal to 300 times the annual canon payment spent over a period of five years payable within five years of the filing of a capital investment plan. The canon varies according mineral occurrence. For brines it is ARG$800 per annum per 100 hectares.

The type of mineral the holder is seeking to explore and exploit must be specified for both types of tenure. Permits cannot be over-staked by new applications specifying different minerals and adding mineral species to a claim file is relatively straightforward.

The Cauchari tenement package includes both types of tenements.

6.2.2. *Standing of licences*

Details on the status of the properties is provided in table 6.1 provided by lawyers, Vargas Galindez of Mendoza. The author is advised that the properties are in good standing

6.2.3. *The Cauchari tenement package*

The Cauchari properties cover 30,723 hectares. These property interests are held by South American Salars SA (an Argentinean registered company) which is a 100% subsidiary of South American Salar Minerals Pty Ltd (an Australian Registered company) which was established with Argentine interests as a joint venture company in 2009 to explore for salar hosted minerals. Orocobre Ltd has an 85% direct interest in the joint venture company, South American Salar Minerals Pty Ltd..

6.3. **Environmental Liabilities**

The Cauchari properties are not subject to any known environmental liabilities. There has been historical ulexite (Borax) mining within the boundaries of the tenements by previous tenement holders and the author has been advised that the Company would not be liable for any disturbance caused.

6.4. **Permits**

Exploration and mining activities on *cateos* and *minas* are subject to regulatory approval of an environmental impact report (EIR). Mining claims (of both types) must be specified for the type of mineral the holder is seeking to explore and exploit. Claims cannot be over-staked by new claims specifying different minerals and adding mineral species to a claim file is relatively straightforward.

EIRs have been submitted for the tenements in the Cauchari tenement package. The company is waiting for regulatory approval of the EIRs.

No additional permits are required for surface access. The National Mining Code provides for primacy of Exploration and Mining Permit holders rights over surface owners rights and activities are permitted subject to the payment of compensation for damage caused or the lodgement of a surety with the government.

Table 6.1 Individual tenements of the Cauchari project showing the area in hectares. Co-ordinates in Gauss Krueger Zone 3, POSGAR 94 datum.

Property Name	Title Holder	Property Right By	Tenement ID	Area (Ha)	Status
Cateo	South American Salars S.A	Title	259-R-2004	494	In process
Cateo	South American Salars S.A	Title	260-R-2004	497	In process
Cateo	South American Salars S.A	Title	948-R-2008	888	In process
Cateo	South American Salars S.A	Title	949-R-2008	1,771	In process
Cateo	South American Salars S.A	Title	950-R-2004	1,998	In process
Antonito I	South American Salars S.A	Title	1155-P-2009	1,500	In process
Francisco Norte	South American Salars S.A	Title	968 R 2008	1,100	In process
Georgina	South American Salars S.A	Title	1081 P 2008	1,995	In process
Olacapatita III	South American Salars S.A	Title	1.119-P-2009	2,493	In process
Olacapatito I	South American Salars S.A	Title	1082 P 2008	1,497	In process
Olacapatito II	South American Salars S.A	Title	1101 P 2008	2,484	In process
San Carlos Este	South American Salars S.A	Title	966 R 2008	191	In process
San Francisco Este	South American Salars S.A	Title	1085 P 2008	2,096	In process
San Francisco Sur	South American Salars S.A	Title	965 R 2008	1,397	In process
San Gabriel I	South American Salars S.A	Title	951-R-2008	795	In process
San Gabriel Sur	South American Salars S.A	Title	1083 P 2008	1,697	In process
San Gerardo	South American Salars S.A	Title	1.118-P-2009	2,395	In process
San Gerardo II	South American Salars S.A	Title	1130-P-2009	1,598	In process
San Joaquin I	South American Salars S.A	Title	952-R-2008	488	In process
Sangabriel Norte	South American Salars S.A	Title	1084 P 2008	1,597	In process
Solitaria I	South American Salars S.A	Title	1156-P-2009	66	In process
Sulfita	South American Salars S.A	Title	1086 P 2008	1,687	In process
Total Cauchari				**30,723**	

7. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

7.1. Accessibility, Local resources and Infrastructure

The Cauchari Project is located in the Puna area of northwest Argentina, largely within the province of Jujuy, but with some tenements in Salta Province (Figure 7.1). The project site is to the north of Route 51 which passes south of the Cauchari salar through the international border with Chile, 55 km to the west (Sico Pass), continuing on to the major mining center of Calama and the port of Mejillones, near Antofagasta in northern Chile. Approximately 20 kms to the south of the project site, a railway crosses from northern Argentina to Chile, providing potential access to a number of ports in northern Chile. Access to good road systems and potentially rail are important for project development.

At the south end of the Cauchari salar there is a gas pipeline running from northern Argentina to Chile. High voltage transmission wires also cross to Chile at the southern end of the salar. Both of these could provide power for a potential project development.

There are a few local villages within 50 kms of the project site and the regional administrative centre of Susques (population 2000) is within an hour's drive and offers basic services. The nearest large city San Salvador de Jujuy 200 km to the east where the company has an office. A potential project development could draw on local labour from Olaroz Chico, other villages and Susques and more skilled and other contract services from San Salvadore de Jujuy.

Access to the area is from the City of San Salvador de Jujuy via Route 9, which heads north-northwest for approximately 60 km, meeting the international highway Route 52 near the town of Purmamarca. Following Route 52 leads to the town of Susques. Access to the project area is from Route 52, which heads south along the eastern side of the Olaroz Salar and crosses Route 70. Route 70 heads south, follows the western side of the Cauchari Salar providing access to the project area. The total drive distance between the Jujuy and the Cauchari project is approximately 200 km, and takes approximately 3 hours.

Water of a quality suitable for a supply of process water has been intersected in potentially sufficient quantities by drilling at the Salar de Olaroz .

Local accommodation for the Project team is provided by a basic hotel, the Hostal de Pastos Chicos, located approximately 5 km west of Susques and an hour's drive north-northeast of the project, on Route 52 leading to the Jama Pass and Chile. The hotel provides services to travelers crossing the international border.

7.2. **Physiography**

The Altiplano-Puna is a high elevated plateau within the central Andes (see Figures 7.2 and 7.3 below). Part of the central Andes, the Puna covers part the Argentinean provinces of Jujuy, Salta, Catamarca, La Rioja and Tucuman with an average elevation of 3,900 m asl.

The Altiplano-Puna Volcanic Complex (APVC) is located between the Altiplano and Puna, and is associated with numerous stratovolcanoes and calderas. Recent studies have shown that the APVC is underlain by an extensive magma chamber at 4-8 km depth (de Silva et al., 2006). It seems likely that this could be the ultimate source of the anomalously high values of lithium in the area.

Figure 7.1 Project location, access and infrastructure

The physiography of the region is characterized by basins separated by ranges, with marginal canyons cutting through the Western and Eastern Cordilleras and numerous volcanic centers, particularly in the Western Cordillera. Abundant dry salt lakes (salars) fill many basins (see Figure 7.3 below).

The Olaroz-Cauchari salars are located in a closed basin, with internal (endorheic) drainage. The combined Olaroz-Cauchari basin is split in two by the delta of the Archibarca River, which enters the basin from the west. The Cauchari project is located in the southern portion of the basin (Figure 7.4). The elevation at the surface of the salar is approximately 3900 m asl. The salar is a flat area, probably hydraulically connected with the Olaroz salar to the north. The water inflow into the salar is produced by precipitation, superficial and groundwater inflows. Surface water inflows enter from the south via the Olacapato River and the north from the Archibarca River. Deltaic fans are formed in the areas where the drainages enter into the salar. The total area of the basin is ~6,000 km^2, with the salar occupying ~250 km^2. The drainage basins of the salars in the Orocobre tenement package are shown in Figure 7.4.

Figure 7.2 Physiographic and morphotectonic features of the Central Andes, showing theAltiplano-Puna Volcanic Complex (APVC) and associated stratovolcanoes (triangles) and calderas (circles). The locations of the Orocobre salar projects are shown in yellow: 1) Olaroz, 2) Cauchari, 3) Salinas Grandes, 4) Guayatayoc.

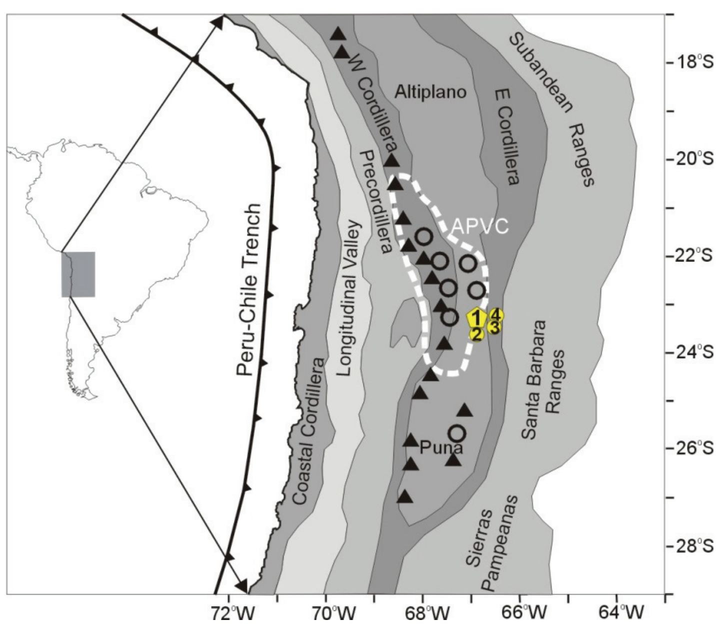


Figure 7.3 elevation model of the Puna showing the location of various salars.

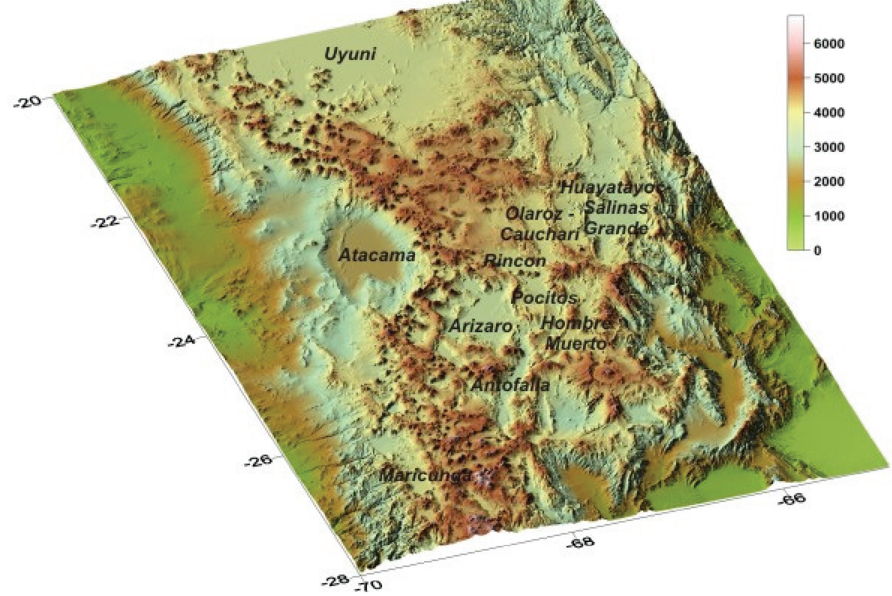
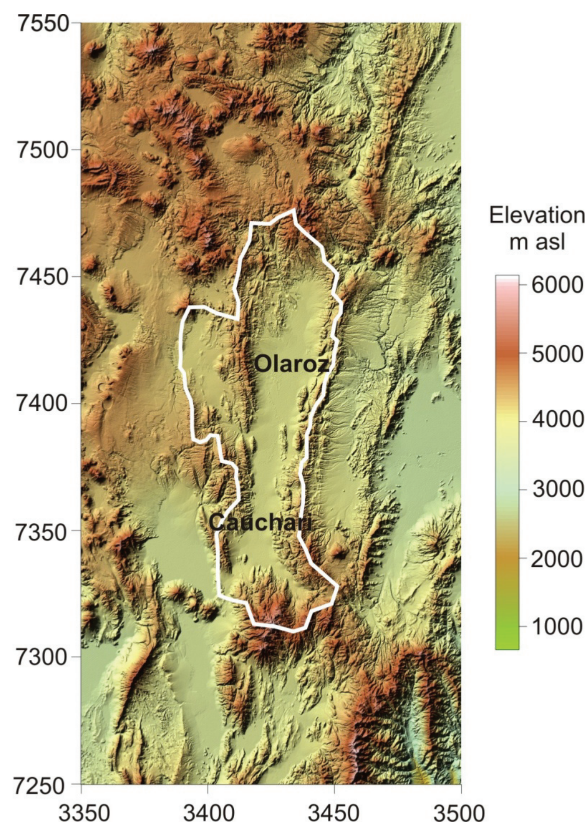


Figure 7.4 Catchment area for the combined Olaroz-Cauchari salars.



7.3. **Climate**

The climate in the project area is relatively severe, although not so severe as to restrict working activities at any time during the year. Daily temperature variations occur up to 25°C. The climate can be described as a continental, cold, high altitude desert, with resultant scarce vegetation. Solar radiation is intense, especially during the summer months of October through March, leading to high evaporation rates.

The climatic conditions are considered attractive for solar evaporation processes. Although not as high as the evaporation rate at Salar de Atacama, the conditions are expected to be very similar to Hombre Muerto, which has been producing lithium chemicals for over 10 years and is located 180 km south of Cauchari.

Due to the remote location there is limited historical climate data available for the project. Because of the inadequate local climate data for the project the company plans to establish local automated weather stations. In the nearby Salar de Olaroz, partial data collection between September 2008 and July 2009 showed the average temperature was 8ºC; the average wind speed 22 km hr^{-1}, the average relative humidity 31%, and the accumulated rainfall 85 mm total.

7.3.1. *Rainfall*

The main rainy season is between the months of December to March, when most of the annual rainfall occurs, often in brief convective storms that originate from Amazonia to the northeast. The period between April and November is typically dry. Annual rainfall tends to increase towards the northeast, especially at lower elevations. Significant control on annual rainfall is exerted by ENSO (El Niño-Southern Oscillation) (Houston, 2006a).

Limited information is available directly from the salars, with some records available from four weather stations in the adjacent area (Table 7.1, below). These include Susques, La Quaica, Mina Pan de Azucar, and Hombre Muerto. At the FMC lithium extraction project in the Salar de Hombre Muerto, a mean annual rainfall of 73 mm was recorded between 1992 and 1995.

No Project site-specific data are available.

Table 7.1 Average monthly rainfall, for rainfall stations, standardized over the rainfall period 1982-1990.7.1

Olaroz project weather station, 60 km north of project August 2008-September 2009 (3900 m)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total mm
19	15.5	9.4	0	0	0	0	0	0	0	0	5	48.9
Hombre Muerto salar, 180 km south of project 2008-2009 (4000 m)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total mm
8.7	17.1	25.2	0	0	0	0	0	0	2.4	4.2	17	74.6
Susques, 50 km east of project 1982-1990 (3675 m)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total mm
53.3	58.3	30.4	0.6	0	0	0	0	0	0.3	16	29.1	188.1
La Quaica, 185 km northeast of project 1982-1990 (3442 m)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total mm
80.3	72.6	52.4	11.8	0	0	0	0	0	12.8	35.2	73.9	339
Mina Pan de Azucar, 120 km northeast of project 1982-1990 (3690 m)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total mm
100.6	100	66.4	19.7	0	0	0	0	0	6.7	76.3	87.9	457.6

7.3.2. *Temperature*

Records from the weather station at Susques, and the Olaroz weather station include temperature (Table 7.2, below) in addition to rainfall. The average annual temperature at the project site is approximately 7° C, with extremes of 35º C and -30º C. The coldest months with temperatures below zero correspond to May through August. There are approximately 150 days on average without frost. This average temperature was calculated for the town of Susques (altitude 3675 m) near the project area (INTA – EEA – PROSIMA –NOA, 1993). Details are collated in the Table 7.3, below. An annual mean temperature of 8°C was registered in the locality of Catua, with 6ºC measured in the Hombre Muerto salar during the period 1979 - 1995.

7.3.3. *Wind*

Strong winds are frequent in the Puna, reaching speeds of up to 80 km hr^{-1} during warm periods of the dry season. During summer, the wind is generally pronounced after midday, usually calming during the night. During this season, the winds are warm to cool. During winter wind velocities are generally higher and more frequent. Data for Purmamarca, Susques and Olaroz are given in Table 7.3.

No Project site-specific data are available.

Table 7.2 Average monthly temperature °C at the Olaroz weather station and other weather stations in northwestern Argentina

Olaroz project weather station, August 2008-September 2009 (3900 m)													Average
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Mean	12.8	14.1	11.6	10.8	6.9	5.1	4.3	5.3	5.5	9.3	11.5	13.0	9.2
Maximum	22.9	24.1	21.9	21.6	19.1	15.5	13.4	16.8	17.9	21.2	22.6	24.1	20.1
Minium	2.7	4.1	1.4	-0.8	-5.2	-5.3	-4.9	-6.3	-7.0	-2.7	0.4	1.9	-1.8
Susques, 1972-1996 (3675 m)													
Mean	11.3	11.2	10.5	8.1	4.9	3.0	2.5	4.6	6.6	8.9	10.4	11.1	7.8
Other Puna area data													
La Quiaca	12.3	12.0	12.2	10.0	6.4	3.9	4.1	5.8	8.6	10.4	12.0	12.2	9.2
Abra Laite	11.3	11.2	10.5	8.2	5.1	3.2	2.7	4.7	6.6	8.9	10.4	11.0	7.8
Barrios	11.9	11.7	11.2	9.0	6.1	4.2	3.7	5.7	7.5	9.8	11.1	11.6	8.6
Cangrejillos	11.6	11.5	10.2	7.5	4.0	1.6	1.1	3.3	5.4	7.8	10.1	11.4	7.1
Castro Tolay Abdon	12.4	12.2	11.5	9.1	6.0	4.0	3.4	5.6	7.6	10.0	11.5	12.2	8.8
Abra Pampa	11.8	11.8	11.5	10.6	6.5	4.0	3.9	6.1	8.5	10.5	11.8	12.2	8.0
Susques	10.8	10.6	10.2	8.3	5.0	2.3	2.0	3.8	6.1	9.8	10.3	11.1	7.5
Tres Cruces	10.3	10.2	9.7	8.5	5.4	3.3	3.1	5.1	7.4	9.0	10.5	10.7	7.8
Cieneguillas	10.7	10.7	10.3	8.2	5.3	3.5	2.9	4.8	6.5	8.8	10.0	10.5	7.7
Cochinoca	11.2	11.0	10.5	8.3	5.2	3.4	2.8	4.8	6.7	9.0	10.3	10.9	7.8
Condor	10.0	10.0	9.6	7.5	4.5	2.8	2.1	4.1	5.8	8.0	9.3	9.8	7.0
Coranzuli	9.1	9.1	8.6	6.4	3.3	1.6	0.9	3.0	4.8	6.9	8.3	8.9	5.9

Table 7.3 Average monthly wind velocities (km hr^{-1}) from Olaroz and other areas of northwest Argentina (Orocobre draft EIS, 2009).

Localidad	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Purmamarca	3.56	3.79	4.28	4.3	5.58	5.04	4.7	3.61	3.99	5.03	4.44	3.86	4.35
Susques	2.37	3.38	4.73	4.62	6.6	4.38	1.68	3.61	4.09	4.44	2.32	2.62	3.74
Olaroz	6.4	7.4	8.7	8.6	10.6	8.4	5.7	7.6	8.1	8.4	6.3	6.6	7.7

7.3.4. *Evaporation*

Very little evaporation data exists for the region. Average annual evaporation in the Salar Hombre Muerto is 2,710 mm, calculated for the period 1992-2001 at the El Fenix Camp (FMC) weather station. Evaporation decreases with increasing elevation, and the highest naturally occurring rates are usually associated with the marginal areas of salars where water availability is greatest (Houston, 2006b).

No site-specific data are available.

7.4. **Vegetation**

Due to the relatively extreme weather conditions in the region, the predominant vegetation is of the high-altitude xerophytic type adapted to high levels of solar radiation, winds and severe cold.

The vegetation is dominated by woody herbs of low height from 0.40 - 1.5m, grasses, and cushion plants. With high salinity on its surface, the nucleus of the salar is devoid of vegetation.

To date no specific vegetation survey had been carried out in the tenement area. However, it is possible to define a number of vegetation areas, based on their physiography.

7.4.1. *Low lying areas in the vicinity of water*

These environments are characterized by having vegetation cover of 70-85%, occupying small areas (1 km maximum) associated with water logged soils and more or less permanent bodies of water.

7.4.2. *Mixed Steppes*

Different types are recognized, depending on the grass species, which may consist of *Stipa sp.*, *Festuca sp.,* and *Panicum chloroleucum*.

7.4.3. *Bushy Steppes*

Three different types are recognized, depending on the dominant bush species, such as rica-rica (*Acantholippia sp*.), tall tolillar (*Fabiana densa*) and short tolillar (*Fabiana sp*.).

8. HISTORY

8.1. Pre-Orocobre

Fabricaciones Militares (an Argentine government agency) carried out sampling of brines from Puna salars during 1970. The presence of anomalous Li values was detected at this time, when only salt and borates were exploited from the Puna salars.

Initial evaluation of the mineral potential of the salars in Northern Argentina is documented by Igarzábal (1984) as part of the Institute of Mineral Benification (IN-BE-MI) investigation carried out by the University of Salta. This investigation involved a geological and geomorphic evaluation and limited sampling of salars in the Puna for Li, K and other elements. The Cauchari salar showed amongst the highest lithium values in this investigation with values of 0.092% Li and 0.52% K at Cauchari. These analyses pre-date the implementation of NI 43-101 and were carried out by an academic laboratory. No assay certificate is available for the information contained in the Igarzábal (1984) report and consequently no reliance can be placed on this data.

Previous exploitation of borates has taken place locally in the Cauchari properties, with a small quantity of salt also extracted.

8.2. Orocobre exploration

In 2003 initial cateos were applied for by geologist, M Peral, in the south of the Cauchari Salar. Initial reconnaissance sampling in these areas during 2003 returned results of up to 400 mg/l Li, leading to additional sampling in the area by Orocobre.

Reconnaissance sampling of the Cauchari properties began in March 2009, following the wet season, and is reported below.

9. GEOLOGICAL SETTING

9.1. Regional

The following publications have been used as background information in preparing this Technical Report, in addition to those specifically referenced in the text:

Alonso, R. N., 1999. Los salares de la Puna y sus recursos evaporíticos, Jujuy, Salta y Catamarca. En Recursos Minerales de la República Argentina (Ed. E. O. Zappettini), Instituto de Geología y Recursos Minerales. SEGEMAR, Anales 35: 1907-1921, Buenos Aires

Evans, R., K. 2010. Lithium reserves and resources. Lithium Supply and Markets Conference, Las Vegas.

Garrett, D. 2004. Handbook of lithium and natural calcium chloride: their deposits, processing, uses and properties.

Igarzábal, A. P. 1984. Estudio geológico de los recursos mineros en salares del NOA (Puna Argentina). Proyecto de Investigación. Consejo de Investigación. Universidad Nacional de Salta

Kunasz, I. 2005. Global lithium dynamics.

Ramos, V.A. 1999. Los depósitos sinorogénicos terciarios de la región Andina.

Roskill Information Services. 2009. The Economics of Lithium. 11th ed. Roskill Information Services Ltd., 27a Leopold Road, London SW19 7BB, United Kingdom.

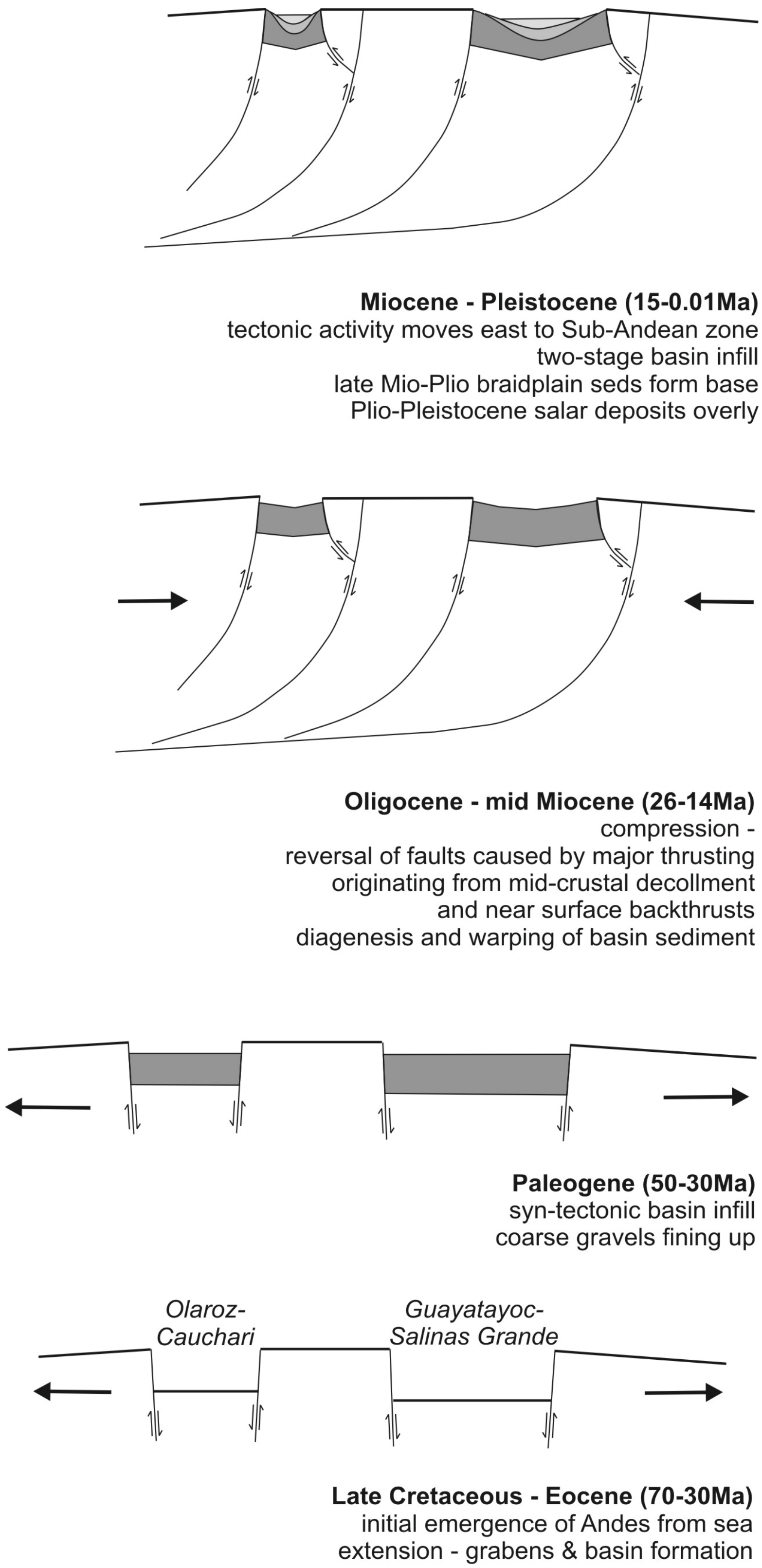
9.1.1. *Jurassic-Cretaceous*

The Andes have been part of a convergent plate margin since the Jurassic, and both the volcanic arc and the associated sedimentary basins developed as a result of subduction processes. An initial island arc formed along the west coast of South America during the Jurassic (195-130 Ma), moving eastward during the mid Cretaceous (125-90 Ma) (Coira et al., 1982). An extensional regime persisted through the late Cretaceous (see 7.1) generating back-arc rifting and grabens (Salfity & Marquillas, 1994). Marine sediments covering most of the Central Andean region indicate an extensive back-arc seaway with little land above sea level (Lamb et al., 1997; Scotese, 2001).

9.1.2. *Paleogene*

During the late Cretaceous to Eocene (78-37 Ma), the arc shifted farther east to the location of the current Precordillera (Allmendinger et al, 1997; Lamb et al., 1997). Significant shortening commenced during the Incaic Phase (44-37 Ma) largely in the west, with associated uplift to perhaps 1000 m (Gregory-Wodzicki, 2000) creating a major north-south watershed. Coarse clastic continental sediments eroded from this ridge indicate eastward transport in Chile and Argentina (Jordan & Alonso, 1987). The subsequent initiation of shortening and uplift in the Eastern Cordillera of Argentina (~38 Ma), led to the development of a second north-south watershed with coarse continental sediment accumulating throughout the Puna (Allmendinger et al., 1997; Coutand et al., 2001).

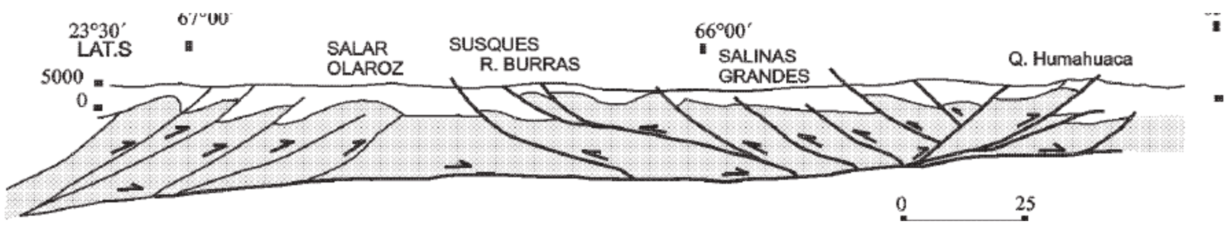
Figure 9.1 Generalized structural evolution of the Puna basins.



9.1.3. *Neogene*

By the late Oligocene to early Miocene (20-25 Ma), the volcanic arc switched to its current location in the Western Cordillera. At the same time, significant shortening across the Puna on reverse faults led to the initiation of separated depocenters (Figure 9.2). Major uplift of the Altiplano-Puna plateau began during the middle to late Miocene (10-15 Ma), perhaps reaching 2500 m by 10 Ma, and 3500 m by 6 Ma (Garzione et al., 2006). Coutand et. al. (2001) interpret the reverse faults as being responsible for increasing the accommodation space in the basins by uplift of mountain ranges marginal to the Puna salar basins.

Figure 9.2 Structural cross section from the Chilean border through the Olaroz and Salinas Grandes salars. Note the development of a mid-crustal decollement with an east vergent, thrust fault and associated back thrusts creating the ranges bordering the salars, with Paleogene to Neogene deposits in the salar basins bordered byuplifted Ordovician to Cretaceous bedrock (from Mon, 2005)



West of Salars de Olaroz and Cauchari, Marreti et. al. (1994) note that the north-south striking reverse faults are covered by continental clastic and pyroclastic strata dated at 9.5 Ma, with the faults cutting lower-middle Miocene strata (Schwab and Lippolt, 1976; Schwab, 1980). The approximate kinematics of late Tertiary deformation in this area involve sub-horizontal east-west shortening. Kay et. al., (2008) also note that Ordovician sedimentary rocks overthrust late Miocene Pastos Chicos Formation sediments on the west the flank of the Salars de Olaroz-Cauchari.

The late Miocene volcanic flare-up (5-10 Ma) centered on the Altiplano-Puna Volcanic Complex (APVC) between 21^{o}-24^{o} S (de Silva, 1989), produced a high density of both caldera subsidence and associated extensive ignimbrite sheets, as well as andesitic-dacitic stratovolcanoes. In the Puna volcanic activity was frequently constrained by major NW-SE crustal megafractures (Chernicoff et al., 2002), that are especially well displayed along the Calama-Olcapato-El Toro lineament to the south of Cauchari (Salfity, 1985).

During the early to middle Miocene, red bed sedimentation is found throughout the Puna, Altiplano and Chilean Pre-Andean Depression (Jordan & Alonso, 1987). As thrust faulting, uplift and volcanism intensified during the middle to late Miocene, the sedimentary basins became isolated by the mountain ranges, developing internal drainages, with major watersheds (the Cordilleras) bounding the Puna to the west and east. Sedimentation in these basins initiated with alluvial fans being shed from the uplifted ranges and continued with playa sandflat and mudflat facies.

Northern Argentina has experienced a semi-arid to arid climate since at least 150 Ma as a result of its stable location relative to the Hadley circulation (Hartley et al., 2005), but as a result of

Andean uplift almost all flow of moisture from Amazonia to the northeast has been blocked, leading to increased aridity since at least 10-15 Ma. Consequently, given the zonally high radiation and evaporation levels, the reduction in precipitation has lead to the development of increased aridity in the Puna. The combination of internal drainage and arid climate led to the deposition of evaporitic precipitates in many of the Puna basins.

9.1.4. *Late Neogene-Quaternary*

During the Pliocene-Pleistocene deformation, as a result of shortening, moved eastward out of the Puna into the Santa Barbara system. At the same time orbital influences led to a fluctuating climate regime with short periods of wetter conditions alternating with drier. As a result of both reduced tectonic activity and frequent aridity, a reduction in erosion and accommodation space means that sediment accumulation in the isolated basins has been limited. Nevertheless, ongoing runoff, both surface and underground continues solute dissolution from the basins and concentration in their centers where evaporation is the only outlet.

Evaporite minerals occur both disseminated within clastic sequence and as discrete beds. The earliest record of evaporite formation is for the middle Miocene, but their frequency and magnitude tends to increase during the Late Neogene-Quaternary (Alonso et al., 1991; Vandervoort et al., 1995; Kraemer et al., 1999). Dating of the thick halite sequences in the Salars de Hombre Muerto and Atacama suggest that they have mostly formed since 100 Ka (Lowenstein, 2000; Lowenstein et al., 2001).

Evaporite minerals occur both disseminated within clastic sequence and as discrete beds. The earliest record of evaporite formation is for the middle Miocene, but their frequency and magnitude tends to increase during the Late Neogene-Quaternary (Alonso et al., 1991; Vandervoort et al., 1995; Kraemer et al., 1999). Dating of the thick halite sequences in the Salars de Hombre Muerto and Atacama suggest that they have mostly formed since 100 Ka (Lowenstein, 2000; Lowenstein et al., 2001).

9.2. **The Cauchari Basin**

The oldest rocks that outcrop in the area are the Ordovician turbidites of the Puna Turbidite Basement and the Ordovician Puna Volcanics. These rocks outcrop in the mountain range on the western side of salar, extending north to the western margin of the Olaroz salar in the mountain range east of the salar.

In the mountain range east of the salar minor occurrences of Ordovician and Silurian sediments and clastic sediments of the Cretaceous Pirgua Subgroup are mapped. Further to the east, towards the salar, units become progressively younger. Outcropping units include the sandstones of the lower Eocene Río Grande Formation (outcropping as a NS belt); the sandstones of the lower Oligocene Vizcachera Formation; and the fluvial deposits of the Miocene Pastos Grandes Group. Units of the Cerro Morado Volcanic Complex outcrop at the southern end of salar.
West of the salar outliers of Oligocene-Miocene Vizcachera Formation and the upper Oligocene Río Grande Formation sandstones overlie Ordovician units.

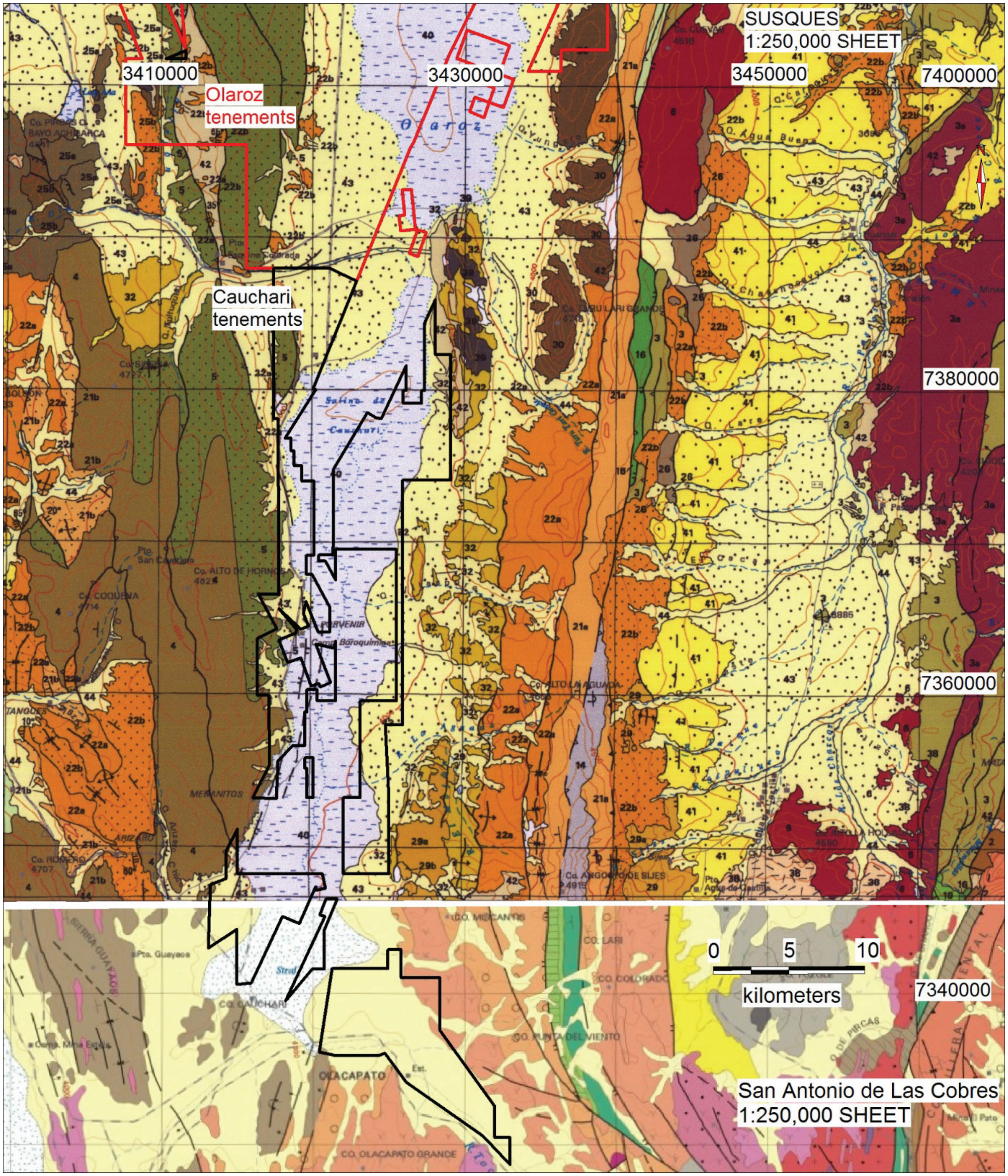
Pleistocene basalts outcrop in the NNW of the salar, with associated colluvial deposits. An apron of Holocene fluvial deposits surrounds the evaporite deposits of the salar, in the center of the basin.

On the following pages, a summary of the stratigraphy and geological history of the basin is provided in Figure 9.3, and the geological map in Figure 9.4.

Figure 9.3 Summary of the stratigraphy and geological history of the Cauchari basin (numbers refer to map units).

	Age period	Ma	Rock types	Geological environment	Tectonic events	1:250,000 Map Sheet	
						Susques (2366-III)	San Martin (23664)
Quaternary	Holocene	0.01	Alluvial deposits, salars	Closed basins, salars	Post Quechua deformation	Salar deposits, lacustrine, colluvial and alluvial sediments (40-44)	Salar deposits, lacustrine, colluvial and alluvial sediments (25c-30)
	Pleistocene	2.6	Alluvial, colluvial, lacustrine , ignimbrites	Closed basins, fan deposits, volcanic centres	NE-SW shortening (from 0.2 Ma) due to strike-slip faulting continuing to present day	Tuzgle ignimbrite (38-39)	Alluvial and glacial deposits (5a, 25b, 26)
Neogene	Pliocene	5.3	Continental sediments +/- ignimbrites	Some volcanic complexes developed in continental sediments	Major volcanic centres and calderas 8-6 Ma	Jama volcanic rocks (36-37). Andesite, dacite lavas, ignimbrites; Atana ignimbrite	Malmar, Uquia and Jujuy Formations. Continental sediments - sandstone, conglomerate +/- mudstone (19, 22-24)
	Miocene		Andesitic to dacitic volcanics	Volcanic complexes in continental sediments		Volcanic complexes (35)	Formations Oran (16 Ma - 0.25 Ma), Callegua, Formation Agua Negra. Continental sandstones, with clay interbeds (19, 20-21)
			Ignimbrites			Coyaguayma & Casabindo dacite Ignimbrites (33 & 34)	
			Continental sediments & tuffs		Start of thrusting, with WNW-ESE directed thrusting from 13-4 Ma	Sijes Formation (32) ~7-6.5 Ma sandstones, mudstones and tuffs	
			Continental sediments, tuffs, volcanic breccias		End of Quechua phase event finished by 9-15 Ma, with associated folding	Chimpa volcanic complex (31) andesites & dacites, lavas/ignimbrites. Pastos Chicos Fm ~10-7 Ma with unnamed tuff 9.5.	
			Dacite domes, pyroclastics, intrusives			Yungara dacite domes (30) & subvolcanics (SE side Olaroz)	
			Rhyolitic, dacitic volcanic complexes, continental sediments			Volcanic complexes (23-29), Cerro Morado, San Pedro, Pairique, Cerro Bayo and Aguiliri, Pucara Formation. Andesite to dacite lavas, domes and ignimbrites. Susques Ignimbrite ~10 Ma	
			Continental sediments			Vichacera Superior (22b). Sandstones and conglomerates, with tuffs & ignimbrites	
		23.8				Vichacera Inferior (22a). Sandstones and interbedded claystones	
Paleogene	Oligocene	33.9	Continental sediments	Red bed sequences	Incaic Phase II - Compression, resulting in folding	Rio Grande Fmn Superior (21b). Red aeolian sandstones	Casa Grande and Rio Grande Formations (18). Continental sandstones, conglomerates, siltstones and claystones
	Eocene					Rio Grande Fmn Inferior (21a). Alternating coarse conglomerates and red sandstones	
		55.8	Continental sediments, locally marine and limey	Local limestone development, local marine sequences		Santa Barbara subgroup (20). Fluvial and aeolian alternating conglomerates and red sandstones	Santa Barbara subgroup. (17)continental limy sandstones, siltstones, claystones
							Balbuena subgroup (16). - see below
BASEMENT - PRE TERTIARY UNITS (MARINE)							
Mesozoic	Cretaceous		Continental sediments, locally marine and limey		Peruvian phase - extension and deposition of marine sediments	Balbuena Subgroup (19). Sandstones, calcareous sandstones, limestones, mudstones (Marine).	Balbuena subgroup (16). Continental/marine calcareous sandstones
			Continental sediments			Piruga Subgroup (16). Alluvial and fluvial sandstone & conglomerate	Piruga subgroup (15). Red sandstones, silty claystones and conglomerates
						Granites, syenites, granodiorite (15, 17, 18)	Granites, monzogranite (11-14)
Paleozoic	Carbonifer ous - Silurian		Marine sediments	Marine platform and turbidite deposits	Isoclinal folding on NW/SE trending axes, extending to early Cretaceous	Upper Paleozoic marine sediments (14)	Machareti and Mandiyuti Groups (10). Sandstones, conglomeratic sandstones, siltsones and diamictites. Silurian Lipeon & Barite Formations (9). claystones and diamicties
						Multiple Paleozoic intrusive suites (6-13)	El Moreno Formation (8). Porphyritic dacite
	Ordovician		Marine sediments	Marine delta and volcanic deposits/domes		Ordovician sandstones (3-5) , volcaniclastic sediments & Ordovician turbidites	Guayoc Chico Group (7) & Santa Victoria Groups (6). Marine sandtones, mudstones and limey units
	Cambrian	540		Marine sediments		Meson Group (2). sandstones and mudstones	Meson Group (5). Marine sandstones
	PreCambrian		Schists, slate, phyllite	Metamorphosed turbidites		Puncoviscana Formation (1) tubidites	Puncoviscana Formation (1) tubidites - metamorphosed and intruded by plutons

Figure 9.4 Geological map of the Cauchari basin (from SEGEMAR, 2008a, 2008b).



10. **DEPOSIT TYPE**

As stated in the Introduction, brine prospects differ from solid phase industrial mineral prospects by virtue of their fluid nature. Therefore, the term 'deposit type' is not strictly relevant to a brine play, so that here the host aquifer is considered, together with its geometry and physical properties, especially porosity.

The Cauchari tenements are at a very early stage of reconnaissance and there is insufficient information available to make a detailed analysis of the aquifer hosting the brine. Nevertheless, by analogy with the Salar de Olaroz in the geologically contiguous basin to the north, and from geophysical studies carried out to date (see Section 10), it is possible to make some general statements about the Cauchari basin that are applicable to the Orocobre claims.

Based on this information, it can be inferred that the aquifer is a sequence of unconsolidated, and partially consolidated, clastic sediments and evaporites with individually variable hydrogeological properties hosted within a structurally controlled basin. Gravity and ATM surveys suggest that the salar deposits and clastic infill is of variable thickness. Towards the north, there appear to be two channels with a basement high in the centre. The western channel appears to be shallower, approximately 100 m deep, but the eastern one may be up to 200 m, potentially deepening to the east. To the south, the western channel appears to die out whilst the eastern channel deepens to a possible 500m.

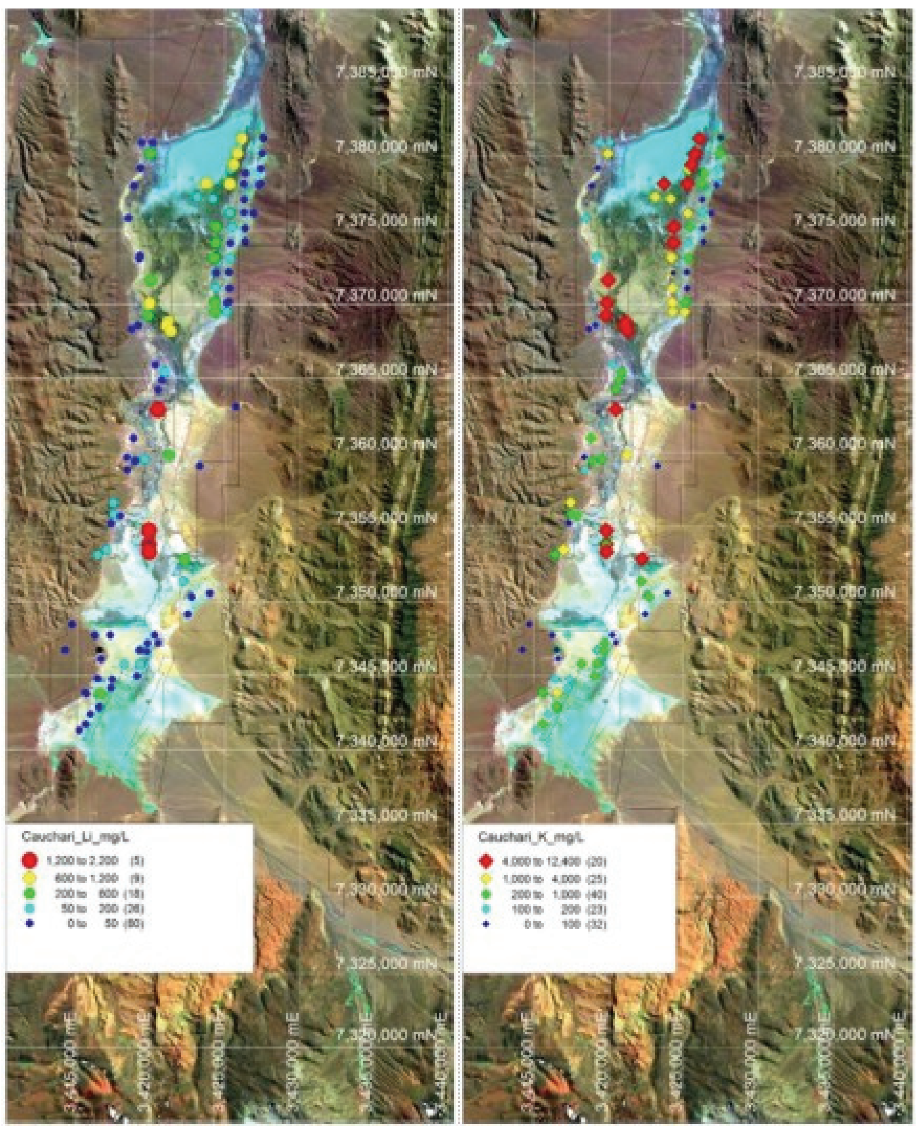
These sediments form the host aquifer for the brine. No porosity determinations were made, but it is possible to provide a guide based on values in the literature (Morris & Johnson, 1968). For total porosity the sands would likely be in the range 25-40%, whereas for effective porosity or specific yield the range for these sands would probably be in the order of 20% with much lower specific yields for finer sediments.

11. **MINERALIZATION**

As stated in the Introduction, brine prospects differ from solid phase industrial mineral prospects by virtue of their fluid nature. Therefore, the term 'mineralization' is not strictly relevant to a brine play, so that here the brine is considered; its flow regime, and its physical and chemical properties.

The Cauchari tenements are at a very early stage of reconnaissance exploration and only brine samples from pits taken during March to May 2009 are available. 134 brine samples were taken from 105 pits. Of these only six had determinations of chloride and sulfate so that it is not possible to make any assessment of brine type or evolution. Nevertheless, it is possible to plot the distribution of the species of interest within the claim areas (Figure 11.1).

Figure 11.1 Distribution of Li, and K within the Orocobre claim blocks at Cauchari.



The geographical plots of the data clearly show low concentration brines around the edges of the salar with higher concentration brines near the centre. The sampling was undertaken soon after the end of the summer rains and there is some possibility that the samples around the edges of the salar are influenced by this. However, it is considered more likely that the lower grades reflect real trends in brine concentrations.

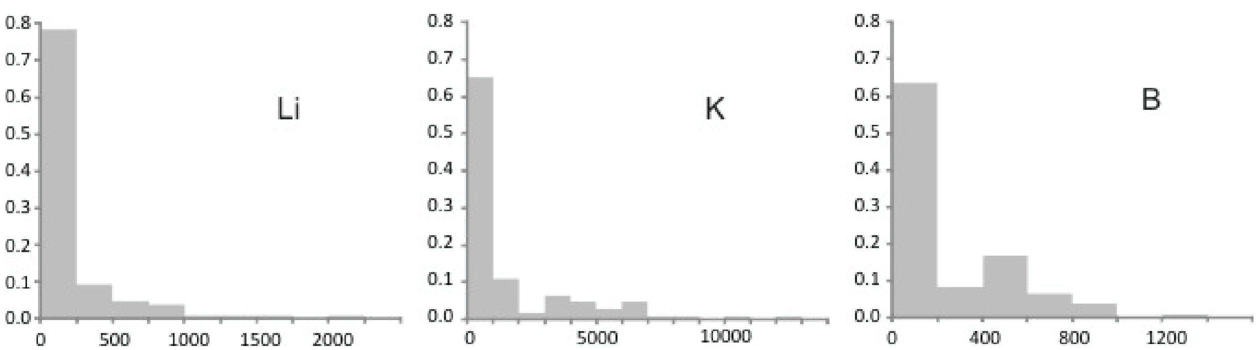
The table below (11.1) gives the basic statistics for all pit brine samples from the Salar de Cauchari, and the histogram (Figures 11.2) shows their frequency of occurrence.

Table 11.1 Basic statistics for the pit brine samples from Cauchari (all values given in mg l^{-1}).

	Li	K	B	Mg/Li
N	107	108	107	
Mean	191	1596	244	2.38
Standard deviation	364	2460	271	
Maximum	2194	12303	1,202	
Minimum	0.01	11.80	5.56	

The statistics are based on all data for the salar, including influent waters, and consequently do not adequately reflect the likely brine concentrations within an exploitation domain, which might be significantly higher. At this stage of exploration, attempting to forecast the likely brine composition within an exploitation domain is considered to be inappropriate.

Figure 11.2 Frequency histograms for Li, K, and B for all pit brine samples (values in mg l^{-1}).



The histograms include all sampling results from the salar and reflect a strong component of low concentrations probably associated with influent and marginal waters, and a secondary peak at higher concentrations representing the nucleus brines.

12. **EXPLORATION**

Exploration undertaken by the Company has been limited to reconnaissance geochemical surveys and surface geophysics.

12.1. **Geochemical Surveys**

Sampling on the Cauchari project consists of a total of 105 pits excavated through the surface crust to obtain brine samples. The sampling so far undertaken is of a reconnaissance nature and future work is planned on a systematic basis (see Section 20).

The results of the geochemical work are discussed in the Section 9 with commentary on sampling methodology and quality control in Sections 10 and 11.

12.2. **Geophyscical Surveys**

The Company contracted Wellfield Service Ltd to undertake both gravity and audio-magnetotelluric (AMT) surveys at various sections across the Salar de Cauchari. The objective of the gravity survey was to obtain first order estimates of the geometry and depth of the basin, and if possible, to establish the main sedimentary sequences within the basin. The objective for the AMT surveys was to define the limits of the brine body hosted in the basin sediments, and to define the brine-fresh water interface.

A total of 34 km of gravity and AMT were conducted between November 1 and November 20, 2009. The location of the sections carried out is shown in Figure 12.1 on the next page. All coordinates and elevations are referred to the Gauss Krueger Projection, Zone 3, and the reference system Posgar 94.

Gravity techniques measure the local value of the acceleration, which after correction, can be used to detect variations of the gravitational field on the earth's surface that may then be attributed to the density distribution in the subsurface. Since different rock types have different densities, it is possible to infer the likely subsurface structure and lithology, although various combinations of thickness and density can result in the same measured density; a problem known as non-uniqueness.

AMT measures temporary variations in the electromagnetic field caused by electrical storms (high frequencies >1 Hz), and the interaction between the solar wind and the terrestrial magnetic field (low frequencies <1 Hz), which allows variations in the electrical subsurface to depths of 2 km or more. The electrical properties of the subsurface depend on Archie's Law:

$$R_t = a\, R_w / P^m$$

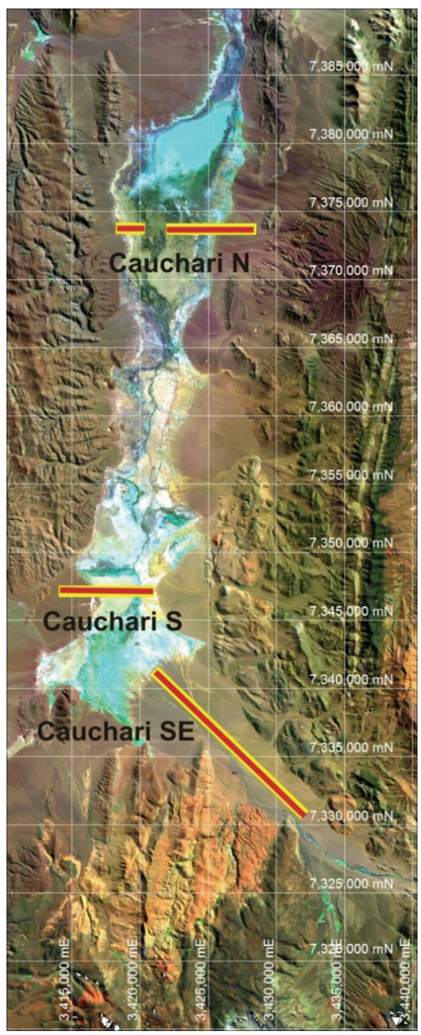
where R_t is the measured total resistivity, R_w is the resistivity of the fluid in the rock pores and P is the rock porosity, a and m are constants. Hence, it is possible to infer the subsurface variations in fluid resistivity and porosity, although it is important to note that once again the problem of a non-unique solution always exists.

12.3. **Gravity**

12.3.1. *Data Acquisition*

Data was acquired at a total of 170 gravity stations spaced at 200 m, coupled with high precision GPS survey data. A Scintrex CG-5 gravimeter (the most up-to-date equipment available) was used, and measurements taken over an average 15 minute period in order to minimise seismic noise. A base station was established with readings taken at the beginning and end of each day's activities in order to establish and subsequently eliminate from the data the effects of instrument drift and barometric pressure changes. The daily base stations were referred to the absolute gravity point PF-90N, close to Salta where a relative gravity of 2149.136 mGal was obtained. Since this point is distant from the Salar de Cauchari intermediate stations were used to transfer the absolute gravity to Pastos Chicos where a relative gravity base station was established with a value of 1425.313 mGall.

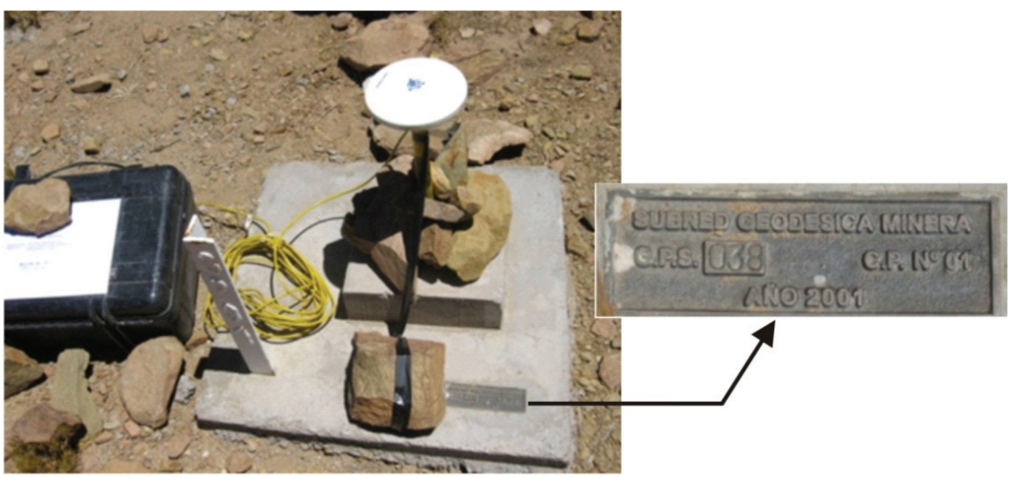
Figure 12.1 Location of gravity (yellow) and AMT (red) sections.



To measure the position and elevation of the stations, a GPS in differential mode was used with post-processing (Trimble 5700). This methodology allows centimeter accuracies, with observation times comparable to or less than the gravity observation. Using a mobile GPS (Rover) the gravity station position data is recorded. Simultaneously, another GPS (Fixed) records variation at a base station located within a radius of 10 to 20 km, to correct the Rover GPS. Both data sets are post-processed to obtain a vertical accuracy of 1 cm.

Figure 12.2 Gravimeter base station.

Figure 12.3 GPS base station.



12.3.2. *Data processing*

In order to arrive at the complete Bouger anomaly which can be used to interpret the subsurface the following corrections to the acquired data must be made:

- Tidal correction.
- Drift, instrumental height and ellipsoid corrections.
- Free air, latitude, Bouguer and topographic corrections.

Tidal correction compensates for variations in gravity caused by the sun and moon. Using TIDES software, the acceleration due to gravity for these effects can be determined corresponding to the location and time of measurements. The data acquired in the survey were translated to UTC time to facilitate data handling. The exported data were converted from µGal to mGal and used to correct the acquired data.
Instrument drift was calculated from the difference in gravity measured at the base station. This difference is then linearly distributed with respect to time of each reading and used to correct the acquired data.

Each reading was corrected for the height of the instrument using the following formula:

$$r_h = r_t + 0.308596\ h_i$$

where r_h is the corrected instrument height, r_t is the tidal correction, and h_i is the observed instrument height.

The formula employed to correct variations in gravity associated with the ellipsoidal shape of the earth corresponds to the 1980 model:

$$gl = 978032.7\ [\ 1 + 0.0053024 \sin^2(l) - 0.0000058 \sin^2(2l)\ ]$$

where gl is the theoretical gravity in milligals and l is latitude

The free air anomaly is calculated as:

$$g_{\text{free air}} = -0.3086\ (\Delta h)$$

where $g_{\text{free air}}$ is the correction factor and Δh refers to the difference in altitude of the station with respect to the base.

To eliminate the effect of the rock masses between the reference level and observation station, the Bouguer correction was employed.

$$g_{CB} = 0.04191(\Delta h)\ \rho$$

where g_{CB} is the correction factor, the value Δh refers to the difference in altitude between the observation point and the base station, and ρ is the mean rock mass density in the area calculated using the graphical Nettleton method to be 2.07 gm cm^{-3}.

The topographic correction is used to compensate the effects of the relief in the gravity measurements. It takes into account the topography at different levels of accuracy and importance, according to its distance from the gravimetric station to correct. Centered areas are considered at the station with radii of 100 m, 2.5 km and 150 km respectively.

The result of applying all corrections is the Bouger anomaly.

12.3.3. *Gravity data modelling and interpretation*

The Bouger anomaly can be modelled to represent the subsurface geology. However any model is non-unique and it is essential to take into account the known geology and rock density. Lacking detailed geological surveys and local rock density measurements at the time of this report writing, means that only preliminary two to three layer models have been developed so far, representing salar and probable Neogene deposits overlying bedrock. The following table gives the estimated density values used for the 2D inversions.

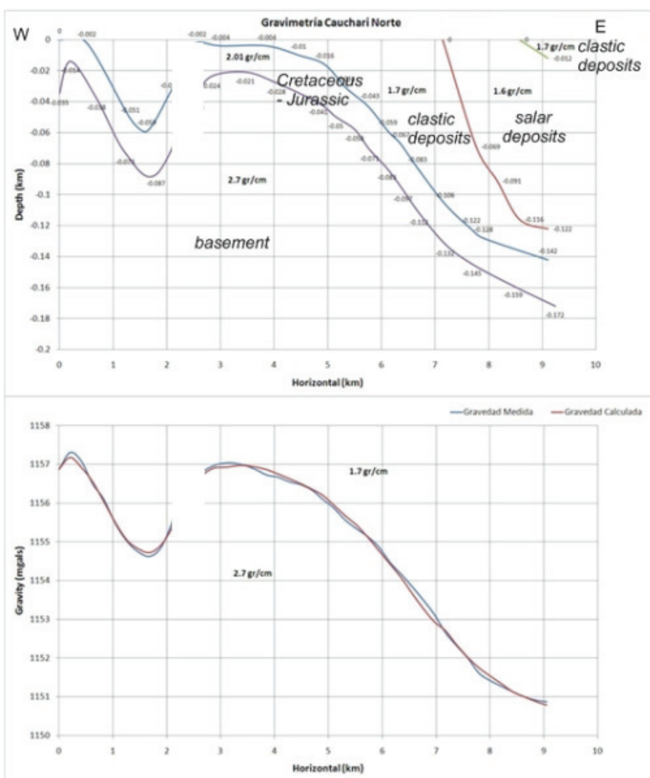
Table 12.1 Bulk rock density values used in the gravity interpretation.

Unit	Density (gm cm^{-3})
Salar deposits	1.6
Clastic sediments 1	1.7
Clastic sediments 2	1.8
Basement 2	2.01
Basement 1	2.7

The Bouguer anomaly was inverted using Talwari software to produce a series of possible 2D stratified models. The results were modelled for a two-layer system except for Cauchari north where it was possible to develop a four layer model that extends the more detailed interpretation from the Salar de Olaroz to the north. Boundary conditions are not well established at this stage and will require further analysis in due course. The model results show a good fit to the gravity data and represent a good first order approximation to the subsurface.

The following pages and Figures 12.5 through 12.6 show the interim interpretation of the data, which will be subject to calibration with borehole data and reinterpretation. However, the results obtained to date are encouraging for an eventual more detailed interpretation.

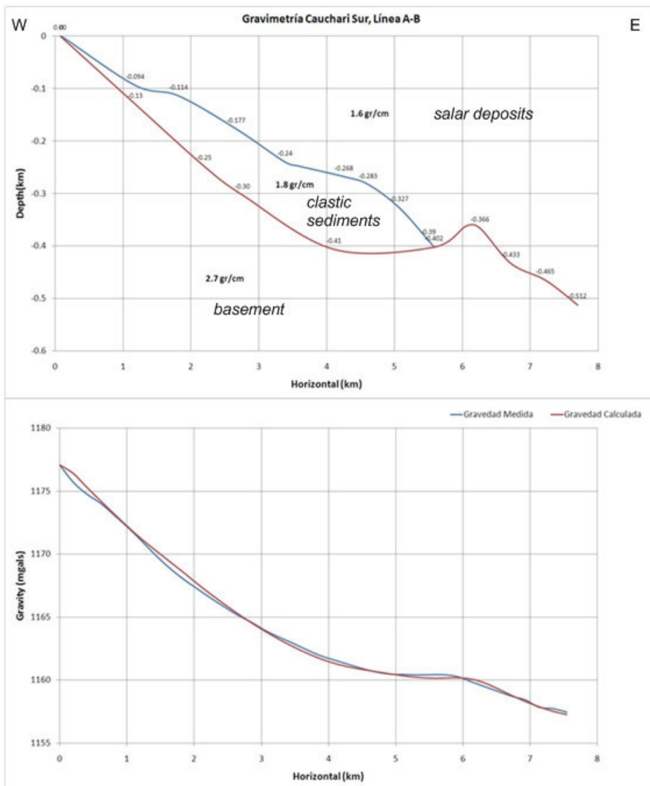
Figure 12.4 Interpretation of the Cauchari north Bouger anomaly and model fit to data.



The fitted model suggests that the basinal structure that occurs in the Salar de Olaroz to the north extends south in Cauchari but with reduced width which on the Cauchari north line is approximately 9 kms.

The western channel continues south, becoming narrower and thinner, no more than 100 m depth, whilst to the east side of the basin the depth appears greater, reaching perhaps 200m. The boundary conditions and possible faulting are not well defined.

Figure 12.5 Interpretation of the Cauchari south Bouger anomaly and model fit to data



The fitted model extends the asymmetric nature of the Salar de Cauchari towards the south, although the maximum basin depth increases to around 500 m along the eastern boundary. What may be a major slump of clastic sediments appears to have occurred on the western side of the basin at this location. The boundary conditions and possible faulting are not well defined.

Figure 12.6 Interpretation of the Cauchari southeast Bouger anomaly and model fit to data

This section extends from the Cauchari salar, southeastward along the Olcapato valley. The first 10 km of the section suggest that the marginal clastic sediments contained in the previously noted eastern "channel", thin from approximately 200 m to 50 m. At this point there is a rapid and significant increase to greater than 600 m. The upper part of the Olcapato valley is considered to represent a fault controlled basin, that may have limited hydraulic connectivity with the Salar de Cauchari basin. Faulting and boundary conditions are not well defined.

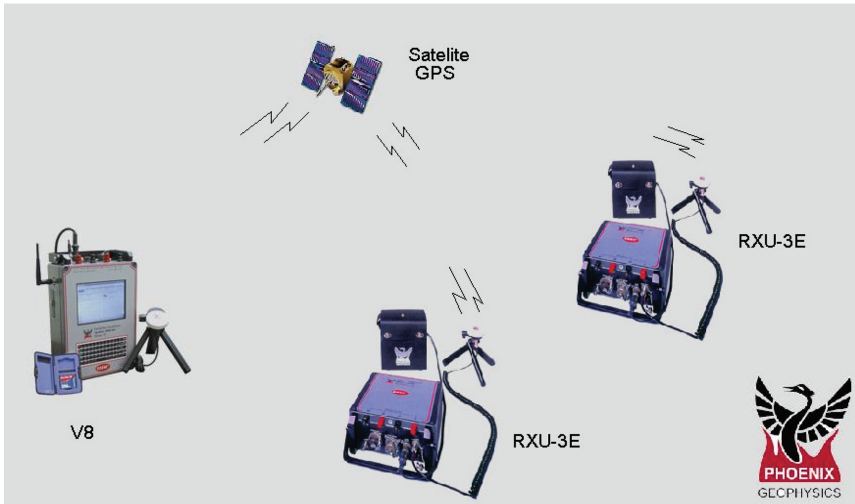
12.4. **Audio magnetotelluric**

12.4.1. *Data acquisition*

Data at a total of 136 AMT stations, spaced at 250 m intervals was acquired using Phoenix Geophysics equipment within a range of 10,000-1 Hz, using up to 7 GPS synchronized receptors. The equipment includes a V8 receptor with 3 electrical channels and 3 magnetic channels, that serves also as a radio controller of auxiliary RXU-3E acquisition units. Three magnetic coils of different size and hence frequency are used at each station, and non-polarizable electrodes that improve signal to noise ratios. The natural geomagnetic signal during the acquisition period remained low (the Planetary A Index was <= 5 for 95% of the acquisition time) requiring 18-20 hours of recording at each station.

All stations were surveyed in using differential GPS to allow for subsequent topographic corrections.

Figure 12.7 Schematic of AMT equipment arrangement



AMT requires a Remote Station, far from the surveyed area, in a low level noise location to act as a baseline for the acquired data. In Cauchari the remote station had two different locations during the project depending on the sub sector where work was being undertaken.

12.4.2. *Data Processing and Modelling*

Processing of the AMT data requires the following stages:

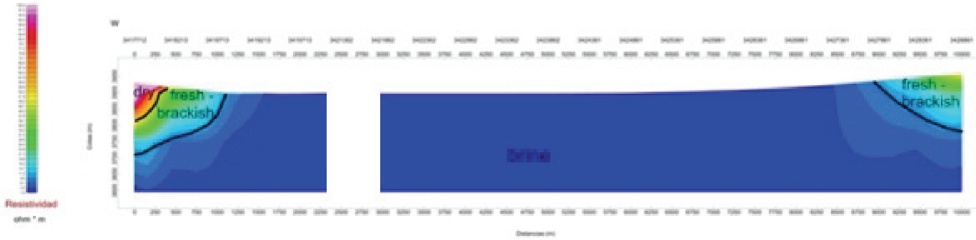
- Filtering and impedance inversion of each station
- 1D inversion for each station
- Development of a resistivity pseudosection
- 2D profile inversion (including topographic 3D net)

The WinGlink software package was used for filtering, inversion and development of the pseudosection and eventually the 2D model output.

12.4.3. *Model output and interpretation*

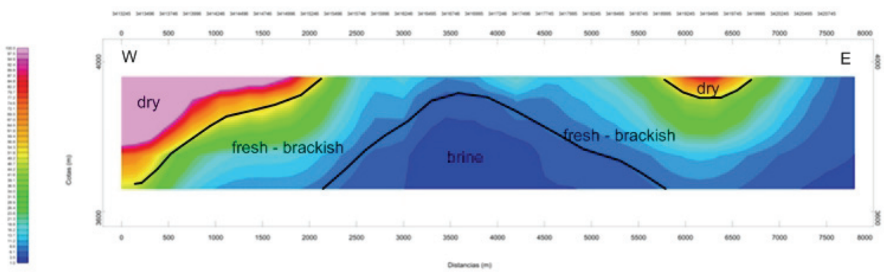
The 2D model results for the sections at Cauchari are presented below (Figures 12.10 though 12.12).

Figure 12.8 Resistivity profile N Cauchari (see Figure 12.2 for location).



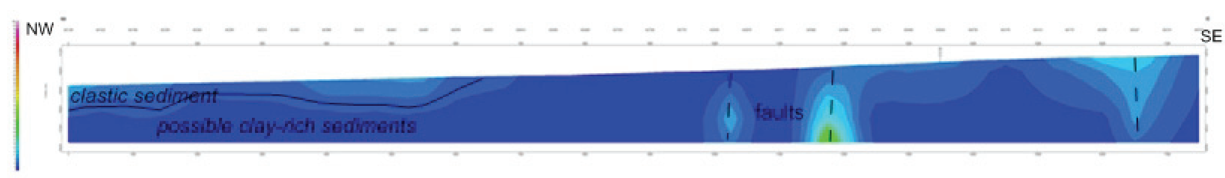
The interpretation of the Cauchari N ATM section suggests a homogeneous brine body of approximately 8 kms width near surface in the centre of the salar with marginal fresh-brackish water, and dry sediments in the area to the west where the edge of the Archibarca fan extends southwards and fresher waters to the east.

Figure 122.9 Resistivity profile S Cauchari (see Figure 12.1 for location).



The interpretation of the Cauchari S ATM section is open to several possible interpretations, but that favoured here is that the entrained fluid conductivity plays the major controlling factor. The brine tends to occur at depth in the centre of the salar, but considerably greater thicknesses of brackish to fresh water overly the brine. Of course, part or all of the changes in resistivity could be due to lithological variations as well. Resolution of these issues can only be made with drilled and sampled wells.

Figure 12.10 Resistivity profile SE Cauchari (see Figure 12.1 for location)



The interpretation of the SE Cauchari ATM section along the Olcapato valley, tends to confirm the presence of faulting in the upper valley. In the lower valley, changes in lithology would appear to be the most likely cause of the resistivity variations, although fluid concentration may play some part in the resistivity variations. Resolution of these issues can only be made with drilled and sampled wells.

13. **DRILLING AND RELATED ACTIVITIES**

As of the date of this report, no drilling has been undertaken on the Cauchari properties. A comprehensive exploration program is being planned, which will include drilling to better understand the subsurface geology and to evaluate the resource.

14. **SAMPLING METHOD AND APPROACH**

14.1. **Brine Sample Program Design**

Sampling on the Cauchari project consists of a total of 105 pits excavated through the surface crust to obtain brine samples. The sampling was undertaken by the Company's employees supervised by a Company geologist. The sampling so far undertaken is of a reconnaissance nature and future work is planned on a systematic basis (see Section 20).

Sampling has been carried out on properties in the Cauchari project since the end of the wet season between March and May 2009. Samples were taken from pits dug specifically to collect brine samples. Where sampling returned elevated Li results additional sampling was conducted in the area, increasing the density of samples, and re-sampling of brine from some pits, to evaluate temporal variability in the brine concentration. The irregular distribution of pits also reflects difficulties of access, such as soft ground within the salar.

The main objectives of the reconnaissance pitting and sampling program were to obtain data on the distribution of lithium and potassium, as well as the overall brine chemistry and its variability. Subsidiary objectives included obtaining data on near surface material composition and water levels. The sample pits in the project area were hand dug to a maximum depth of 2 m. The results from this exploration have been discussed in Section 9.

14.2. **Cauchari pit sampling**

Sample pits in the project area were hand dug (Figure 14.1) to a maximum depth of 2 m, for reasons of safety and the difficulty of removing soil from the pits beyond this depth. Where brine inflow to the pit was encountered within 2 m of surface the pit was excavated to approximately 20 cm below the level of the inflow, providing a sump for inflow. The pit was allowed an hour to fill with brine before a sample was taken. Where no brine inflow was noted in the upper 2 m the pit was extended a further meter using a power auger.

The lithology and stratigraphy of selected pits was described by the sampling crew and the depth of brine inflow noted. Photographs were taken of the pits, showing the pit wall, the depth of the pit and groundwater inflow, in addition to the surface location of the pit.

Brine samples were collected from the base of the pits using a one litre plastic bottle. The bottle was rinsed with the brine, and then filled to capacity to remove any airspace. Where brine was encountered in auger holes drilled beneath the base of the pits samples were collected by lowering 500 ml bottles taped to a rod into the auger hole. Up to 2 litres of sample was collected at each site. Field measurements of brine parameters were not made at the time of sampling. In the Salta office 200 ml sub samples were taken for laboratory analysis by decanting from the 1 litre bottles, minimizing any transfer of settled sediment. Samples were sent to Alex Stewart (Assayers) Argentina (ASA).

During the pit sampling a number of replicate samples were taken. This was undertaken by re-sampling pits, some days or months after the original sample was taken. As such these replicate samples cannot be considered duplicates and do not constitute valid quality control samples. A comparison of these replicate samples is provided in section 13.

Figure14.1 Exploration pits dug to take shallow brine samples. Pits were hand dug and geologically logged, with the depth to the standing water level recorded.

14.3. Brine Sampling Supervision

Sample collection at Cauchari was conducted by personnel from South American Salars, under the supervision of the geologist conducting geological logging of the sample pits. The geologist was responsible for geological logging and overseeing sample collection and pit location.

14.4. Sample Security

All samples from Cauchari were labelled with permanent marker pen, and transported from the field site to the Salta office of Orocobre in wooden crates. Samples were received at the Salta office and re-packaged into labelled cardboard cartons. The cartons were dispatched to the Alex Stuart laboratory in Mendoza, with a sample list and analytical instructions, which were also sent to the laboratory by email.

15. SAMPLE PREPARATION, ANALYSES AND SECURITY

15.1. Sample Preparation

Samples from pits were not field filtered and were not subjected to any preparation prior to shipment to the laboratory. All samples collected contained some suspended sediment. Following shipment of the initial batch of one litre samples a reduced sample size of 200 ml was provided in all subsequent batches, at the request of the laboratory. In the Salta office 200 ml sub samples were taken by decanting from the one litre bottles, minimizing any transfer of settled sediment.

15.2. Sample Analyses

The samples from the Cauchari salar were analysed by Alex Stewart Assayers (ASA) of Mendoza, Argentina. The ASA laboratories have extensive experience analysing lithium bearing brines. They are ISO 9001 accredited, and operate according to Alex Stewart Group standards consistent with ISO 17025 methods at other laboratories. Samples were analysed at ASA laboratories using the Inducted Coupled Plasma spectrometry (ICP) method. The UNSA laboratory used Atomic Absorption spectrometry (AA) for analysis of both the Orocobre samples and standards produced at the laboratory.

A summary of the pit brine analyses results are presented in Table 11.1 above, and an evaluation of the repeat assays are discussed below.

The analytical techniques used by ASA Laboratories are based upon American Public Health Association (APHA), Standard Methods for Examination of Water and Wastewater, Environmental Protection Agency (EPA), and American Society for Testing Materials (ASTM) protocols. Determination of lithium, potassium, calcium, sodium and magnesium is achieved by fixed dilution of filtered samples and direct aspiration into an ICP instrument. The suite of parameters and the laboratory method are provided in Table 15.1 below.

Table 155.1 List of the basic suite of analyses requested from both laboratories.

Analysis	Alex Stewart Primary laboratory Code	 Method	University of Salta Check lab Method
Sample preparation			
Filtration	SM 2540-C	0.45 um filter	-
Physical Parameters			
Total dissolved solids	SM 2540-C	Total Dissolved Solids Dried at 180°C	-
pH	SM 4500-H+-B	Electrometric Method	-
Conductivity	SM 2510-B	Meter	-
Density	IMA-28	Gravimetric Method Pycnometer	Gravimetric Method
Alkalinity	SM 2320-B	Titration Method.	Titration Method.
Alkalinity (carbonates)	SM 2320-B	Titration Method.	Titration Method.
Alkalinity (bicarbonates)	SM 2320-B	Titration Method.	Titration Method.
Inorganic Parameters			
Boron (B)	ICP-10: EPA 200-7 Modified	Emission Spectrometry	Volumemetric Acid Base
Chloride (Cl)	SM 4500-Cl-B	Titration Method.	Argentometric Method
Sulfates (SO_4)	SM 4500-SO4-C	Gravimetric Method	Gravimetric Method with drying of residue
Dissolved metals			
Lithium (Li)	ICP-10	Emission Spectrometry	Atomic Absorption Spectrophotometry
Potassium (K)	ICP-10	Emission Spectrometry	Atomic Absorption Spectrophotometry
Sodium (Na)	ICP-10	Emission Spectrometry	Atomic Absorption Spectrophotometry
Calcium (Ca)	ICP-10	Emission Spectrometry	Atomic Absorption Spectrophotometry
Magnesium (Mg)	ICP-10	Emission Spectrometry	Atomic Absorption Spectrophotometry
Manganese (Mn)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-
Nickel (Ni)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-
Iron (Fe)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-
Copper (Cu)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-
Chromium (Cr)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-
Nickel (Ni)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-

15.3. Quality Control

15.3.1. *Relative percentage difference evaluation*

QA/QC procedures used for the reconnaissance sampling involved the use of standard, duplicate, and replicate samples. These have been evaluated by calculating the relative percentage difference between the two or more samples for each standard or pit sample. The standard formula used consists of:

Relative percent difference = 100 * {2 * │value 1 − value 2│ / (value 1 + value 2)}

where │value 1 − value 2│ is the absolute value of the difference between the two samples. In the case of more than two samples the greatest difference was used, with the average of all the samples used.

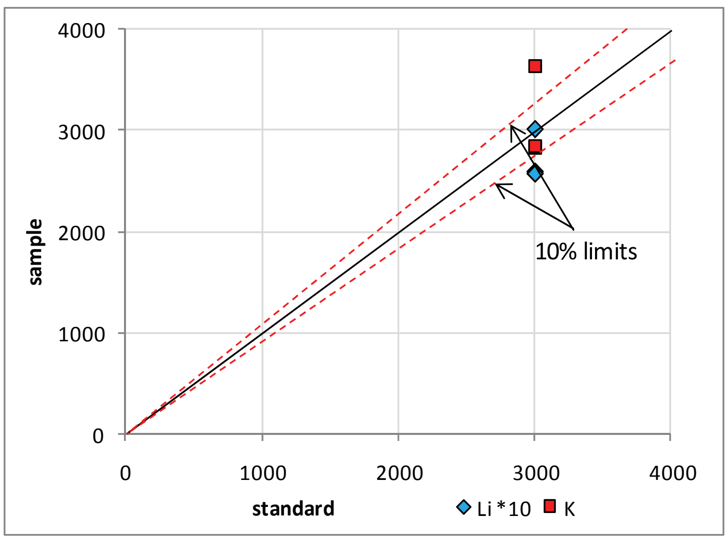
15.3.2. *Standard Analyses*

A certified Li standard at 300 mg l^{-1} was prepared by the UNSA were used as part of the QA/QC program on the Cauchari project. In addition to this a non-certified brine standard collected from Olaroz Pit 7, was also used in the program. A bulk sample of Pit 7 brine was collected during one sampling event for use as a standard throughout the sampling program. The standard sample results are shown in Table 15.2, together with the RPD evaluation. Figure 15.1 shows the results graphically.

Table 155.2 Evaluation of standard samples used on the Cauchari project. The first three samples correspond to the UNSA certified Li300 sample. The bottom three correspond to the non certified Pit 7 sample.

Sample	Li mg/l	K mg/l	Mg mg/l	Na mg/l
Standard	**300**	**3,000**	**600**	**90,000**
GER-25	301	3,636	574	82,614
ST1A	259	2,828	431	85,438
ST1B	257	2,840	452	88,470
RPD	16%	26%	29%	7%
Pit 7 Uncertified Standard				
GER-24	1,105	8,915	2,463	101,948
SP7A	749	7,455	1,923	115,094
SP7B	691	6,988	1,810	110,980
RPD	49%	25%	32%	12%

Figure 155.1 ASA determinations of the UNSA standard



The results for the lithium analyses show a potential understatement of lithium values with two of the samples approximately 15% less than the standard. The same samples produced low values for magnesium. Replacement analyses were not requested by the Company as the work was only of a reconnaissance nature and the levels of accuracy acceptable for the purposes of confirming that elevated levels of lithium and potassium occur in the area.

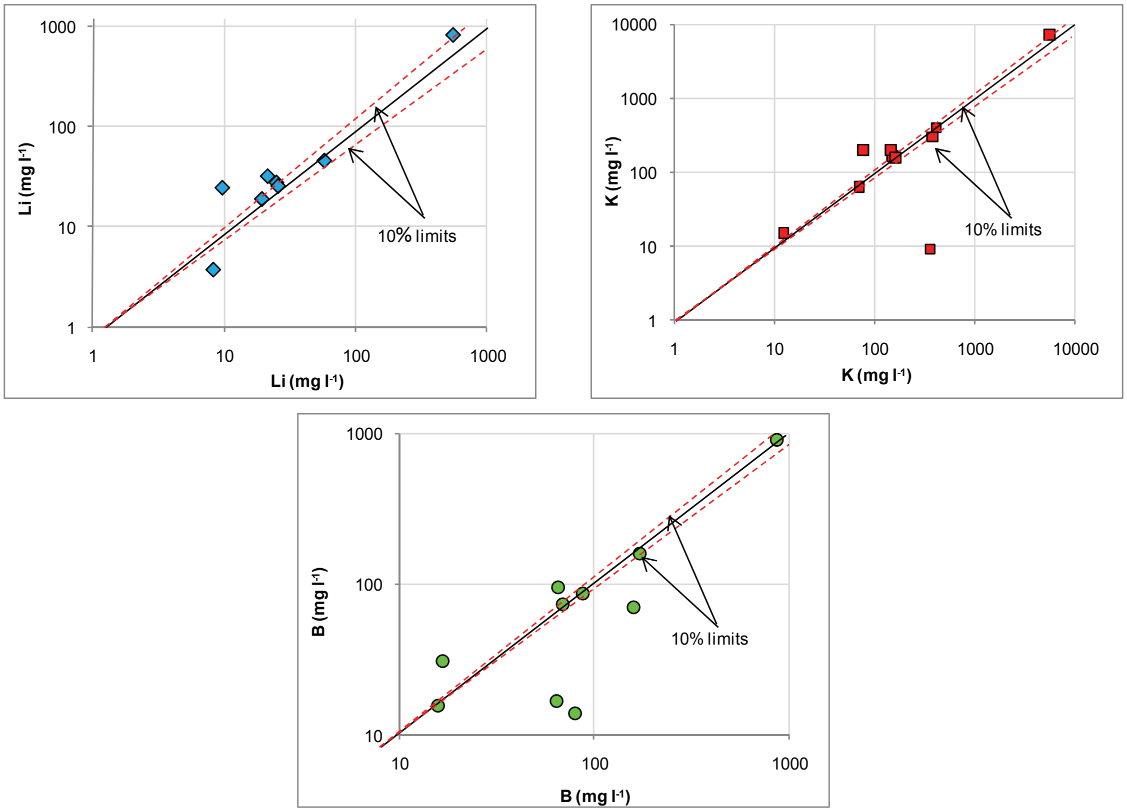
13.3.3 Sample Duplicate/Replicate Analyses

Ten blind duplicate samples (equivalent to 7% of all samples) were analysed at the ASA laboratories. The results are shown in Table 15.3 and Figure 15.2 below.

Table 15.3 Sample duplicate analyses at ASA laboratories for Cauchari samples.

Sample	Li	K	B
FRAN-10	561	5666	869
FRAN-10-B	818	7359	903
RPD%	37%	26%	4%
GAB 10A	19	415	16
GAB 10B	19	401	15
RPD%	3%	3%	3%
GAB 21a	58	378	171
GAB 21b	45	299	161
RPD%	25%	23%	6%
GEO 03a	ND	12	17
GEO 03b	0	15	31
RPD%		18%	59%
GEO 04a	10	78	159
GEO 04b	24	197	71
RPD%	87%	87%	77%
GEO 07a	8	71	65
GEO 07b	4	64	17
RPD%	76%	11%	117%
GEO 10a	48	361	80
GEO 10B	ND	9	14
RPD%		190%	141%
GEO 37a	25	151	69
GEO 37b	27	165	73
RPD%	9%	9%	7%
GEO 39a	21	144	65
GEO 39b	32	202	96
RPD%	39%	33%	38%
GEO 41a	26	162	88
GEO 41b	25	159	86
RPD%	2%	2%	2%

Figure 155.2 Cross plots for duplicate samples from Salar de Cauchari analysed at the ASA laboratories.



Li, K and especially B frequently have RPD's greater than 10%, indicating the need to improve control on processes analytical techniques by the laboratory.

Eighteen pits were selected for resampling after a period of several weeks had elapsed. These samples represent repeats although they do not contribute to the QA/QC since natural variations in brine chemistry may have taken place between the sampling dates. Table 15.4 provides the results of the repeat analyses provided by ASA laboratories.

The average RPD for all ions across all samples is around over 30%, suggesting that there may be significant temporal variation in brine quality, although poor quality control in the laboratory would also account for this variation. Whilst this may not be critical for a reconnaissance study, it will require that further studies interact more closely with the laboratory to reduce these errors.

Table 155.4 Sample replicate analyses at ASA laboratories for Cauchari samples.

Sample	Date	Li	K	Mg	Na	Ca	B
FRAN-33	5/14/2009	256	2599	1517	52287	3330	213
FRAN-33c	5/4/2009	273	2735	1593	52363	3402	233
FRAN-33		154	1593	922	36236	3375	167
RPD%		55%	53%	53%	36%	2%	33%
FRAN-22	4/7/2009	8	117	76	2495	589	27
FRAN-22-B	4/8/2009	2	69	53	1636	616	20
RPD%		115%	52%	35%	42%	5%	31%
GAB 20	19/05/2009	2	24	51	716	112	11
GAB 20b	21/05/2009	3	36	66	945	172	13
RPD%		71%	41%	26%	28%	43%	23%
GAB 39a	21/05/2009	37	323	127	6287	58	107
GAB 39b	19/05/2009	37	320	143	6267	73	105
RPD%		0%	1%	12%	0%	22%	1%
GAB 44 B1	20/05/2009	38	303	284	4624	120	88
GAB 44a	17/05/2009	2194	12303	730	98853	343	700
GAB 44b2		39	291	267	4299	129	84
RPD%		193%	191%	93%	183%	94%	157%
GAB 45a	19/05/2009	1425	8387	405	93565	299	476
GAB 45b	22/05/2009	1400	8299	394	91620	324	471
RPD%		2%	1%	3%	2%	8%	1%
GEO 13a	14/05/2009	56	495	508	9382	84	102
GEO 13b	15/05/2009	22	175	207	3068	286	66
RPD%		88%	95%	84%	101%	109%	43%
GEO 14a	14/05/2009	25	204	227	3326	207	71
GEO 14B	14/05/2009	27	234	268	3474	192	92
RPD%		9%	14%	17%	4%	7%	25%
GEO 15a	13/05/2009	2	33	41	267	81	10
GEO 15b	14/05/2009	2	33	42	298	82	11
GEO 15c	14/05/2009	2	41	45	381	53	12
RPD%		34%	23%	9%	34%	43%	18%
GEO 24a	14/05/2009	39	281	252	5277	209	371
GEO 24b	17/05/2009	92	550	549	12737	379	351
RPD%		81%	65%	74%	83%	58%	6%
GEO 29a		15	167	190	1863	218	67
GEO 29b		17	197	247	2202	224	88
RPD%		16%	17%	26%	17%	3%	27%
GEO 30A		36	248	125	3465	116	74
GEO 30b		40	248	131	4413	132	90
RPD%		10%	0%	4%	24%	13%	19%
GEO 32a		22	286	123	3567	238	70
GEO 32B		25	323	141	3937	119	87
RPD%		12%	12%	14%	10%	67%	22%
GEO 33a		200	1555	554	20537	288	174
GEO 33b		223	1737	608	23279	309	187
RPD%		11%	11%	9%	13%	7%	7%
GEO 34A	14/05/2009	24	162	105	2340	238	68
GEO 34B	15/05/2009	29	199	117	2875	182	86
RPD%		20%	20%	11%	21%	26%	23%
GEO 36a		41	279	162	4171	218	73
GEO 36B		83	569	368	8354	804	227
RPD%		68%	68%	78%	67%	115%	102%
SULF 08		332	3351	3121	44774	101.2	693
SULF 08B		475	4864	4197	59374	152.5	1016
RPD%		35%	37%	29%	28%	40%	38%
SULF 10		55	515	547	8522	114.5	106
SULF 10B		63	573	615	9397	137.8	118
RPD%		14%	11%	12%	10%	18%	11%

15.4. Quality Control Conclusions

The quality control processes used on the Cauchari project were limited and under development at the time of the sampling and have since evolved past this early stage program. Nevertheless, they were acceptable for monitoring laboratory performance to this point.

Laboratory analyses are of sufficient accuracy and reproducibility for the purposes of the reconnaissance sampling programs undertaken so far. Adoption of procedures currently being used at the Olaroz project will result in quality control system suitable for resource estimation

16. DATA VERIFICATION

16.1. General

The Author is retained as an independent consultant to provide on-going advice in his field of expertise. As such, there is regular and open interaction between the Author and the Company's professional staff and technicians. The Author has observed both a high degree of professionalism amongst the Company's professional staff and a diligent attitude towards the work being undertaken. The author has provided training as required to the Company's personnel on tasks being currently undertaken.

It is not possible to verify data that was produced in the past by obtaining new Assay, Geological or Survey data. The available data is subject to the limitations described in Sections 12 and 13 and summarized below. Within these limitations, there is good reason to have confidence in the veracity of the results.

16.2. Assay data

Orocobre and South American Salars carried out an internal validation of the available assay and location data for the pit sample sites in the current database. Original copies of the analytical certificates from ASA laboratories were provided to the second author. These certificates do not specify the methods employed by the laboratory for the analysis listed on the certificate, but it is assumed the methodology given in Table 15.1 was used. Analytical and sampling quality control measures employed by the company are discussed in Section 13 above.

16.3. Geological data

Geological data collected has not been fully verified by the author. Field note books used by geologists have been sighted and selectively checked against information in the current database. The author has verified that detailed photographs are available for more recent pit sampling at Cauchari.

16.4. Survey data

Hand held Garmin GPS units were used to collect the location of sample pits. In the salar setting the GPS signal is typically strong and a minimum horizontal precision is expected to be ±15 m. Data was collected in the Argentine co-ordinate system with the Gauss Krueger UTM projection, Zone 3, and the Posgar 94 datum.

17. **ADJACENT PROPERTIES**

17.1. **General comments**

Two salars in the region have been producing Li, K and B products from brines for more than ten years: the Salars de Atacama in Chile, and Hombre Muerto in Argentina. Both salars are mature, inasmuch as the host aquifer is a large halite body in both cases. The Project results to date show that all species have lower concentrations than similar salars in the region.

Table 17.1 Comparison of the Cauchari Project with other salar brine chemical compositions (mg l^{-1}).

	Salar de Atacama Chile mean	Hombre Muerto Argentina FMC	Salar de Rincon, Argentina Sentient	Salar de Olaroz Argentina ………...	Salinas Grande* Argentina Orocobre	Guayatayoc* Argentina	Cauchari* Argentina …..…….	Salar de Cauchari Argentina (LAC)	Salar de Uyuni Bolivia	Silver Peak Nevada CFC
Li	1,835	744	397	796	775	67	191	618	424	245
K	22,626	7,404	7,513	6,600	9,289	2,185	1,596	5,127	8,719	5,655
Mg	11,741	1,020	3,419	2,289	2,117	115	453	1,770	7,872	352
Ca	379	636	494	416	1,450	628	569	401	557	213
B	783	420	331	822	232	144	244	1,360	242	85
Density	1.223	1.205	1.220						1.211	1.297
Mg/Li	6.4	1.37	8.6	2.88	2.73	1.72	2.37	2.86	18.6	1.43

* mean values include all pit samples from nucleus and margins and are not necessarily representative of possible production values

Data for Salars de Atacama, Hombre Muerto, Rincón, and Uyuni as well as Silver peak, taken from "Evaluation of The Potential of Salar del Rincon Brine Deposit as a Source of Lithium, Potash, Boron And Other Mineral Resources, by Pedro Pavlovic and Jorge Fowler, 2004. Salar de Cuachari (LAC), from NI 43-101, Lithium Americas Corporations, February 15th 2010.

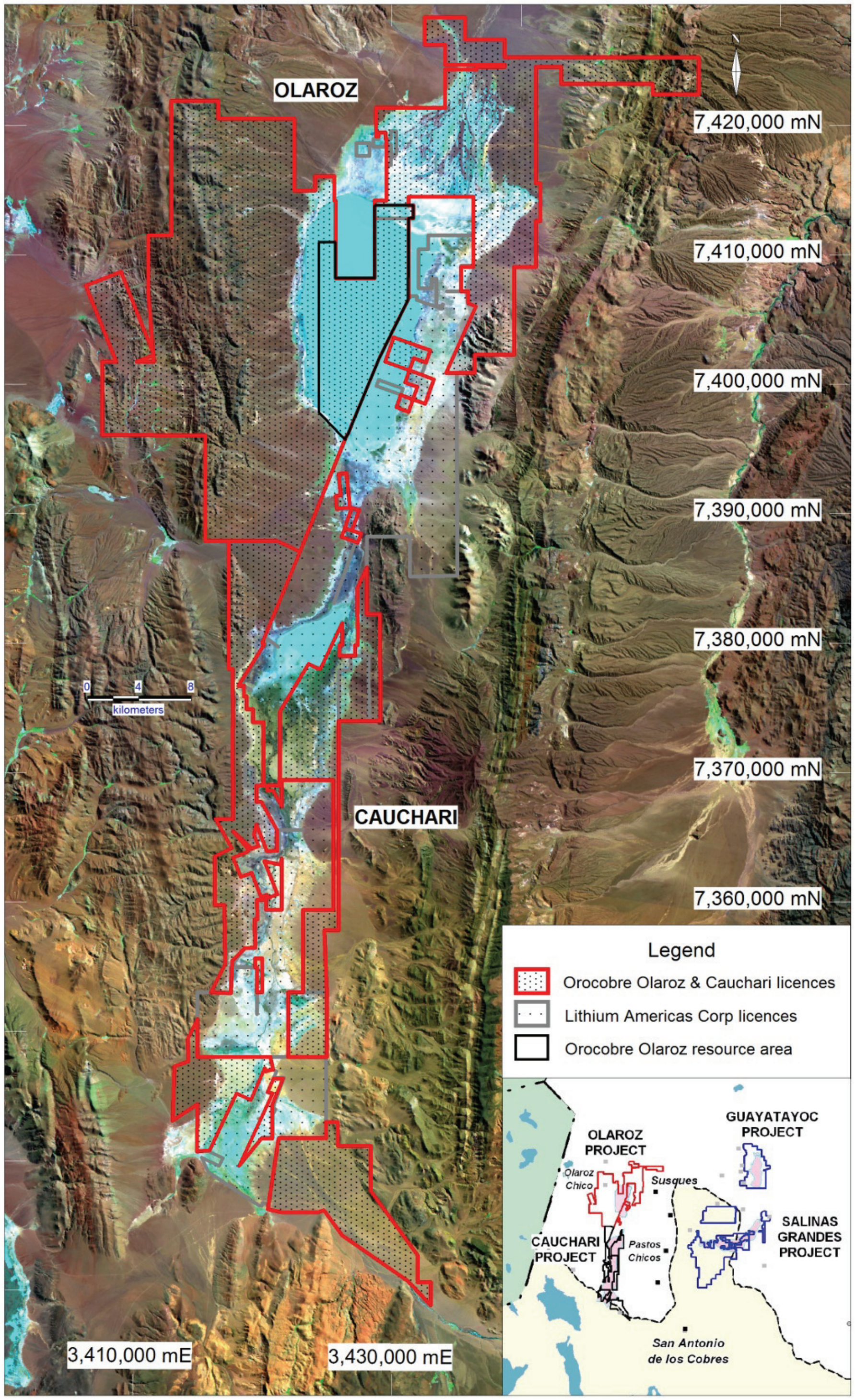
17.2. **Adjacent properties**

Orocobre holds tenements in the adjacent Salar of Olaroz, and the nearby Salar de Salinas Grandes. Both these properties contain brine with elevated levels of Li, K and B, and are currently the focus of investigations described in detail in the NI 43-101 compliant Technical Reports filed alongside this report. Geos Mining (2009) estimated an Inferred Resource for the Salar de Olaroz at 350 million m^3 of brine at 800 mg l^{-1} Lithium and 6,600 mg l^{-1} Potassium to an average depth of 55m.

At the Salinas Grandes, surface grades of over 2,000 mg l^{-1} lithium are reported over an area of 60 km^2 of the Company's properties and 20,000 mg l^{-1} potassium over 40 km^2.

Lithium Americas Corporation holds tenements in Cauchari and on the eastern side of the Salar de Olaroz. An Inferred Resource over approximately 24 km^2 of their Cauchari properties has been estimated as 926,000 tonnes of lithium metal at 584 mg l^{-1} lithium and 4,860 mg l^{-1} potassium based on borehole depths of 176m to 249m (NI 43-101 compliant Technical Report filed on the 16 March 2010).

Figure 17.1 Location of Lithium Americas Corporation properties in relation to the Company's at Olaroz and Cauchari



Li3 Energy (February 2010 corporate presentation) is reportedly in discussions to purchase property at the south of the Cauchari salar, although no information is available as to sampling results there.

Lithium One owns properties in the eastern part of the Salar de Hombre Muerto. It appears that the brine in the eastern part of the salar is hosted by a clastic aquifer in contrast to that exploited by FMC in the western part of the salar. In their NI 43-101 compliant Technical Report, dated 15 February 2010, Lithium One report Li grades from a pitting program of >800 mg l^{-1} over an area of approximately 80 km^2.

Several companies are evaluating the potential of other salars in northwestern Argentina.

The Author has been unable to verify the information in this section relating to adjacent properties and the mineralization on such adjacent properties is not necessarily indicative of the potential of mineralization on the properties that are the subject of this Report, except insofar as the Salinas Grande-Guayatayoc properties lie within the Argentine Puna province which is rich in Li and K bearing brine resources.

17.3. El Fenix lithim brine producer – Hombre Muerto Salar

Minera Altiplano (FMC) has been producing lithium compounds from brine at the Hombre Muerto salar since 1997. The Li-rich brine is hosted in a mature, unconfined halite aquifer located in the western sub-basin, covering an area of approximately 300 km^2. In-situ reserves are reported at 4.5 million tonnes lithium carbonate (approximately 850,000 tonnes of Li metal equivalent), sufficient for more than 70 years production at current production levels of 10,000 tonnes lithium carbonate and 7,600 tonnes lithium chloride per year.

17.4. Borate mineralization

Quaternary ulexite mineralization occurs throughout several areas within the salar tenements held by Orocobre. Some of these occurrences were previously mined by small borate producers.

Ulexite mineralization occurs as a precipitate just below the current surface of the salar. The ulexite forms extensive layers, with a variable thickness, and irregular geometry. Within the layers ulexite occurs as nodules or bands at the base of sandy horizons, associated with gypsum, and halite. The extraction of the mineral is conducted manually in the high grade zones, and by the use of a backhoe in zones where the ulexite beds are thicker.

18. MINERAL PROCESSING AND METALLURGICAL TESTING

18.1. Aspects relating to the water balance and brine extraction.

Brine prospects differ from solid phase industrial mineral prospects by virtue of their fluid nature. During production, the flow of brine through the host aquifer will cause rearrangement and mixing, so that it becomes necessary to address the response of the aquifer to pumping. This requires knowledge of the permeability and flow regime, not only of the host aquifer within the claim area, but beyond the margins where hydraulic continuity with contiguous aquifers and surface water may allow flow into the host aquifer.

The Project is at too early a stage to have such data available, but plans are underway to obtain aquifer and flow regime characteristics within and beyond the claim areas.

18.2. Mineral Processing and Metallurgical Testing

The Cauchari project is at too early a stage to have been subject to mineral processing and metallurgical testing. However, based on the brine chemistry some initial conclusion can be made. The Cauchari brine has a low Mg/Li ratio and decent K/Mg ratio, which is positive for lithium and potassium process efficiencies. A fraction of the samples were analysed for sulfate and calcium revealing high sulfate and low calcium content. These parameters indicate that brine from Cauchari is very suitable for the production of potassium salts and lithium carbonate through conventional brine processing similar to the Silver Peak process and to the process that is under development for Orocobre's Olaroz project.

19. **MINERAL RESOURCES AND MINERAL RESERVE ESTIMATES**

The Cauchari project is at too early a stage to make mineral resource estimates. The magnitude of potential is suggested by the area containing high levels of lithium and potassium in near-surface brine, but more information regarding the host aquifer and the contained brine, as well as the catchment water balance is required before any form of estimate can be made. Plans are underway to obtain this data by means of a drilling, testing and sampling project.

20. **OTHER RELEVANT DATA AND INFORMATION**

No information – this section intentionally left blank.

21. **INTERPRETATION AND CONCLUSIONS**

Published geological studies show that the sedimentary basin started life in the Paleogene as an extensional graben, converting during the early Neogene to a compressional, thrust-bounded basin. The basin has been infilled with coarse continental sediments becoming progressively finer and enriched with evaporitic precipitates as the climate became drier consequent upon Andean uplift during the late Miocene. The current salar occupies the southern part of an endorheic (internal drainage) basin of ~6,000 km^2. Influent dilute waters evaporite around the margins of the salar and transfer concentrated solutions to the nucleus, which over thousands of years has led to a creation of a brine body hosted in the sedimentary aquifer.

The current salar covers an area of ~250 km^2. Geophysical studies suggest that the aquifer may be at least 500 m thick, hosting a brine body of varying salinity.

Reconnaissance surface pitting, brine sampling and chemical analyses indicate that the marginal areas of the salar, where the majority of claims are held, have relatively low levels of concentration compared with the center of the salar. Exploration geophysics suggests the presence of a deeper "channel" aligned north-south, along the eastern boundary of the salar. It is possible that this channel may contain higher grade brine. Further investigations will need to concentrate on those claims that have potentially higher grades, particularly towards the northern parts of the salar, closer to the Olaroz property. The higher grade brines in the center of the salar occupy a rather narrow belt, and it might be expected that during any potential extraction, as the marginal low-grade brines migrate towards any pumping wells, there will be a significant grade decline over time.

In order to develop resource estimates, investigations involving further surface pitting, drilling, sampling and testing is required. QA/QC as used at the Company's Olaroz project would be required. The recommended program is detailed below.

22. **RECOMMENDATIONS**

22.1. **Background**

The results of the reconnaissance studies carried out to date indicate the possibility of some brine resource at Cauchari, containing interesting levels of Li, K, and B. It is thus recommended that a phased program of investigation be commenced as described below.

22.2. **Objectives**

The objective of the next phases of work are to establish the resources with a greater level of confidence. The program outlined below is intended to initially establish the Inferred Resources of the salar, and if warranted in a second phase, not detailed here, to move to a Measured Resource under NI 43-101/JORC terminology. At the conclusion of each phase the results will be used to determine the viability of moving forward to the next step.

The first stage will allow a reliable in-situ resource estimate to be established with sufficient additional information to estimate the recoverable reserves and to identify any likely issues that require further investigation or might prove problematic during the project life.

It is not intended that this next phases of work will provide sufficient information to be able to predict potential brine grade changes during operation and hence further work would be required before final well sites are defined.

22.3. **Scope of work required for Inferred Resource evaluation**

22.3.1. *Basin evaluation*

A first order evaluation of the basin is required to determine its generalized structure, stratigraphy and sedimentary architecture.

22.3.2. *Surface variation of brine chemistry*

As a first step in understanding the fluid chemistry, facies distribution and provenance, the variation in the near surface brine, its density and flow directions are required.

22.3.3. *Subsurface geology*

At this stage, the subsurface geology requires investigation to establish the principal lithological variations with depth.

22.3.4. *Porosity variations*

The effective porosity of the main lithological units needs to be established at this stage.

22.3.5. *Subsurface brine variations*

The chemistry of the pore fluid in the major lithological units needs to be established at this stage.

22.4. **Methodology for Inferred Resource**

22.4.1. *Geological survey and review*

Using published geological information, satellite imagery and site surveys, the salar and its surroundings requires mapping.

22.4.2. *Surface pitting program*

By digging shallow (1-3 m) pits on a regular grid of approximately 1 km, and having them accurately surveyed (both for location and elevation) it will be possible to obtain information on the elevation of the brine surface and to take samples for determination of pH, density, temperature and electrical conductivity in the field, in addition to sending samples to a laboratory for major ion (and Li, B) analysis.

22.4.3. *Drilling*

Five wells shall be drilled to 50 m at selected locations across the salar. The wells will be cored using advanced sonic techniques, in order to be able to be able to sample both the formation and the brines at specified depth intervals, under what are expected to be difficult drilling conditions

22.4.4. *Core logging and testing*

Logging and core sampling and analysis will proceed in the same manner as described in more detail below (see section 5.2).

22.4.5. *Geophysical logging*

All holes will be logged using, natural gamma, neutron, density and sonic.

22.4.6. *Brine sampling*

Brine sampling and analysis will proceed in the same manner as described in more detail below (see section 5.4).

22.4.7. *Analysis and Reporting*

Wherever possible analysis of the data gathered will be on-going throughout the field work so that errors and omissions may be identified and corrected in a timely manner. Final analysis at the end of the field work will lead to the development of a detailed report containing the resource estimate.

22.5. Program of activities

The following table indicates the main tasks to be accomplished to achieve an Inferred Resource:

Table 222.1 Program to establish an Inferred Resource.

Task	Month 1	Month 2	Month 3	Month 4
FIELDWORK				
Geological survey				
Pitting program				
Well site location/roads				
Core drillers mobilisation				
Core drilling				
On-site geological logging				
Geophysics downhole				
OFF-SITE WORK				
Core analysis				
Brine analysis				
ANALYSIS & REPORTING				
Data analysis and interpretation				
Reporting				

22.6. Estimated costs

The following table provides a budget estimate of the work required for the Inferred Resource Program.

Table 222.2 Budget estimate for the Inferred Resource Program.

Task	Cost USD
Geological survey and pitting program	250,000
Core drilling, logging and sampling	450,000
Core and brine analyses	100,000
Contingency	80,000
TOTAL	880,000

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24. **DATE AND SIGNATURE PAGE**

CERTIFICATE of AUTHOR

I, John Houston, MSc., C.Geol., do hereby certify that:

1 I am an independent consultant of:
Stuart Lodge, 273 Wells Road,
Malvern, WR14 4HH, UK.

2. I graduated with an Honours Bachelor of Science degree in Geology from Birkbeck College, London University, UK in 1970

3. I graduated with a Master of Science in Hydrogeology from University College, London University, UK in 1974.

4. I am a UK Chartered Geologist, a Fellow of the Geological Society of London, a Fellow of the Chartered Institute of Water and Environmental Management, a Member of the Geological Society of America and a Member of the American Geophysical Union.

5. I have published the following recent, relevant papers:

In preparation. The evaluation of brine prospects and the requirement for new filing standards. *Economic Geology.*

In review. Groundwater flow through the central Andean volcanic arc. *Geological Society of America Bulletin.*

2010. with Rech, Currie, Shullenberger, Dunagan, Jordan, Blanco, Tomlinson and Rowe: Evidence for the development of the Andean rain shadow from a Neogene isotopic record in the Atacama Desert, Chile. *Earth and Planetary Science Letters.*

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1994 Satellite imagery evaluates water resources for Chile. *Earth Observation Magazine* **May**, 38-40.

6. I have practiced my profession for forty five years.
7. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101. This report is based on my personal review of information provided by the Issuer and on discussions with the Issuer's representatives. My relevant experience for the purpose of this report is:
   - 1998-2008 Principal consultant to Nazca S.A.
   - 1990-1998 Group Chief Executive, Water Management Consultants
   - 1979-1988 Director, Hydrotechnica Ltd.
   - 1975-1979 Senior Hydrogeologist, Aspinwall and Company
   - 1970-1974 Hydrogeologist, Botswana Geological Survey
   - 1965-1970 Hydrogeologist, British Geological Survey

   And I have previously directed, managed, evaluated and participated in the following brine resource projects:
   - Salar de Hombre Muerto for FMC and Minera del Altiplano, Argentina (1991-1993)
   - Salar de Atacama for Amax and Minsal, Chile (1986-1997)
   - Sua Pan Brine Project, Botswana (1995-1996)
   - Lake Natron Resource evaluation, Tanzania (1991)
   - Um as Sammim brine development, Oman (1991).
8. I am responsible for the preparation of the Cauchari Project Technical Report dated April 30, 2010. I visited the property many times between April, 2009 and April 2010.
9. I have not had prior involvement with the properties that are the subject of the Technical Report.
10. As of the date of this certificate, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
11. I am independent of the issuer applying all of the tests in section 1.4 of National Instrument 43-101.
12. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
13. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Effective date:- 30th Day of April, 2010
Date of signing: 4th Day of May, 2010

John Houston

____

Signature of John Houston, C.Geol.

John Houston
Printed name of John Houston, C.Geol.