NI 43-101
PRELIMINARY ECONOMIC ASSESSMENT

HOMBRE MUERTO NORTH LITHIUM PROJECT

SALTA, ARGENTINA

EFFECTIVE DATE – MARCH 4, 2024
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DEVELOPMENT CORPORATION

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PERMIT NUMBER
1001427
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NOTICE

JDS Energy & Mining, Inc. prepared this National Instrument 43-101 Technical Report, in accordance with Form 43-101F1, for Lithium South Development Corporation. The quality of information, conclusions and estimates contained herein is based on: (i) information available at the time of preparation; (ii) data supplied by outside sources, and (iii) the assumptions, conditions, and qualifications set forth in this report.

Lithium South Development Corporation filed this Technical Report with the Canadian Securities Regulatory Authorities pursuant to provincial securities legislation. Except for the purposes legislated under provincial securities law, any other use of this report by any third party is at that party's sole risk.

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1 EXECUTIVE SUMMARY

1.1 Introduction

Lithium South Development Corporation (the Company or LIS) retained JDS Energy & Mining, Inc. (JDS) to prepare this independent technical report (Technical Report) providing the results of a Preliminary Economic Assessment (PEA) for its Hombre Muerto Norte (HMN) Lithium Project (the Project) in Salta Argentina.

This PEA provides an update to a prior PEA produced in 2019 by JDS and Knight Piésold Consulting (KPC). It incorporates updated pricing and cost projections and is based on an updated resource estimate prepared by Groundwater Insight on 5 September 2023. The recovery process for lithium has been changed from the prior 2019 PEA.

All figures in this Report were prepared for this report, unless otherwise indicated. The results and observations presented in this Technical Report are a guide to indicate the potential viability of the HMN Project and should not be regarded as a final measure of value at this stage of study.

1.2 Reliance on Other Experts

The Qualified Persons (QPs) retain overall responsibility for all sections of the Technical Report that are not related to legal matters. For legal matters, the QPs have relied upon, and, to the extent permitted under Item 3 of Form 43-101F1, disclaim responsibility for legal matters, as summarized in the Title Opinion (August 2023) provided by Sr. Jorge Vargas Gei, of the law firm Vargas Galíndez Abogados, Mendoza, Argentina. The QPs have not researched these Project title and mineral rights and express no opinion as to the ownership status of the Project properties.

1.3 Property Description and Location

The HMN Project is located in Antofagasta de La Sierra Department, Catamarca Province and Los Andes Department, Salta Province, northwestern Argentina. The Project comprises six Mining Concessions with a total area of 3237 ha, situated in the northern part of Salar del Hombre Muerto (SHM). These concessions are the primary target for lithium brine exploration and the focus of this Technical Report.

Three additional properties related to the HMN Project are located approximately six km north of the SHM in Salta Province. These properties, known as the Sophia properties, comprise three non-contiguous Mining Concessions with a total area of 2365 ha. They were acquired as a prospective freshwater source for the HMN Project, and as a location for anticipated future plant and processing facilities.

LIS Legal counsel, Sr. Jorge Vargas Gei, states that LIS, through its wholly owned Argentine subsidiary NRG Metals Argentina S.A., has a good and valid, legal, and beneficial title to the Alba Sabrina, Natalia Maria, Tramo, Gaston Enrique, Norma Edith, Viamonte, Sophia I, Sophia II, and

Sophia III properties. As of the date of the Title Opinion (April 8, 2024), all properties are in good standing and comply with applicable regulations.

1.4 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

The HMN Project straddles the Salta and Catamarca Provinces in the southeastern Puna region of Argentina. It is located approximately 380 km SW of the capital city of Salta by road, and the nearest human settlement of La Redonda is approximately 25 km SW of the Tramo Property by road. Local resources within the Puna are minimal, and most supplies used for mining and exploration at SHM are transported in by truck from Salta and San Antonio de Los Cobres. Antofagasta de La Sierra, Catamarca Province is located approximately 100 km S of the HMN Project on Provincial Route 43 and is the closest community with services.

Infrastructure in the Argentine Puna is basic and minimal. Existing infrastructure near the HMN Project supports the mines that are currently operating (Fénix and Tincalayu) and the construction of advanced-stage projects (Sal de Oro, Sal de Vida, Centenario-Ratones, Hombre Muerto West). Infrastructure requirements for the HMN Project are further evaluated Section 18 of this report.

The SHM occupies an area of approximately 590 km^2 in the northern and lowest portion of the Hombre Muerto basin, an approximately 3900 km^2 N-S elongated endorheic basin. The salar has an approximate average elevation of 4000 masl, and the basin is surrounded by mountains with elevations over 5000 masl. SHM is divided into the Eastern (Subcuenca Oriental) and Western (Subcuenca Occidental) Subbasins by three fault-bounded bedrock remnants: the Hombre Muerto Peninsula in the south, the Farallón Catal in the centre, and Tincalayu Peninsula in the north. The Eastern and Western Subbasins remain hydraulically connected through the salar deposits that infill the low-lying areas between the bedrock remnants.

The Argentine Puna is a cold, high altitude desert with an intense Andean Continental type climate. High altitudes, low temperatures, saline soils, and arid climate conditions have resulted in the development of xerophytic, halophytic, and psammophilous plant communities in the Puna region of South America. Animal species of the Puna have also adapted to the unique and challenging climate conditions.

1.5 History

Previous exploration by Lithium One (previously Galaxy Resources), including surface sampling and geophysical surveys, was conducted near and over some parts of the Gaston Enrique, Natalia Maria, and Tramo Properties (Montgomery & GAI, 2012). Recent exploration work carried out by LIS (previously NRG Metals Inc.) at the HMN Project, was first reported in the technical reports by Montgomery (2017; 2018) and KPC (2019).

1.6 Geological Setting and Mineralization

Salar del Hombre Muerto is situated in the southern zone of the central Andean Puna-Altiplano plateau of South America. It is characterized by low-lying internally drained basins (salars), which are fault-bounded by mountain ranges and volcanic edifices. Salar infill geology within the SHM is regionally variable. The channel occupied by Alba Sabrina, most of the northern sector of the Eastern Subbasin including Tramo, and the southern sector of the Eastern Subbasin are clastic sediment-dominated; while the Western Subbasin and the Natalia Maria area on the eastern margin of Tincalayu Peninsula in the Eastern Subbasin are halite-dominated.

The Alba Sabrina property includes a NE-SW trending channel in the northwestern sector of the SHM, formed by the Tincalayu Peninsula (east side) and Cordon del Gallego Range (west side). This semi-isolated salar channel is clastic-dominated, with no halite intersected by drilling. Here, the bottom of the salar basin is demarcated by unaltered, low permeability Falda Ciénaga Formation quartzite. The basin infill sequence includes the basal Brecciated Quartzite, Upper Middle Sediments, Basalt, and the upper Interlayered Fine and Coarse Sediments units.

The Natalia Maria property is a halite-dominated area of the SHM, on the eastern margin of Tincalayu Peninsula. The western half of the property extends onto the Tincalayu Peninsula where Sijes Formation sediments and Incahausi Formation basalts outcrop. The eastern half of the property is in the salar. Infill units intersected by drilling include Compact Halite, Halite, Basalt, Interbedded Halite and Sediments, and the upper Interlayered Fine and Coarse Sediments units.

Tramo is in the clastic-dominated northeastern sector of the SHM. The property area is dominated by salar deposits, with a small outcrop of Sijes Formation in the southwest corner and alluvial fans on the northern, eastern, and western margins of the property. Infill geology at Tramo is a combination of lithologies that occur on the other Project properties. Basal Conglomerate, Interbedded Halite and Sediments, and Interlayered Fine and Coarse Sediments occur on the eastern side of the property. The western side of the property is dominated by Interbedded Halite and Sediments with an upper layer of Interlayered Fine and Coarse Sediments. This westward increase in halite indicates a transition towards the halite-dominated region of the salar on the eastern margin of Tincalayu Peninsula. The hydrogeological basement has not been intersected by drilling at Tramo.

Brine Resources in the Alba Sabrina, Natalia Maria, and Tramo properties of the HMN Project are defined relative to a 500 mg/L lithium cut-off. Overall, the information at the HMN Project indicates that the lithium grades and the levels of impurities compare favourably against other brine deposits.

1.7 Deposit Type

The SHM has two large, hydraulically connected subbasins with aspects of both Evaporite-dominant and Clastic-dominant salar types. The Eastern Subbasin is predominantly clastic-dominated and transitions into a halite-dominated salar along the northwestern margin of the subbasin adjacent to the Tincalayu Peninsula. Tramo is located within the clastic-dominated region of the northern sector of the Eastern Subbasin, and Natalia Maria in the halite-dominated region. The Western Subbasin is halite-dominated with a halite core that transitions into an outer clastic-dominated perimeter at the margins. Alba Sabrina occupies a clastic-dominated NE-SW trending channel located at the northern margin of the Western Subbasin.

1.8 Exploration

Exploration by LIS at the HMN Project was conducted over four field seasons:

- 2016-17 Program: first reported by Montgomery (2017);
- 2018 Program: first reported by Montgomery (2018) and KPC (2019);
- 2021 Program: first reported by Groundwater Insight (GWI) (2023); and
- 2022-2023 Program: first reported by GWI (2023).

Exploration components conducted during these exploration programs, and previously documented as listed above include:

- 27 surface brine and water samples, not including QA/QC samples, collected from pits and auger holes;
- 10 CSAMT stations in two lines that transect the Alba Sabrina, Natalia Maria, and Tramo properties;
- 2848.5 m of diamond drilling in 12 boreholes, 45 m of ticone drilling in one borehole, and construction of 13 observation wells (on Tramo, Alba Sabrina, and Natalia Maria);
- 132 core samples collected for analysis of RBR;
- 801 m of rotary drilling in two boreholes and construction of two pumping wells (on Tramo);
- 120 subsurface brine samples, plus 50 QA/QC samples, collected from packers and wells;
- Two step tests and two 72-hr pumping tests; and
- 135 TEM soundings in 36 lines throughout the HMN Project properties.

Results from these exploration programs were used to support the modelling and Resource Estimate presented by GWI (2023) and included in this Report.

1.9 Drilling

The two drilling programs completed at the HMN Project are as follows:

- 2018 drilling program: two diamond drillholes and two rotary holes drilled at Tramo; and

- 2022-2023 program: 10 diamond drillholes, nine drilled at Alba Sabrina and one drilled at Natalia Maria; and one tricone hole drilled at Natalia Maria.

These drill programs were designed to test for lithium-rich brines within conductive geophysical target horizons and to support Resource estimation at the Alba Sabrina, Natalia Maria, and Tramo properties by:

- Collecting samples for subsurface brine chemistry characterization;
- Characterizing salar geology based on lithology and porosity (Specific Yield) data collected from continuous core samples, downhole geophysics, and other drilling information; and
- Installing observation and pumping wells for hydrogeological characterization.

1.10 Sample Preparation, Analysis, and Security

All 2022-2023 Program oversight (e.g., sample collection, drilling, well construction, QA/QC, and secure transport) was performed by LIS personnel, with oversight by Dr. Mark King (QP). The QP considers that the HMN Project dataset and QA/QC procedures are acceptable for evaluation of brine Resources, with no significant and systematic bias.

1.11 Data Verification

Dr. Mark King (QP) provided review and input to the design and execution of the HMN Project 2022-2023 field exploration Program. The QP and other GWI geologists maintained technical discourse with LIS throughout the exploration program and the QP visited the Project on two occasions:

- 2022: for two days (October 12 and 13) during drilling at the Alba Sabrina property, and
- 2023: for one day (March 22) during drilling at the Natalia Maria property.

Independent QA/QC duplicate sampling was conducted by the QP during both visits to the 2022-2023 Program. Overall, the QP duplicate data are in reasonable agreement with the original samples, and the results are considered acceptable.

Dr. Mark King (QP) supervised the compilation of the Project database and worked closely with Aqua Insight Inc. during geological modelling and brine model development related to the updated Resource estimation. Based on these activities, it is the opinion of the QP that an acceptably rigorous set of field and data interpretation methods were used in preparing the HMN Project Mineral Resource Estimate.

1.12 Mineral Resource Estimate

An updated Mineral Resource Estimate was developed for the HMN Project using the three-dimensional (3D) modelling software FEFLOW (DHI-WASY, 2021). The software implementation was managed by Aqua Insight Inc., specialists in FEFLOW applications. Dr. Mark King (QP) provided technical oversight of the modelling and considers the results to be valid and appropriate for Measured, Indicated, and Inferred Mineral Resource Estimates, as defined by the CIM and referenced by NI 43-101.

The Mineral Resource Estimate is presented in Table 1-1, relative to a grade cut-off of 500 mg/L lithium. The updated Mineral Resource Estimate was calculated for the Interlayered Fine and Coarse Sediments, Interbedded Halite and Sediments, Halite, Basalt, Upper Middle Sediments, Conglomerate, and Brecciated Quartzite. The Compact Halite unit, intersected below 190 mbgs at Natalia Maria, is not currently considered as part of the brine resource.

The presentation of Mineral Resources in this Report conforms with NI 43-101 and CIM Standards. As defined under these standards, Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Further, all conceptual models (including the FEFLOW models used herein to estimate resources) have a degree of risk and uncertainty that should be considered when evaluating the Project. Additional associated risks for evaluating the transition from Resources to Reserves at this Project include:

- Potential for brine capture from adjacent project sites;
- Potential for brine losses to adjacent project sites; and
- Potential for dilution of brine by freshwater inputs along the lateral and upper boundaries of the salar during recovery pumping.

Dr. Mark King (QP) considers that these will be important criteria for any future production design.

Table 1-1: Summary of the Mineral Resource Estimate Relative to a Grade Cut-off of 500 mg/L Lithium (Effective Date: September 5, 2023)

Parameter	Alba Sabrina			Natalia Maria	Tramo	All Sites
	Measured	Indicated	Total	Measured	Measured	Total
Brine Volume (x10^3 m^3) [1, 2]						
	217,900	31,700	249,600	12,900	141,600	404,100
Average Concentration (mg/L) [3]						
Lithium (Li)	696	712	698	1103	769	736
Boron (B)	474	479	475	490	377	441
Calcium (Ca)	536	593	543	538	944	684

Parameter	Alba Sabrina			Natalia Maria	Tramo	All Sites
	Measured	Indicated	Total	Measured	Measured	Total
Potassium (K)	7118	7226	7132	9991	7080	7205
Sodium (Na)	103,513	102,402	103,372	109,566	98,633	101,910
Magnesium (Mg)	2454	2534	2464	3030	2256	2409
Sulphate (SO_4)	13,507	13,755	13,538	12,868	9866	12,230
Tonnage [2]						
Lithium	151,700	22,600	174,200	14,200	108,900	297,400
Lithium Carbonate [4]	807,400	120,200	927,500	75,800	579,800	1,583,200
Boron	103,300	15,200	118,400	6300	53,400	178,200
Boric Acid [5]	590,600	86,800	677,400	36,200	305,500	1,019,100
Calcium	116,800	18,800	135,600	7000	133,700	276,200
Calcium Chloride [6]	323,400	52,000	375,400	19,300	370,200	764,800
Potassium	1,550,800	229,000	1,779,800	129,100	1,002,300	2,911,200
Potash [7]	2,740,200	404,600	3,144,800	228,100	1,771,100	5,144,000
Sodium	22,552,700	3,244,900	25,797,600	1,415,800	13,964,100	41,177,400
Sodium Chloride [8]	57,328,800	8,248,600	65,577,400	3,598,900	35,496,700	104,672,900
Magnesium	534,600	80,300	614,900	39,200	319,400	973,500
Sulphate	2,942,800	435,900	3,378,700	166,300	1,396,800	4,941,800
Tonnage Ratios						
Ca/Li	0.77	0.83	0.78	0.49	1.23	0.93
K/Li	10.22	10.14	10.21	9.06	9.20	9.79
Na/Li	148.69	143.75	148.05	99.36	128.20	138.45
Mg/Li	3.52	3.56	3.53	2.75	2.93	3.27
SO_4/Li	19.40	19.31	19.39	11.67	12.82	16.62
SO_4/Mg	5.50	5.43	5.49	4.24	4.37	5.08

Notes:
1. Grade cut-off of 500 mg/L lithium.
2. Quantities rounded to the nearest 100; product and sums may not be exact due to rounding.
3. Average concentration quantities rounded to the nearest whole number.
4. Lithium carbonate mass calculated as lithium mass multiplied by the equivalency factor (5.323).
5. Boric acid mass calculated as boron mass multiplied by the equivalency factor (5.719).
6. Calcium chloride mass calculated as calcium mass multiplied by the equivalency factor (2.769).
7. Potash mass calculated as potassium mass multiplied by the equivalency factor (1.767).
8. Sodium chloride mass calculated as sodium mass multiplied by the equivalency factor (2.542).

Source: GWI (2023)

1.13 Mining

Production wells with dedicated submersible pumps will be used to extract brine from the salar and transfer it to pre-concentration ponds located near the processing plant. The current estimate of production wells to be operated on the three active Project concessions is as follows:

- Tramo 4 production wells
- Natalia Maria 4 production wells
- Alba Sabrina 6 production wells

It is assumed that each well will have an operating life of approximately 10 years, at which time replacement would be required.

Two potential production wells (TWW18-01 and TWW18-02) have been installed on the Tramo concession. Specifications are shown in Table 1-2 and pictures of the wells and associated core holes are shown in Figure 1-1. It is expected that one or both of these existing wells will be used for production.

Table 1-2: Specifications of the Pumping Wells Installed on the Tramo Concession

Well ID	Depth (m)	Hole Diametre (mm)	GK Zone 3 m East	GK Zone 3 m North	Casing		Pumping Test
					254 mm PVC (m)	203 mm PVC (m)	
TWW18-01	401	432-356	3402347	7210098	0-144	144-398	Yes
TWW18-02	400	432-356	3400173	7210223	0-126	126-378	Yes

Source: GWI (2023)

1.14 Mineral Processing

LIS has conducted a complete brine characterization study for the HMN Project to develop the necessary process for producing technical grade lithium carbonate (Li_2CO_3). The brines found at the HMN Project are similar to those within the broader SHM, as well as Salar de Olaroz and Salar de Cauchari. The brines have a relatively low Mg/Li ratio, which makes them suitable to undergo removal of magnesium with slaked lime.

In the industrial process, lithium will be concentrated until lithium sulphate saturation is achieved. The resulting brine concentrate will be subsequently treated in a lithium carbonate plant. The adjusted processing sequence will reduce lithium loss as brine entrainments in harvested salts, in magnesium hydroxide, and in calcium sulphate solids. Results to date indicate that lithium recovery of around 70% should be achievable. The basic process will be similar to proven industrial operations such as those at Salar de Olaroz, Salar de Cauchari, and Silver Peak. The final product will be technical grade lithium carbonate.

Through simulations, evaporation tests, and laboratory tests, an effective sequence for brine processing will be developed, which maximizes lithium recovery and minimizes reagent consumption. The resulting processing flowsheet will be used to support future studies.

1.15 Infrastructure

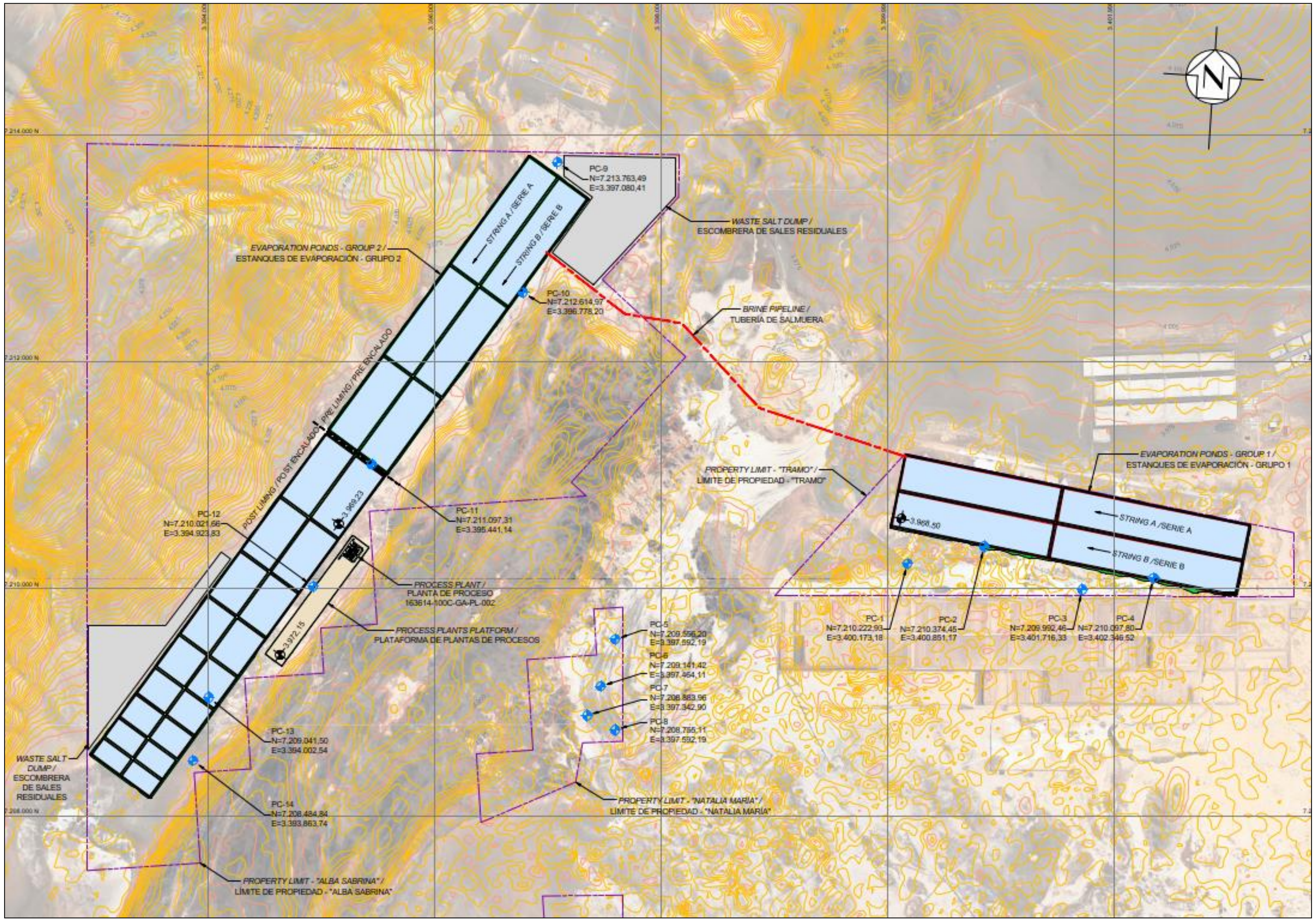
1.15.1 Overview

The project infrastructure consists of the following main components:

- Salar brine extraction wells;
- Concentration and evaporation ponds;
- Lithium carbonate process plant;
- Combined heat and power unit;
- Fresh and potable water supply;
- Mobile equipment; and
- Camp facility.

The general layout of the project is shown on Figure 1-1.

Figure 1-1: General Layout



Source: KPC (2024)

1.15.2 Concentration and Evaporation Ponds

The project requires concentration and evaporation ponds, where the chemical processes related to lithium carbonate extraction will take place. In general, these ponds will be constructed by various earthworks, and lined with geotextile and LLDPE geomembrane. There are two groups of ponds (Group 1 and Group 2) and two strings within each group (String A and String B). The ponds in each string are interconnected by dual 110 mm diameter PEX (cross-linked high-density polyethylene) pipes, with redundancy for reliability.

The ponds have been sized based on the site's climate conditions. An approximate area of 2,100,000 m^2 is estimated for the evaporation ponds in Group 1 (located in the "Tramo" zone and including the “Natalia Maria” zone). An area of 4,350,000 m^2 is estimated for the evaporation ponds in Group 2 (located in the "Alba Sabrina" zone).

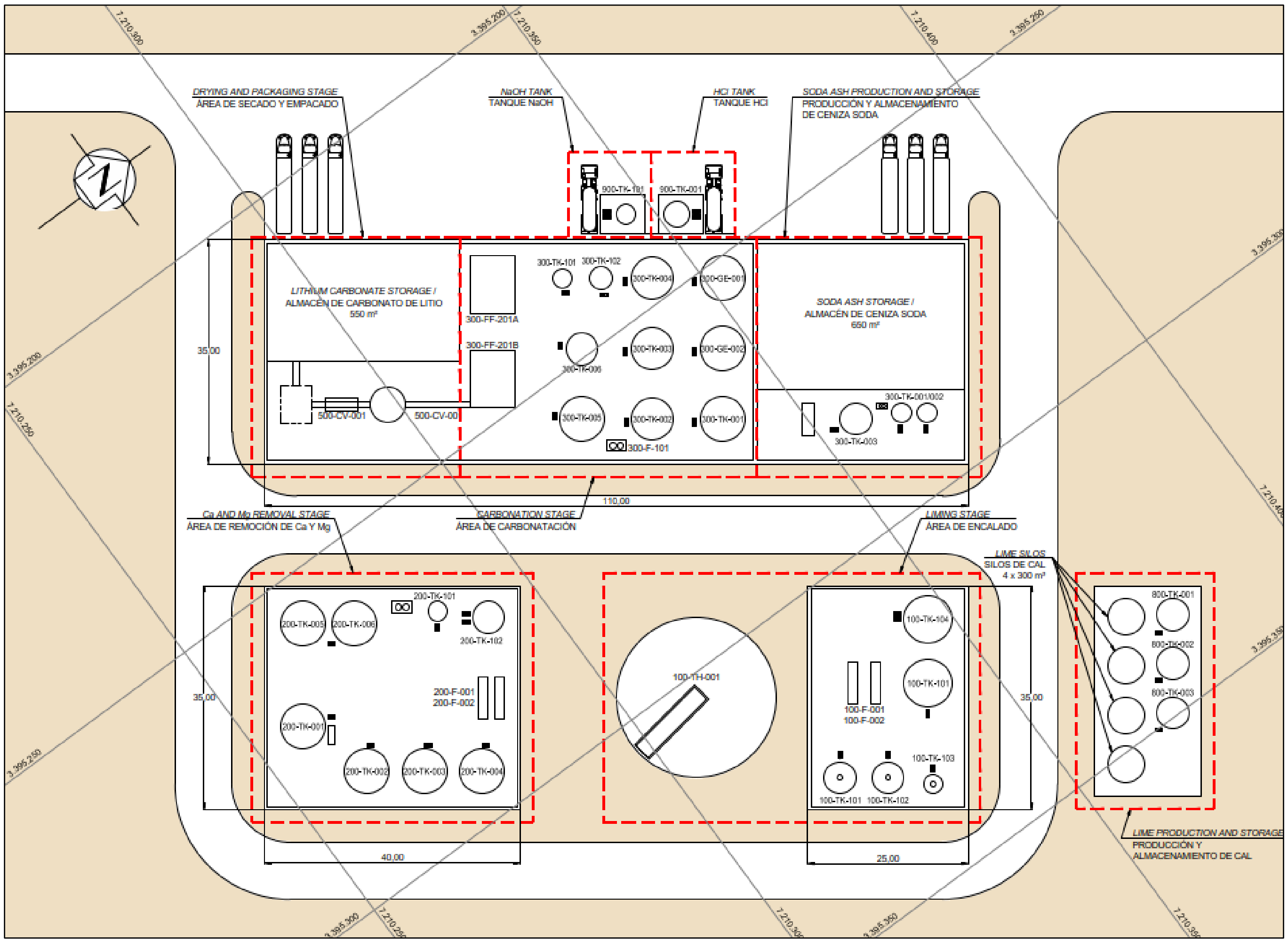
1.15.3 Lithium Carbonate Process Plant

The Lithium Carbonate (Li_2CO_3) process plant will be located adjacent to the Group 2 Concentration and Evaporation Ponds, on a leveled ground platform, and will include the following items:

- Production and storage of lime (silos);
- Liming area;
- Concentration tanks;
- Plate press filters;
- Hydrochloric acid tank;
- Sodium hydroxide tank;
- Ca and Mg removal sector;
- Carbonation sector;
- Production and storage area for soda ash; and
- Drying and packaging sector (including the lithium carbonate warehouse).

These items will be housed within an industrial building to provide protection of equipment and personnel from the weather. The industrial building will be constructed with concrete foundations, reinforced concrete floors, metal structure with straps, belts, and sheet metal enclosures with insulation. The dimensions of the process plant building ensure sufficient space for reagent storage, mobile equipment, and the aforementioned process components. The process plant layout is shown on Figure 1-2.

Figure 1-2: Process Plant Layout



Source: KPC (2024)

1.15.4 Combined Heat and Power Unit

The equipment for combined heat and power (CHP) production will operate with diesel based stand-alone electric generators. A maximum of 5 MW is required for the following installations:

- Brine extraction well pumps;
- Transfer pumps – concentration and evaporation ponds;
- Lithium carbonate process plant; and
- Camp and auxiliary services.

1.15.5 Fresh and Potable Water Supply

Fresh water to supply the process plant and camp will be drawn from a well located approximately 12 km from the site. The water well system includes piping, fittings, a submersible pump, and a parallel service road. Additionally, there will be a reverse osmosis plant included in the auxiliary facilities of the process plant.

Regarding potable water, bottles will be provided for consumption at the camp.

1.15.6 Mobile Equipment

A minimum fleet of mobile equipment is necessary for the maintenance and normal operation of the mine. The mobile equipment fleet includes:

- Motor graders;
- Front-end loader;
- Dump trucks;
- Bulldozer;
- Wheel loader; and
- Soil compactor.

1.15.7 Camp Facility

A camp for approximately 210 people will be built in the proximity of the process plant. The camp will include the following items:

- Medical clinic and first aid;

- Recreation room;
- Bathrooms;
- Changing rooms;
- Double bedrooms;
- Single bedrooms;
- Offices;
- Laundry room; and
- Kitchen.

1.16 Environmental Studies, Permitting, and Social or Community Impact

The Environmental Baseline Study (EBS) for the HMN Project was completed by E&C Consultores (ECA) of Salta in March 2022 and filed with the Mining Authority in May 2022 (ECA, 2022). The study covers the Alba Sabrina, Natalia Maria, Tramo, Gaston Enrique, Norma Edith, and Viamonte properties and includes the documentation of flora, fauna, climate, air quality, hydrogeology, soils, a socio-demographic survey, and ecosystem characterization. A weather station was also established on site for environmental monitoring during the study period.

The results were prepared under the General Environmental Law of the Mining Code 24.585. The report provides an early indication of potential impacts associated with future development at the HMN Project, so that effective mitigation can be achieved through appropriate pro-active management techniques.

LIS, through its wholly owned Argentine subsidiary NRG Metals Argentina S.A., submitted an updated exploration EIR to the Mining Authority in February 2020. An addendum to the drilling program component of the exploration EIR was submitted in July 2021. On March 25, 2022, LIS obtained the EIS through Resolution 0543 issued by the Mining Authority. This EIS grants authorization for ongoing exploration activities within the HMN Project.

LIS has developed a comprehensive Corporate Social Responsibility (CSR) policy. This policy articulates a set of action-oriented strategies aligned with international standards of best mining practices. LIS submitted the first Social Performance Report to the Mining Authority in February 2023.

1.17 Adjacent Properties

Lithium brine projects within the SHM include:

- Livent: The Fénix Project is currently the only commercial lithium producer in the SHM and has been operational since 1997;
- Allkem: The Sal de Vida Project is under construction in the southeastern subbasin of the SHM;
- POSCO: The Sal de Oro Project surrounds the Gaston Enrique, Natalia Maria, Tramo, and Viamonte properties in the northeastern subbasin of the salar;
- Minera Santa Rita S.R.L.:
  - The Virgen del Valle Litio Project is an advanced stage project located in the southeastern subbasin of the SHM and is surrounded by the Allkem claims and Livent claims; and
  - The Providencia Project is on the northern border of the Alba Sabrina property.
- Galan Lithium:
  - The Hombre Muerto West Project is a construction stage project located on the alluvium at the western margin of the salar, adjacent to the Fénix Project; and
  - The Candelas Project is south of the Sal de Vida project and extends further south along Río de Los Patos.
- Tecpetrol (Alpha Lithium): The Hombre Muerto Project is an early-stage exploration project located in the northeastern subbasin of the SHM; and
- Edison Lithium Corp: The Edison Lithium claim area is located on the southwestern border of Alba Sabrina.

The current resources and information on the adjacent properties are reported on the corporate websites and SEDAR filings of the holding companies. This data has not been verified by the authors and is not reported herein. The information presented may not necessarily be indicative of the geology or mineralization of the HMN Project that is the subject of this Technical Report.

Investors are cautioned that this information is taken from publicly available sources, has not been independently verified by LIS and it is not known if it conforms to the standards of NI 43-101. Furthermore, proximity to a discovery, mine, or mineral resource, does not indicate that mineralization will occur at the HMN Project, and if mineralization does occur, that it will occur in sufficient quantity or grade that would result in an economic extraction scenario.

1.18 Economics

1.18.1 Capital

The capital estimate for an annual production capacity of 15,600 t of lithium carbonate technical grade is based on data sourced from both an internal database and requested budgetary quotes. These estimates are presented in US dollars for consistency and clarity. Key points regarding the cost estimations include:

- Quotations in US dollars have been updated to reflect the most recent pricing; and
- Quotations in Argentine pesos were adjusted based on the latest inflation rates and converted to US dollars using the “Banco de la Nación Argentina (BNA)” exchange rate, with January 2024 as a baseline date (860 ARS/USD).

The proposal for staffing and the estimated time commitments required by personnel for constructing the facilities are based on recent local experience. Salaries for staff members were sourced in pesos and subsequently converted to US dollars in alignment with the project-standard exchange rate.

The capital cost includes direct and indirect costs for:

- Lithium carbonate plant;
- Salar brine extraction wells;
- Evaporation and concentration ponds;
- Roads and warehouses;
- Fresh water extraction wells;
- Supporting services such as air and water premises, power plant, maintenance shops and laboratory;
- Construction camp; and
- Mobile equipment.

The capital investment for the HMN Project, including equipment, materials, indirect costs, and contingency during the construction period is estimated to be US$366.1M.

Total capital expenditures are summarized in Table 1-3.

Table 1-3: Capital Cost Summary

Description	Total Cost $M
Lithium Carbonate Plant	127.4
Brine Production Wells	22.1
Evaporation and Concentration Ponds	101.0
Infrastructure	22.5
Mobile Equipment	4.9
Owners Cost	4.5
Subtotal	**282.4**
Contingency	83.7
Total CAPEX	**366.1**

Source: KPC (2024)

The contingency value is set at 35% for general economic estimate in accordance with AACE Standards for a level 4 engineering detail. The contingency for earthworks for the evaporation and pre-concentration ponds was reduced to 20% reflecting a higher level of detail and precision.

1.18.2 Operating Costs

The operating cost estimate has been developed for a 15,600 t/a (design capacity) lithium carbonate facility. Preliminary vendor quotations have been used for reagent costs. Salaries and wages have been estimated based on experience in the area.

Total operating expenses are summarized in Table 1-4.

Table 1-4: Operating Cost Estimate Summary

Description	$ M/a	$/t Li_2CO_3
Direct Costs		
Chemical Reagents Consumption	32.3	2,070
Energy	7.5	481
Manpower	6.7	427
Catering and Camp Services	7.8	501
Maintenance	9.4	606

Description	$ M/a	$/t Li_2CO_3
Truck Haulage to Port	3.4	220
Equipment Operation - Maintenance	0.5	30
Equipment Operation - Accumulation of Waste Salts	0.8	51
Subtotal Direct Cost	**68.4**	**4,385**

1.18.3 Economic Evaluation

An economic model was developed to estimate annual cash flows and sensitivities of the Project. Pre-tax estimates of Project values were prepared for comparative purposes, while after-tax estimates were developed and are likely to approximate the true investment value. It must be noted, however, that tax estimates involve many complex variables that can only be accurately calculated during operations and, as such, the after-tax results are only approximations.

The Project is projected to have a post-tax IRR of 31.6% and a net present value using an 8% discount rate ($NPV_{8\%}$) of $934 M. Figure 1-3 shows the projected cash flows, and Table 1-5 summarizes the economic results of the Project.

Figure 1-3: Annual After-Tax Cash Flow

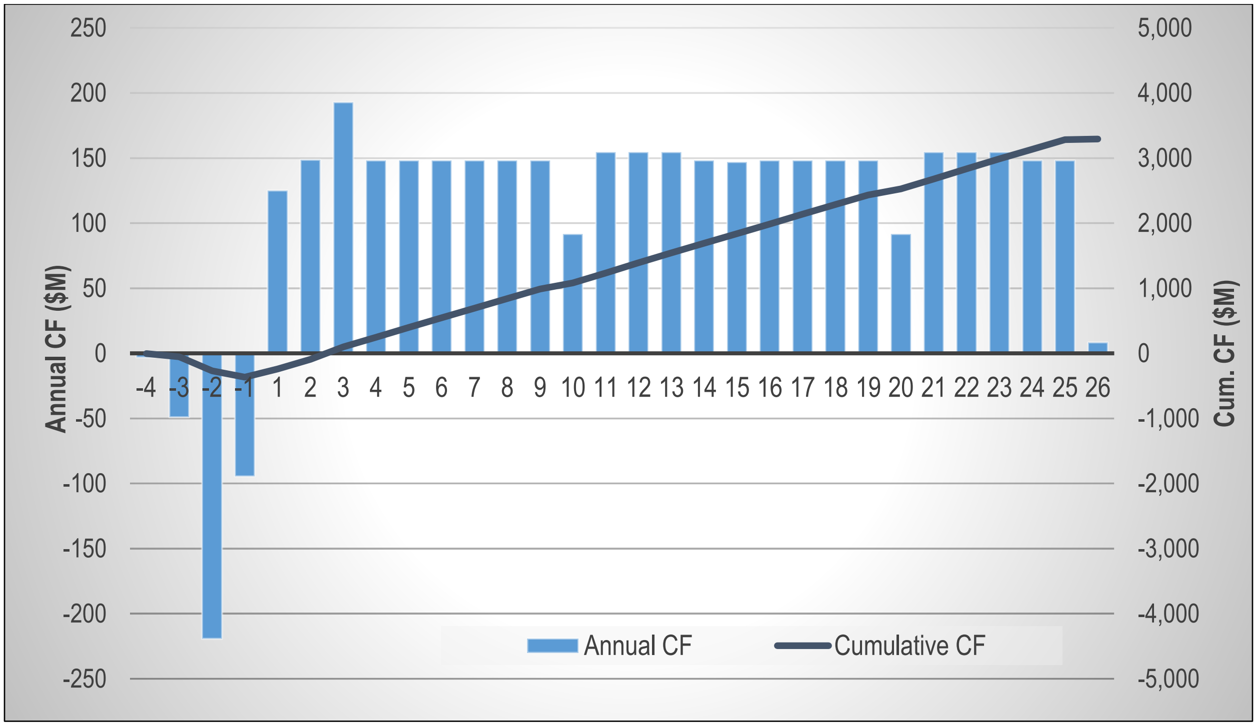


Table 1-5: Summary of Economic Results

Production	Unit	
Li_2CO_3 Produced	tonnes	381,700
Operating Revenues and Costs		
Total Payable Metal	US$M	7,634
	$/t product	20,000
Total Selling Costs and Royalties	US$M	427
	$/t product	1,118
Total Operating Expenses	US$M	1,725
	$/t product	4,520
Pre-Tax Operating Income	US$M	5,482
	USD/t product	14,362
Capital Costs		
Initial Capital	US$M	366
Sustaining and Closure Capital	US$M	117
Total Capital Costs	US$M	483
Taxes		
Total Income Taxes	US$M	1,706
Pre-Tax Economics		
NPV @ 0%	US$M	4,999
NPV @ 8%	US$M	1,451
IRR	%	37.2%
Payback	Years	2.4
After-Tax Economics		
NPV @ 0%	US$M	3,292
NPV @ 8%	US$M	934
IRR	%	31.6%
Payback	Years	2.5

A univariate sensitivity analysis was performed to examine which factors most affect the Project economics when acting independently of all other cost and revenue factors. Each variable evaluated was tested using the same percentage range of variation, from -25% to +25%, although some variables may experience significantly larger or smaller percentage fluctuations over the LOM. For instance, the product prices were evaluated at a ±25% range to the base case, while the capex and all other variables remained constant. This may not be truly representative of market scenarios, as product prices may not fluctuate in a similar trend. The variables examined in this analysis are those commonly considered in similar studies – their selection for examination does not reflect any particular uncertainty.

Notwithstanding the above noted limitations to the sensitivity analysis, which are common to studies of this sort, the analysis revealed that the Project is most sensitive to selling price. The Project showed the least sensitivity to capital costs. Figure 1-4 shows the results of the sensitivity tests, while Table 1-6 shows the NPV at various discount rates.

Figure 1-4: Post-Tax $NPV_{5\%}$ Sensitivity

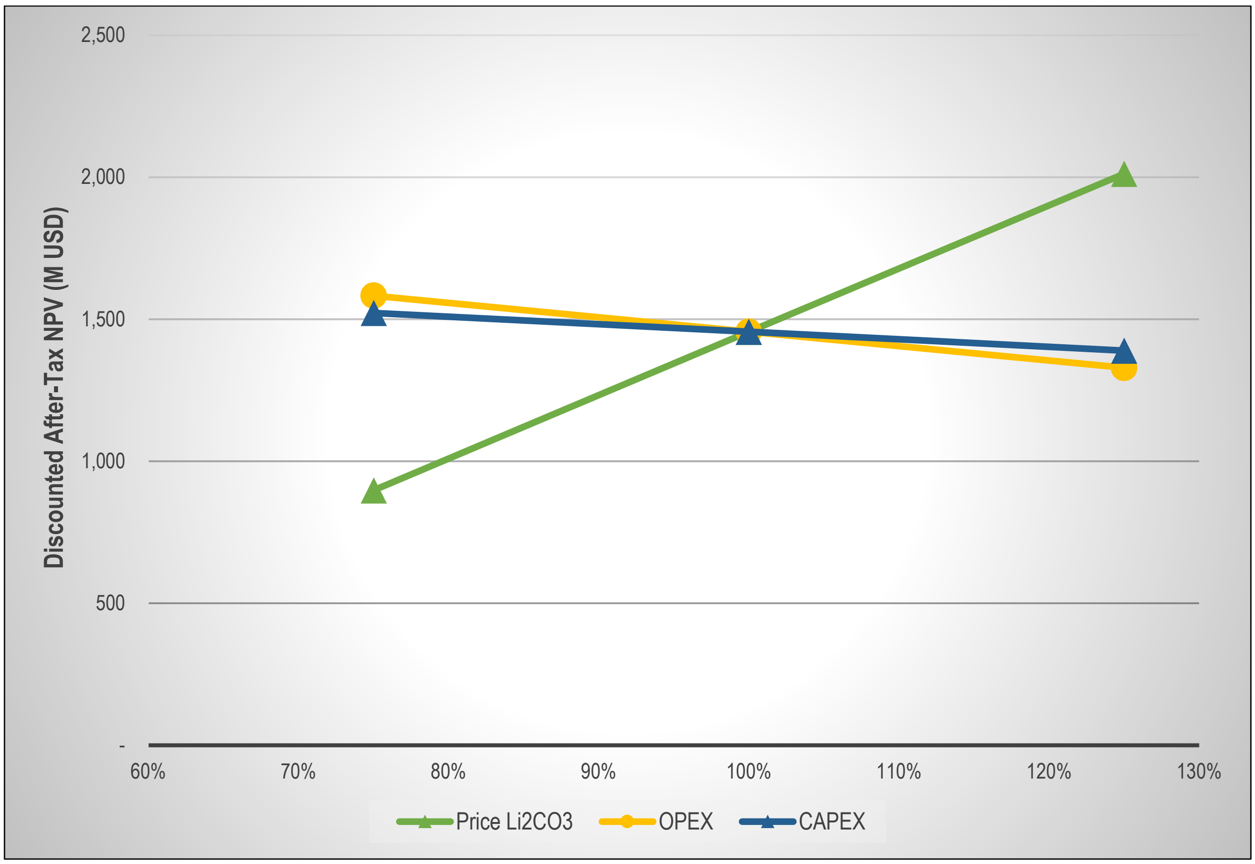


Table 1-6: Project NPV at Various Discount Rates

Discount Rate (%)	Pre-Tax NPV (M$)	Post-Tax NPV (M$)
0	4,999	3,294
5	2,234	1,456
8	1,451	934
10	1,106	704

1.19 Interpretations and Conclusions

The PEA demonstrates that the HMN Project has the potential to be profitable in the generation, processing, and sale of lithium with the production scenario modelled. However, this PEA is preliminary in nature and there is no certainty that the results of this PEA will be realized. These results, while encouraging, should not be considered adequate for the purpose of making a production decision. Further investigation is required to advance the understanding of the project economics to a feasibility level of detail.

The updated Mineral Resource Estimate documented in this report, with an effective date of September 5, 2023, was supervised by Mark King, Ph.D., P.Geo., F.G.C. The mineral deposits that are the focus of this estimate are related to lithium brine contained within the salar deposits of SHM.

The updated Mineral Resource Estimate conforms with National Instrument 43-101 (NI 43-101) and the Canadian Institute of Mining, Metallurgy, and Petroleum Definition Standards for Resources and Reserves (CIM Standards). The following interpretations and conclusions are supported by the HMN Project data collected to date:

- Conditions in the SHM, and specifically in the Alba Sabrina, Natalia Maria, and Tramo properties, have led to the accumulation of brine with potentially economic grades of lithium;
- Drilling results demonstrate regional variability in the SHM salar infill materials, and shows that:
  - The channel occupied by the Alba Sabrina property is clastic sediment-dominated;
  - The salar in and around Natalia Maria, along the eastern margin of Tincalayu Peninsula, is halite-dominated; and
  - The northeastern corner of the Eastern Subbasin, in and around Tramo, is clastic sediment-dominated. Halite content of the salar deposits increases to the west, towards the Tincalayu Peninsula, indicating a transition zone between the clastic-dominated salar intersected on the eastern side of Tramo and the halite-dominated salar intersected at Natalia Maria.
- Brine sampling data indicate that lithium grade is highest in the Natalia Maria property, and lowest in the Alba Sabrina property. Lithium grade increases to the east within the Tramo property;
- Brine impurities, including potassium, calcium, magnesium, and sulphate are low in the HMN Project brines. Interpolated ratios of these constituents relative the lithium resource are:
  - Calcium to lithium ratio of 0.93;
  - Potassium to lithium ratio of 9.79;
  - Sodium to lithium ratio of 138.45;

  - Magnesium to lithium ratio of 3.27; and
  - Sulphate to lithium ratio of 16.62.

- The updated Mineral Resource Estimate was calculated for the Interlayered Fine and Coarse Sediments, Interbedded Halite and Sediments, Halite, Basalt, Upper Middle Sediments, Conglomerate, and Brecciated Quartzite. The Compact Halite unit, intersected below 190 mbgs at Natalia Maria, is not currently considered in the resource. Follow-up testing of the Compact Halite unit could indicate that it has a low, but potentially significant permeability; and
- The Alba Sabrina, Natalia Maria, and Tramo properties contain an estimated 297,400 tonnes of Measured and Indicated lithium Resources, relative to a 500 mg/L cut-off grade, which equates to 1,583,200 tonnes of LCE.

1.20 Recommendations

The next phase of exploration at the HMN Project is designed to support future Reserve Estimates and to potentially expand the Resource Estimate at depth in Tramo, plus into the Norma Edith and Viamonte properties. The following program components are proposed for this next phase of exploration.

Economics performed thus far have been done to a PEA level. These should be advanced to a Prefeasibility or Feasibility level of detail prior to a production decision. As the single greatest risk to the Project is lithium pricing, an expert in that field should be engaged to support the pricing assumptions used in the Feasibility Study.

1.20.1 Mineral Reserves

To support future Reserve Estimates:

- Three rotary exploration boreholes should be drilled and completed as pumping wells. Long-term (72-hr) pumping tests should be conducted at each pumping well to evaluate brine chemistry and subsurface hydraulic properties. The rotary holes should be drilled on selected platforms used in the 2022-2023 drilling program at Alba Sabrina and Natalia Maria:
  - Alba Sabrina: Two rotary boreholes drilled to approximately 250 and 400 m depth; and
  - Natalia Maria: One rotary borehole drilled to approximately 250 m.
- Slug tests should be performed on the 11 observation wells installed at Alba Sabrina and Natalia Maria during the 2022-2023 Program, to evaluative subsurface hydraulic properties;
- The water balance should be updated to reflect site-specific baseline water level, hydrogeological, and meteorological data; and

- A numerical flow should be developed to support reserve estimation, by representing brine processes in the HMN Project area and any significant freshwater inputs in the boundary zones.

1.20.2 Mineral Resources

To update Mineral Resource Estimates:

- Two diamond exploration coreholes should be drilled and completed as observation wells, to test for lithium brine and to evaluate subsurface lithology and porosity in the Norma Edith and Viamonte properties. These exploration coreholes are designed to support expansion of the Resource Zone into these two, previously undrilled HMN Project properties. Proposed borehole locations are based on TEM results and include:
  - Norma Edith: One diamond corehole drilled to at least 300 m depth; and
  - Viamonte: One diamond corehole drilled to at least 250 m depth.
- Two additional diamond exploration coreholes should be drilled and completed as observation wells, to test for lithium brine at depth below the current Resource Zone and to determine depth to basement in the Natalia Maria and Tramo properties. Proposed borehole locations include:
  - Natalia Maria: One diamond corehole should be drilled east of the existing boreholes, to at least 500 mbgs or until the Compact Halite unit is fully intersected, to test for permeability within the Compact Halite unit and for presence of deeper brine aquifers; and
  - Tramo: One diamond corehole should be drilled between the two existing drill platforms to at least 450 mbgs or until basement is intersected.
- The Geological and Resource Models should be updated based on diamond drilling results, to potentially increase the size of the Resource Zone.

1.20.3 Ongoing Monitoring

For the ongoing monitoring program:

- Dataloggers should be installed at selected wells in Alba Sabrina, Natalia Maria, and Tramo, to continuously monitor water level responses to weather events and pumping at adjacent wells;
- Collection of meteorological data should continue from the Santa Rita weather station; and
- Survey collection should continue to support environmental studies required to sustain permitting.

Proposed exploration activities and estimated costs are summarized in Table 1-7. It is considered feasible to complete all field activities and reporting related to Reserve Estimates within one year (2023-24 field season). Activities related to an Updated Resource Estimate could be completed in conjunction with the Reserve activities or in the following 2024-2025 field season.

Some activities, including meteorological, water level, and other environmental monitoring, would be ongoing.

1.20.4 Process Testwork

As a result of the drilling program at the HMN Project, the brine tested to date was only sourced from the Tramo claim block so far. Hence it is not representative of the updated resource which contains brine from the Alba Sabrina and Natalia Maria claim blocks. Therefore, it is not sufficiently representative for commercial operation. Since several months, a brine adjustment program has been initiated to provide a mixture of the complete resource.

The implication of the above is that the SO_4/Mg molar ratio will be more than 1, and therefore after liming free sulphate will still be present in the brine. In the industrial process, lithium will be concentrated until lithium sulphate saturation before being directed to the lithium carbonate plant.

The production of lithium chloride, feedstock for lithium metal and lithium hydroxide applying causticization with potassium hydroxide, is feasible as the remaining SO_4 can be easily removed with a calcium chloride solution. The generated lithium chloride is then concentrated in ponds and finally evaporated and crystallized. This alternative route will have less environmental impact and low investment cost.

1.20.5 Fresh Water Supply

Further investigation is required to confirm or replace the processing water supply assumptions of this Study. Test drilling should be done on site to determine the most likely location of such a well and work should begin on securing those rights and/or permits.

1.20.6 Feasibility Study

It is recommended that LIS focus on the further assessment and development of the Tramo concession. Data collected from the testwork and the numerical model should be used to inform a pre-feasibility (PFS) or feasibility study (FS) that includes a more detailed estimation of capital and operating costs as well as more definition on the marketing of the final product.

1.20.7 Geotechnical Drilling and Analysis

In support of the Feasibility or Pre-feasibility Study, geotechnical drilling and analyses should be performed to confirm the foundation requirements for all surface structures.

1.20.8 Permitting

The company should continue to advance its baseline environmental testwork and studies as well as social impact investigations to support future permit applications.

1.20.9 Estimated Cost of Recommendations

The estimated cost of the work programs recommended to support the proposed exploration program and prepare a Feasibility Study are shown in Table 1-7.

Table 1-7: Estimated Costs of Report Recommendations

Item	Estimated Cost ($USD x 1000)
Reserve Estimate	2,170
Updated Resource Estimate	2,848
Field Logistics, Support, and Reporting	1,450
Process Testwork	2,000
Fresh Water Supply Drilling	115
Feasibility Study	2,300
Geotechnical Drilling and Analyses	345
Permitting	1,150
Ongoing Monitoring	700
Subtotal	**13,078**
Contingency 10%	1,308
Total	**14,386**

2 INTRODUCTION

2.1 Authorization and Purpose

Lithium South Development Corporation (the Company or LIS) retained JDS Energy & Mining (JDS) to provide an update of its August 2019 PEA. This PEA was prepared in accordance with National Instrument 43-101 – Standards of Disclosure for Mineral Projects (NI 43-101, Form 43-101F1, and NI 43-101CP), under the supervision of Richard Goodwin, P.Eng. of JDS, who is independent of LIS.

The potential mineral deposits discussed in this report are related to lithium in brine contained within salar deposits of SHM.

The update incorporates new costs and product pricing and is based on a new updated resource estimate and recovery process.

The updated mineral resources that is assumed for this PEA is entitled "Updated Resource Estimate – Hombre Muerto North Project NI 43-101 Technical Report, Catamarca and Salta, Argentina. It was prepared by Dr. Mark King, Ph.D., P.Geo. and Peter Ehren, M.Sc., MAusIMM (CP) and has an effective date of 5 September 2023.

In addition to the two technical reports cited above, the property has had resource declared in two other technical reports in 2017 and 2018 by Mongomery.

All figures in this Technical Report were prepared for this report, unless otherwise indicated. The results and observations presented in this Technical Report are a guide to indicate the potential viability for the HMN Project and should not be regarded as a final measure of value at this stage of study.

2.2 Report Responsibility

Three companies were used to prepare this report:

- JDS Energy & Mining (JDS), which provided study management and the prepared the economic model;
- Groundwater Insight Inc. (GWI), which conducted all geology work including the resource estimation and mineral inventory; and
- Knight Piésold Consulting (KPC), which did the facility and infrastructure design, including the layout of the processing plant, and prepared all operating and capital cost estimates taking as input the list of main equipment provided by process specialist.

There are five Qualified Persons who contributed to and are responsible for the content of this Study, all of whom are "Qualified Persons" (QPs) as defined under Canadian national Instrument NI 43-101 and are independent of LIS:

Richard Goodwin, P.Eng., is a Project Manager for JDS Energy and Mining, Inc. and a mining engineer with over 30 years of experience managing mining operations and projects in various commodities such as base metals, precious metals, PGMs, and diamonds in various domestic and international locations. Mr. Goodwin is responsible for Sections 1.1, 1.2, 1.16, 1.17, 1.18.5, 1.18.6, 1.18.9, , 2, 3, 15, 19, 21, 22, 24, 25.3, 25.4, 26.5, 26.6, 26.9, and 27 and 28 of this Technical Report.

Dr. Mark King Ph.D., P.Geo., FGC, P.Geo., is President and Senior Hydrogeologist of Groundwater Insight, Inc., and has 35 years of experience in groundwater quality and quantity projects. Dr King has extensive experience in salar environments and has been a QP on numerous lithium brine projects, ranging from early exploration to production. Dr. King is responsible for Sections 1.3 to 1.12, 1.14, 1.15, 4 to 12, 16, 20, 23, 25.1, 26.1 to 26.3, and 26.8 of this report.

Peter Ehren, M.Sc., MAusIMM (CP) is an independent Lithium Consultant with more than 25 years of experience in the industry. He started his interest in the lithium business during his master's thesis at Technical University of the Delft where he investigated for BHP Minerals the recovery of lithium from geothermal brine (Salton Sea), applying a Direct Lithium Extraction (DLE) technology. After his thesis he worked for SQM as process engineer, and R&D manager till 2007. Since 2007 he started to work as independent consultant in lithium, boron and potassium industry. He is a world expert in solar evaporation systems, phase chemistry and process developments. He has worked in the majority of lithium basins and production facility worldwide. He is one of the few consultants in the industry who has built projects from lab scale all the way through to industrial production. During this period, he brought 4 projects to DFS level. (Orocobre - Allkem, Ioneer, Millennium Lithium, Lithium Power International) He has visited and evaluated many lithium brine and minerals operations in the whole world. He is a Chartered Professional (AusIMM) and Qualified Person for NI-43-101 and JORC. Mr. Ehren is responsible for Sections 1.13, 1.18.4, 17, and 25.2 and 26.4 of this report.

Alex Mezei, P.Eng., is an independent metallurgical consultant providing general and specialized services in metallurgical process flowsheet testing, design, development, derisking and implementation. Alex has been involved in process economics assessment (Capex, Opex) for several projects. Specific technical expertise includes hydrometallurgy, liquid-solid separation, rheology, and mineral processing. Projects and commodities include extraction of cobalt, lithium, nickel, graphite, manganese, as well as base, rare and precious metals. More recent experience includes carbon capture projects. Mr. Mezei is responsible for Section 13.

Ken Embree, P.Eng. is the President of Knight Piésold Ltd. (Canada). He has a Bachelor of Science degree in geological engineering, with over 35 years of experience in the mining industry including site investigations, design, construction, operation, and closure projects, with a focus on waste and water management. He has also worked on the design and construction of hydroelectric projects. His experience includes projects in North/South/Central America, Asia, Africa, and Europe. Mr. Embree is responsible for Sections 1.18.7, 18, and 26.7 of this report.

2.3 Overview of Brine Evaluation Framework

NI 43-101 applies to all disclosures of technical information for mineral properties owned by, or explored by, companies which report these results on stock exchanges within Canada. NI 43-101 defines the term “mineral project” as: “any exploration, development or production activity in respect of a natural solid inorganic material, including industrial minerals.”

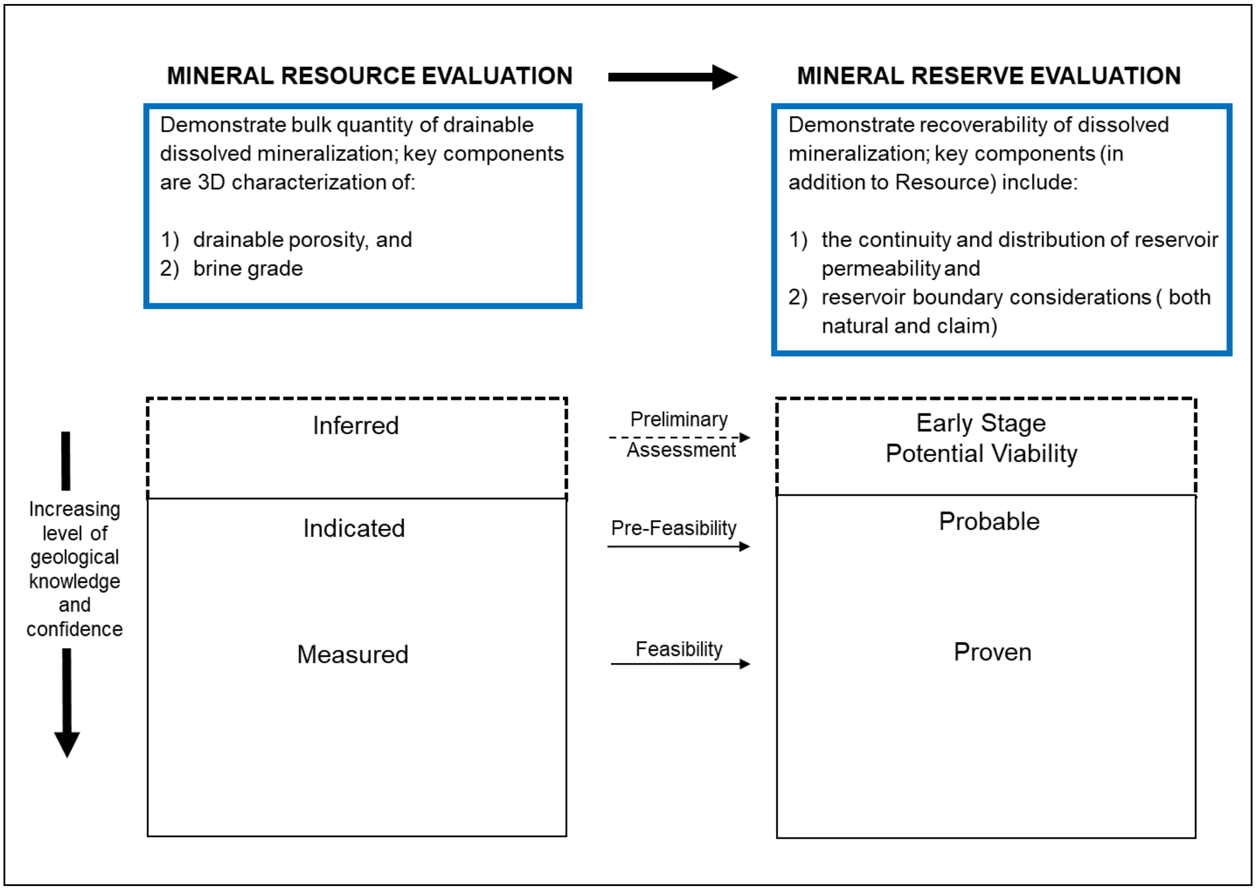
The exploration activity on the HMN Project is in respect to lithium, a natural solid inorganic material and classified as an industrial mineral. The natural occurrence of lithium within a liquid, i.e., brine, does not preclude the application of the NI 43-101 reporting framework, although certain evaluation approaches are required that will be different to those used for solid phase mineralization.

NI 43-101 provides a rigorous reporting framework for mineral projects hosted in brine while also providing the necessary flexibility to accommodate the characteristics and analytical parameters specific to brine. Furthermore, reporting on mineral projects hosted in a brine pursuant to NI 43-101 provides the necessary level of protection expected by investors.

The approach used by GWI to evaluate lithium brine projects is based on the framework in the Canadian Institute of Mining Metallurgy and Petroleum (CIM) Standards (CIM, 2014), with some enhancements to accommodate the special considerations for brine (e.g., Hains, 2012). The CIM Standards define a Mineral Resource as: “a concentration or occurrence of solid material of economic interest in or on the Earth’s crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction.”

The evaluation framework used for this Project is shown on Figure 2-1. The figure identifies the primary enhancements to conventional, solid phase, mineral evaluation, namely: 1) characterization of host formation porosity (for Resources), and 2) characterization of host formation permeability and boundary conditions (for Reserves). Certain components of this framework are enhancements of, or otherwise in addition to, those already contained in the CIM Standards (2014).

Figure 2-1: Evaluation Framework for Mineral Prospects, with Brine Specific Features Outlined in Blue



Source: GWI (2024)

2.4 QP Property Inspection and Interaction

Dr. Mark King (QP) visited the HMN Project on two occasions during the 2022-2023 field exploration program. During these visits, Dr. King conducted the following activities at the HMN Project and office that are relevant to the current Report:

- October 2022:
  - Visited the Project properties for two days on October 12 and 13, 2022, to view all HMN Project properties and to observe drilling and sampling techniques, to conduct independent brine sampling, and to review core at the Alba Sabrina property; and
  - Visited the LIS offices and laboratory in Salta, Argentina on October 11 and 15, 2022 to review processing work and QA/QC procedures with the LIS expert team.

- March 2023:
  - Visited the Project properties for one day on March 22, 2023, to observe drilling and brine sampling, to collected independent brine samples, and to review drill core from the Natalia Maria property; and
  - Met with the LIS expert team at the LIS offices in Salta, Argentina on March 26, 2023.

Mr. Richard Goodwin visited the property on 19 December 2018 with Fernando E. Villarroel of NRG Metals Inc. Both drill sites were visited as well as one optional site for location of the concentration ponds and processing facility. They were accompanied by Gonzalo Laciar of Knight Piésold's Mendoza office. On 20 December 2018, Mr. Goodwin visited the Universidad Nacional de Salta and observed the ongoing evaporation testwork.

2.5 Statement of Independence

All QPs are independent of LIS, as such terms are defined by NI 43-101. They have no material interest in LIS or mineral properties in which LIS has any interest. The relationship between the QPs and LIS is solely one of professional association between client and independent consultant. The terms of payment of the QPs in no way relied upon the outcome of this study.

2.6 Units and Currency

Unless otherwise stated, all units used in this report are metric. The concentration of dissolved brine constituents, including lithium, is reported in milligrams per litre (mg/L), unless otherwise noted. All currency values in the report are expressed in US dollars (US$).

2.7 Use of Report

This Technical Report was prepared with data and information provided by LIS and third parties, in accordance with National Instrument 43-101 and 43-101F1 pursuant to the agreed contractual terms of the present engagement. All QPs warrant that reasonable care was exercised in preparing this report, that the report meets or exceeds industry standards, and that it is subject to the terms and conditions of engagement with LIS.

This Technical Report is considered current as of March 4, 2024.

3 RELIANCE ON OTHER EXPERTS

The opinion of an Argentinian lawyer, Jorge Vargas of Vargas Galíndez Abogados, was relied upon to establish the mining rights and permit status of the property, as described in Section 4.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location and Description

The HMN Project is located in Antofagasta de La Sierra Department, Catamarca Province and Los Andes Department, Salta Province, northwestern Argentina (Figure 4-1). The Project comprises six concessions with a total area of 3237 ha, situated in the northern part of SHM. These concessions are the primary target for lithium brine exploration and the focus of this Technical Report.

Three additional properties related to the HMN Project are located approximately six km N of the SHM in Salta Province. These properties, known as the Sophia properties, comprise three non-contiguous concessions with a total area of 2365 ha. They were acquired as a prospective freshwater source for the HMN Project, and as a location for anticipated future plant and processing facilities (Section 5.3.6).

4.2 Type of Mineral Tenure

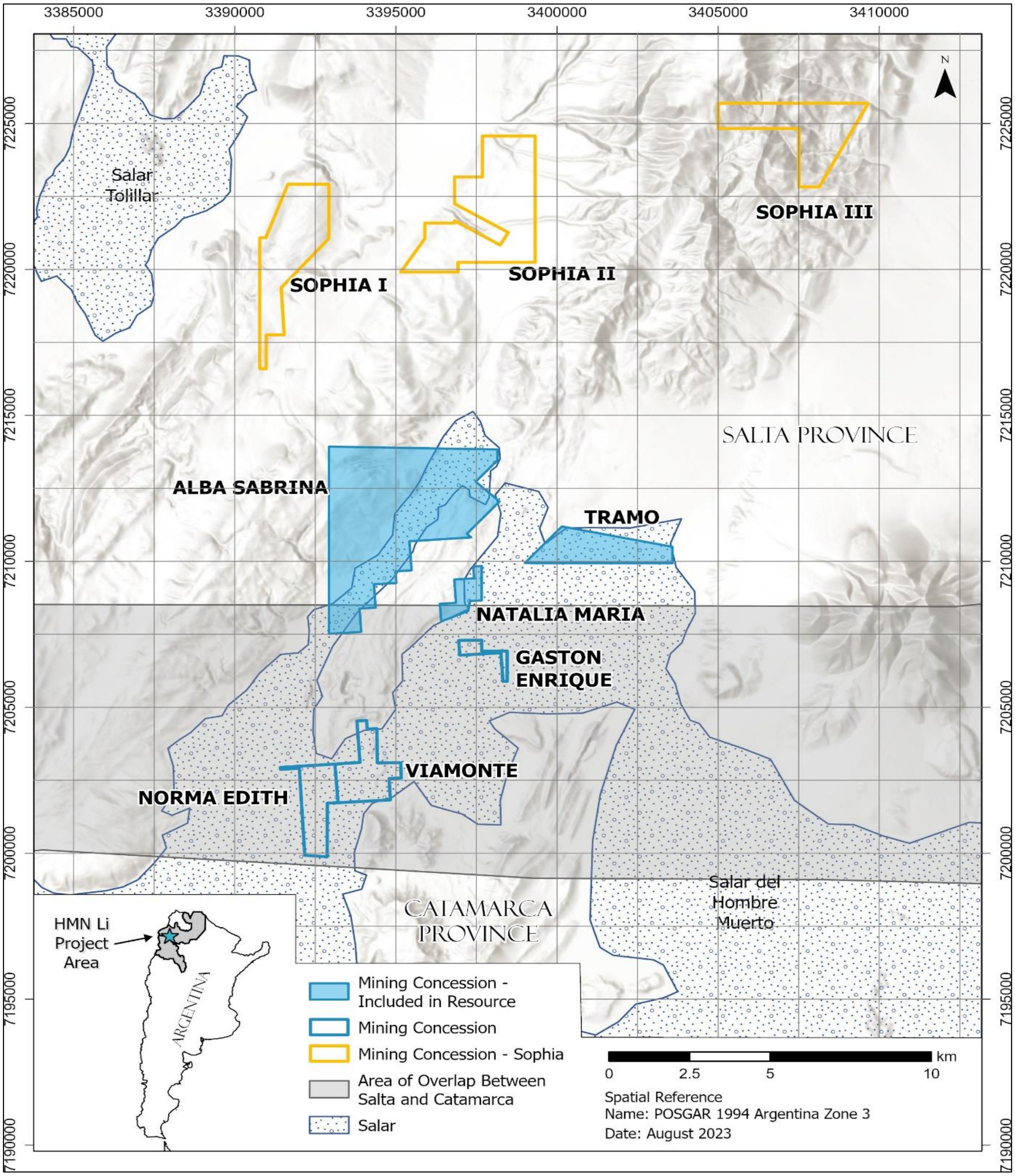
Sr. Jorge Vargas Gei, of the law firm Vargas Galíndez Abogados, Mendoza, Argentina provided all information regarding the legal status of the HMN Project properties (Sections 4.2 and 4.3). This information type is not the responsibility of the QPs. Details of the property information are provided in Table 4-1 and property locations are shown on Figure 4-1.

In Argentina, renewable and non-renewable natural resources are the property of each province. Provinces have the authority to grant mining rights to private entities and then regulate any exploration and mining activity. There are two types of mining tenure granted by the provinces under Argentine mining laws:

- Exploration Concessions (Cateos); and
- Mining Concessions (Minas).

The HMN Project and associated properties include nine Mining Concessions (5602 ha) (Table 4-1). Mining Concessions grant to LIS, through its wholly owned Argentinian subsidiary NRG Metals Argentina S.A., the right to exploit the mineral resources, including water, hosted within the Alba Sabrina, Natalia Maria, Tramo, Gaston Enrique, Norma Edith, Viamonte, Sophia I, Sophia II, and Sophia III properties. These concessions remain the property of LIS as long as LIS meets the obligations in the National Mining Code, as outlined in Section 4.3.

Figure 4-1: Property Map for the Lithium South HMN Project



Source: GWI (2023)

Table 4-1: Status of Concessions in the Lithium South HMN Project and Associated Properties

Property Name	File #	Title Holder	Claim Type	Provincial Jurisdiction	Area (ha)	Included in 2023 Resource?
Alba Sabrina	18.823	NRG Metals Argentina S.A.	Mining	Salta/Overlap	2089	Yes
Natalia Maria	18.830		Mining	Salta/Overlap	115	Yes
Tramo	18.993		Mining	Salta	383	Yes
Gaston Enrique	18.824		Mining	Overlap	55	No
Norma Edith	18.829		Mining	Overlap	285	No
Viamonte	13.408		Mining	Overlap	310	No
Area (ha)					3237	
Sophia I	736816	NRG Metals Argentina S.A.	Mining	Salta	677	No
Sophia II	736818		Mining	Salta	1073	No
Sophia III	736819		Mining	Salta	615	No
Area (ha)					2365	
Total Area (ha)					**5602**	

Source: Sr. Jorge Vargas Gei (2024)

Portions of the HMN Project properties are located within a zone of overlapping jurisdiction between the provinces of Salta and Catamarca, where the proclaimed northern border of Catamarca overlaps with the proclaimed southern border of Salta. The locations of the properties in relation to the overlap zone are shown on Figure 4-1, and are as follows:

- Tramo, Sophia I, Sophia II, and Sophia III properties are entirely within the province of Salta;
- Alba Sabrina and Natalia Maria properties are predominantly within the province of Salta, and partially in the overlap zone; and
- Gaston Enrique, Norma Edith, and Viamonte are entirely within the overlap zone.

In 2015, the Argentine Supreme Court determined that the overlap dispute must be resolved by the National Congress. Currently, while a final resolution is anticipated, the governments of both provinces have entered into a cooperation agreement for the development of mining activity in this zone.

On January 31, 2023, NRG Metals Argentina S.A. and Posco Argentina S.A.U. entered into a Cooperative Development Agreement, to avoid future conflicts over the zone of overlapping jurisdiction. The agreement relates to the portions of the HMN Project properties located within this zone and is summarized in Section 4.3.3.

4.3 Mining Rights Opinion

4.3.1 Summary

LIS legal counsel states that:

- NRG Metals Argentina S.A. is an Argentinian subsidiary of LIS and is wholly owned by LIS;
- NRG Metals Argentina S.A. has a good and valid, legal, and beneficial title to the Alba Sabrina, Natalia Maria, Tramo, Gaston Enrique, Norma Edith, Viamonte, Sophia I, Sophia II, and Sophia III properties;
- The Alba Sabrina, Natalia Maria, Tramo, Gaston Enrique, Norma Edith, and Viamonte properties are subject to the Moreno Option Agreement between NRG Metals Argentina S.A. and Mr. Moreno and Ms. Sala dated May 17, 2017, the Addendum, and the Second Addendum. As of the date of the Title Opinion (April 8, 2024), all payments (US$5.65 million) have been made and all shares (10 million common shares) issued according to the schedule outlined in the Agreement and associated Addendums;
- Other than the obligations arising out of the Moreno Option Agreement, the Addendum, and the Second Addendum (Section 4.3.2), all properties are free and clear from any liens, charges, or encumbrances, recorded in the relevant registries;
- There are no expiry dates for concessions in Argentina, provided that annual fees are paid. The annual fees for the Alba Sabrina, Natalia Maria, Tramo, Gaston Enrique, Norma Edith, and Viamonte properties are up to date as of the data of the Title Opinion. There are currently no annual fees for the Sophia I, II, and II properties; and
- As of the date of the Title Opinion (April 8, 2024), all properties are in good standing and comply with applicable regulations.

4.3.2 Royalties

As per the Moreno Option Agreement, NRG Metals Argentina S.A. exercised the purchase option and signed a deed of transfer of the mining rights to the Alba Sabrina, Natalia Maria, Tramo, Gaston Enrique, Norma Edith, and Viamonte properties on May 12, 2022. Mr. Moreno and Ms. Sala retain a 3% royalty on the production of lithium carbonate and/or from any other product derived from brine operations on the properties included in the Agreement.

Law No. 24.196 of Mining Investments establishes a mining royalty of up to 3% of the mine head value of the extracted ore. Such value is defined as the sales value less certain cost related to mineral processing (refining, logistics, marketing, administration) but, excluding the extraction cost. LIS would be required to pay this royalty to the provincial government of Salta if and when the HMN Project achieves production capacity.

4.3.3 Posco Cooperative Development Agreement

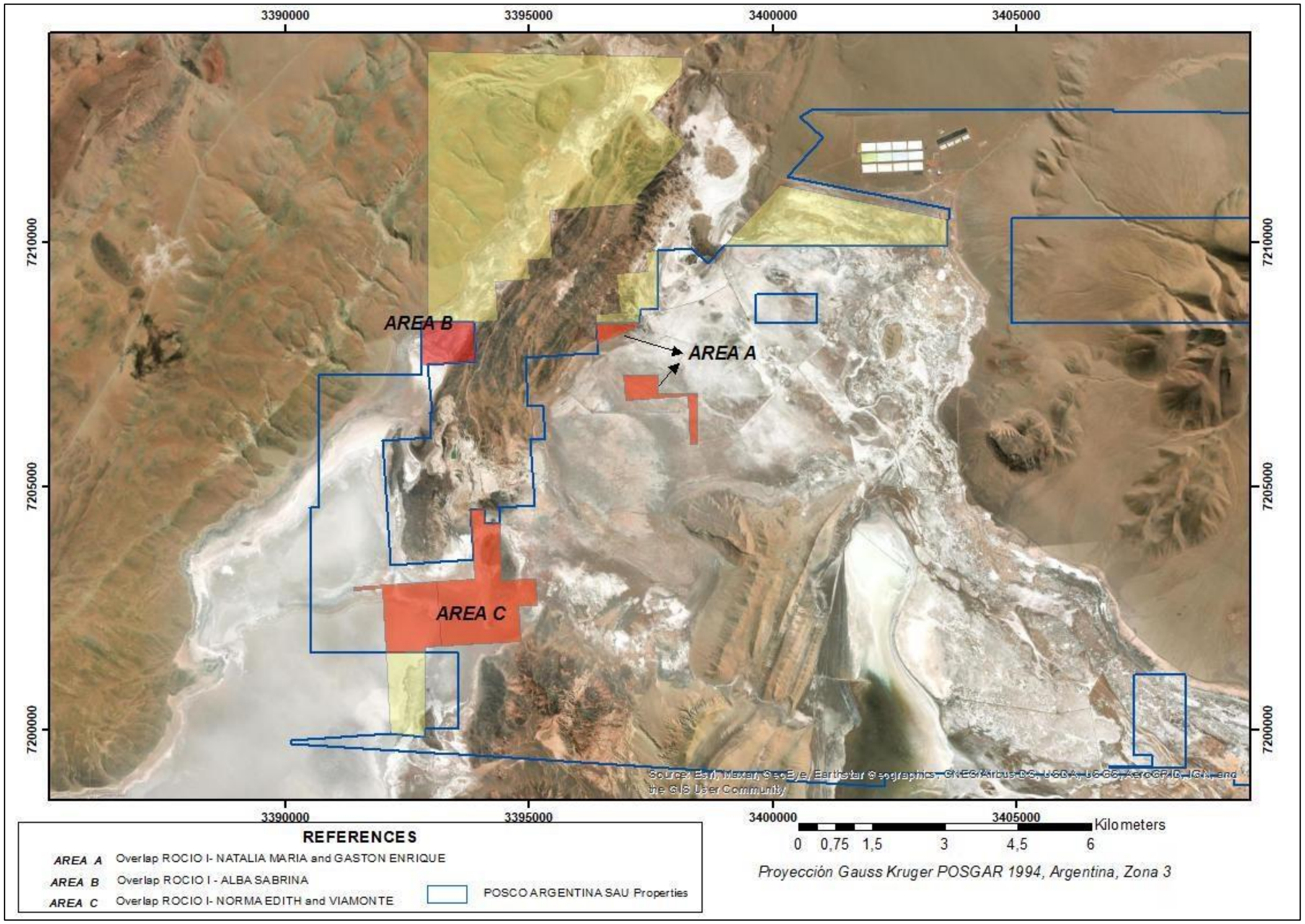
The Cooperative Development Agreement between NRG Metals Argentina S.A. and Posco Argentina S.A.U. was entered into on January 31, 2024. The main terms of the agreement are as follows:

- The Agreement is intended to avoid any potential conflict between the parties on overlapping mining claims Rocio I (owned by Posco) and Alba Sabrina, Gaston Enrique, Natalia Maria, Norma Edith, and Viamonte (owned by NRG Metals, Argentina S.A.) (Figure 4-2);

- The overlapping areas in Alba Sabrina, Gaston Enrique, and Natalia Maria (Areas A and B) will be for exclusive surface use, excluding exploitation activities; and

- The overlapping area in Norma Edith and Viamonte (Area C) will be jointly and cooperatively explored and exploited by both parties. Any brine produced from this area with be shared on a 50/50 basis.

Figure 4-2: Cooperative Development Agreement with Posco Argentina S.A.U.



Source: Sr. Jorge Vargas Gei (2024)

4.4 Environmental Liabilities and Considerations

An Environmental Baseline Study (EBS) was conducted for the Alba Sabrina, Natalia Maria, Tramo, Gaston Enrique, Norma Edith, and Viamonte properties between August 2021 and March 2022 to fulfill requirements under the General Environmental Law, Mining Code No. 24.585. The findings of the EBS are summarized in Section 20.1. The following environmental considerations were documented during the study (ECA, 2022):

- No threatened plant or animal species were detected on any of the HMN Project areas surveyed during the EBS. Furthermore, the sites surveyed do not represent habitat areas of high biodiversity value in the context of the Hombre Muerto basin;
- The HMN Project falls within the La Vicuña Nature Reserve Area (ECA, 2022). Provincial Law 6.709/93 declares the vicuña (Vicugna vicugna) as a protected species in several regions within Argentina, including Los Andes Department, Salta Province. Although no vicuñas were observed on the properties, they may transit the area to access peripheral parts of the Hombre Muerto basin. It is necessary to develop strategies to manage future development of the HMN Project so that it does not interfere with vicuña movements; and
- Surface water resources are important for plant and animal communities, local livestock production, and human settlements. In particular, the base of the alluvial fan east of Cordón del Gallego on the Alba Sabrina property is an important seasonal water source for wildlife in the area, and natural freshwater water runoff to the area should not be diverted.

4.5 Permits

A detailed summary of permitting activities related to the HMN Project is provided in Section 20.

4.6 Closing

There are no other known significant risks to the HMN Project, besides those noted in this Technical Report, which may affect access, title, or otherwise the right or ability to perform work on the properties.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Accessibility

The SHM is commonly accessed from the city of Salta, according to the following directions (Figure 5-1):

- From Salta, drive W on National Route 51 through the town of San Antonio de los Cobres (170 km) and then continue W toward Puestos Cauchari (70 km);
- Turn S at Puestos Cauchari onto Provincial Route 27 and continue S to the town of Estación Salar de Pocitos, for approximately 40 km;
- Turn S onto Provincial Route 17 and continue S for approximately 100 km; and
- Turn W onto Cuesta de Napoleón Road and pass through the Sophia II property. SHM is accessed from the NW (Figure 5-1 and Figure 5-2).

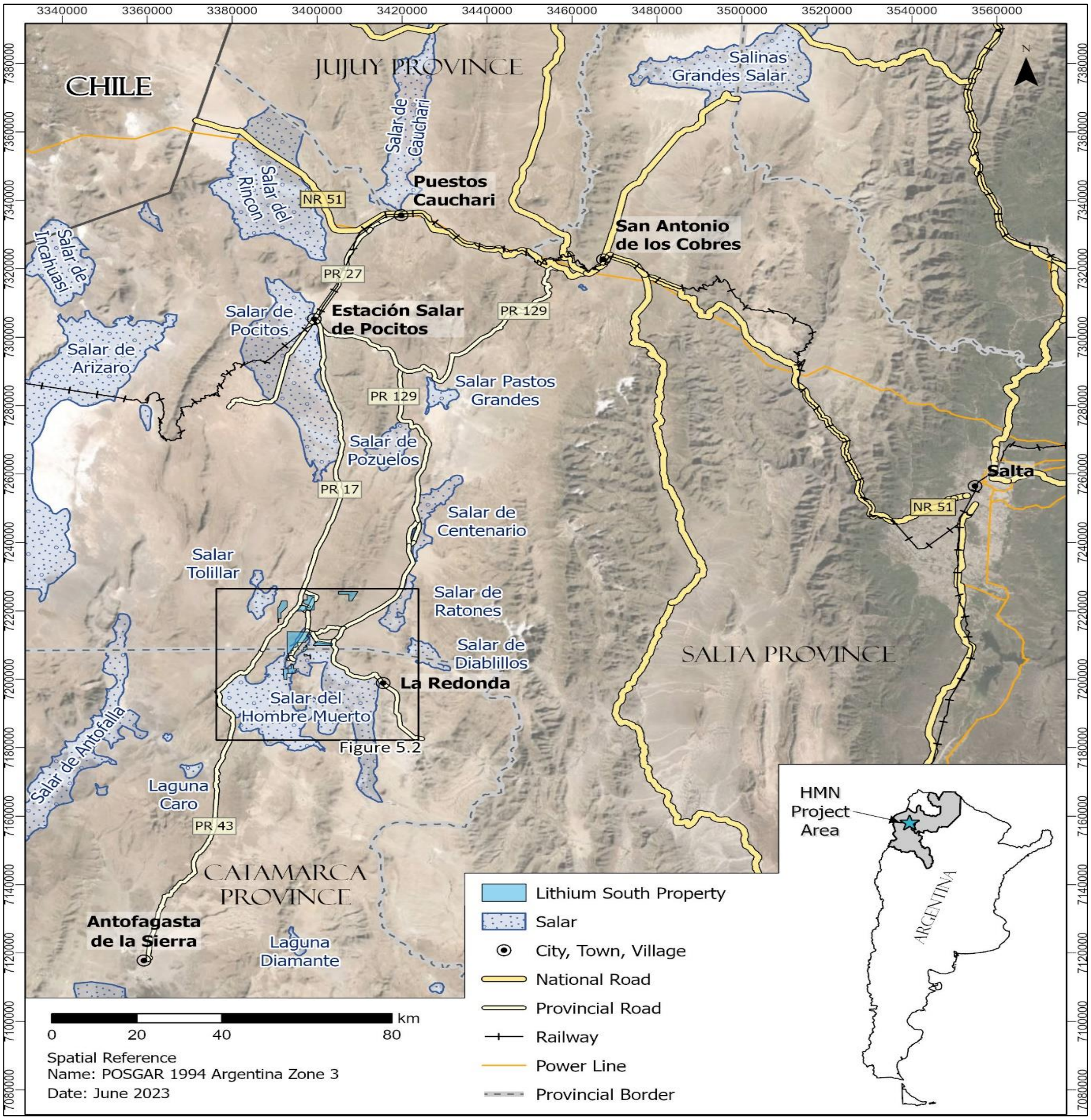
5.2 Local Resources

The HMN Project straddles the Salta and Catamarca Provinces in the southeastern Puna region of Argentina. Local resources within the Puna are minimal, and most supplies used for mining and exploration at SHM are transported in by truck from Salta and San Antonio de Los Cobres. Distances to the closest city, townships, and settlements are as follows (Figure 5-1):

- The capital city of Salta (719,000 inhabitants) is located approximately 380 km NE by road and is the closest major city to the Project;
- Antofagasta de La Sierra, Catamarca Province (1300 inhabitants) is the closest township to the Project and is equipped with a hospital, a few small hotels and restaurants, general stores, a school, internet access, cell phone reception, and a landing strip for small planes. It is located approximately 100 km S of the HMN Project on Provincial Route 43;
- The town of San Antonio de Los Cobres, Salta (5500 inhabitants) is located about 210 km NE of the Project by road. The town has shops, restaurants, hotels, hospitals, schools, and government agencies including the Army and the Argentine National Gendarmerie; and
- The nearest human settlement, La Redonda, is approximately 25 km SW of the Tramo Property by road. La Redonda is a small community of approximately 20 llama and sheep herders.

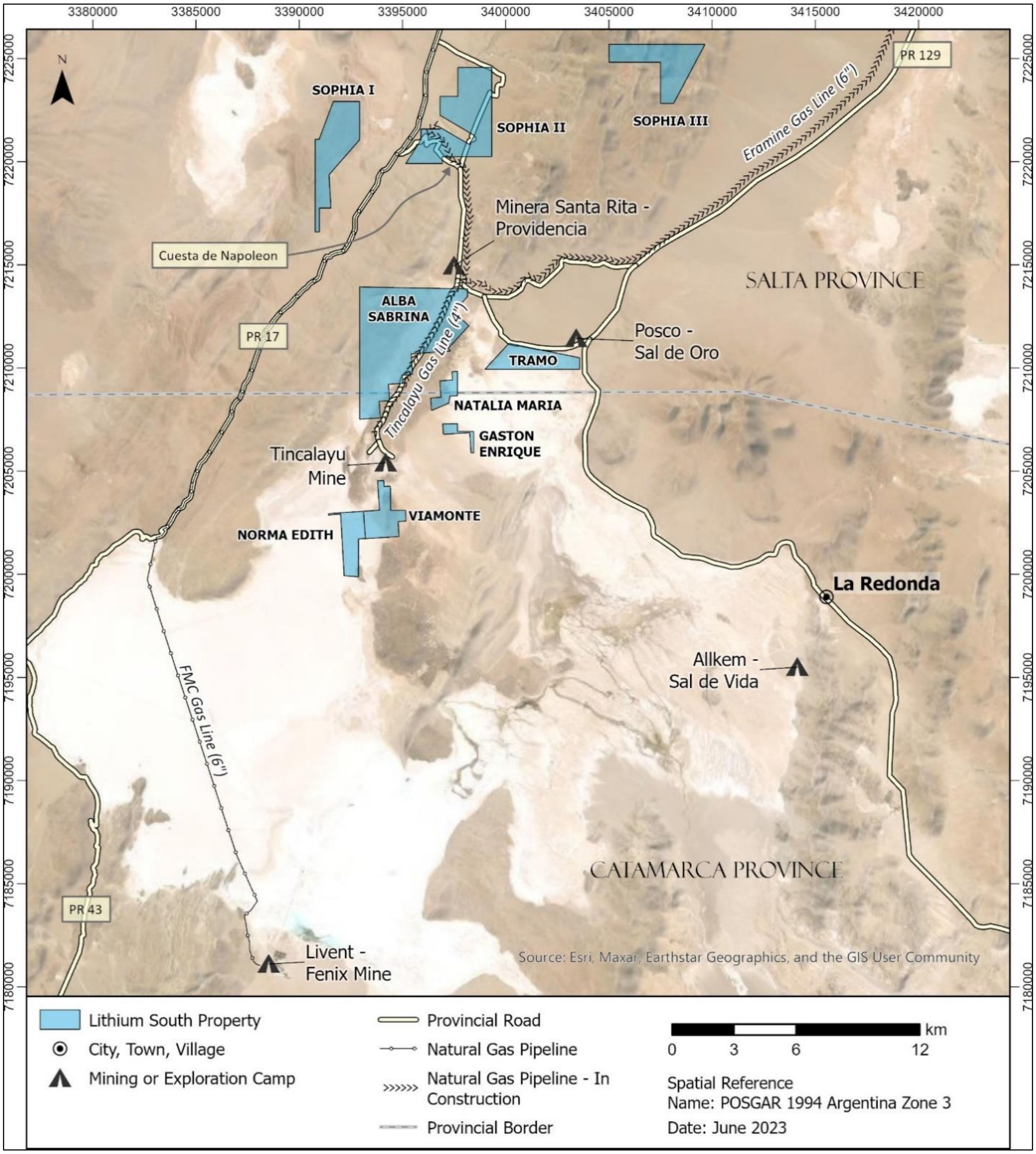
Some of the mining camps near the HMN Project include the Tincalayu Mine (Borax Argentina), Fénix Mine (Livent Corp), Sal de Oro Project (Posco Argentina), Sal de Vida Project (Allkem), and Providencia Project (Minera Santa Rita) (Figure 5-2). Most of these camps have medical facilities, and the Livent and Posco projects also have airstrips.

Figure 5-1: Access Routes and Infrastructure Around the HMN Project



Source: GWI (2023)

Figure 5-2: Access Routes, Infrastructure, and Camps Near the HMN Project



Source: GWI (2023)

5.3 Infrastructure

5.3.1 Infrastructure Summary

Infrastructure in the Argentine Puna is basic and minimal. Existing infrastructure near the HMN Project supports the mines that are currently operating (Fénix and Tincalayu) and the construction of advanced-stage projects (Sal de Oro, Sal de Vida, Centenario-Ratones, Hombre Muerto West).

Infrastructure requirements for the HMN Project will be further evaluated in follow-up assessment work. Preliminary possibilities and existing infrastructure that may be utilized to support development at the Project are in summarized Sections 5.3.2 through 5.3.7.

5.3.2 Electric Power

The closest major powerline to the HMN Project is approximately 160 km N in Puestos Cauchari (Figure 5-1). The 600-megawatt, 375-kilovolt power line extends between Salta, Argentina and Mejillones, Chile. Smaller communities within the Puna, including Estación Salar de Pocitos and La Redonda, and mining camps are serviced by diesel generators.

5.3.3 Natural Gas Pipeline

Natural gas is currently supplied to SHM via the FMC Gas Line, a six-inch diameter pipeline that connects the Puna pipeline at its current terminus near the intersection of Provincial Routes 27 and 17 in Estación Salar de Pocitos to the Fénix Mine (Figure 5-2). The pipeline is approximately two km NW of the Alba Sabrina property, at the closest point.

Two additional pipelines are currently under construction near the HMN Project (Figure 5-2):

- The Eramine Gas Line is a six-inch diameter pipeline designed to supply natural gas to the Eramine Centenario-Ratones Project. This pipeline connects to the FMC Gas Line where the Cuesta de Napoleón Road intersects with Provincial Route 17 and crosses through the Sophia II property and approximately 500 m N of the Alba Sabrina property en route to Salar de Ratones; and

- The Tincalayu Gas Line is a four-inch diameter natural gas pipeline that crosses over the Alba Sabrina property. The pipeline will provide natural gas to the Tincalayu Mine from the Puna and Eramine pipelines.

5.3.4 Railway

A 940 km long, narrow-gauge railway that connects Salta, Argentina to Antofagasta on the coast of Chile was completed in 1948 (Figure 5-1). The railway at the closest point is located approximately 100 km N of the HMN Project, in Estación Salar de Pocitos. The railway is currently being reactivated through agreements between regional governments. At the time of this

Technical Report, a small section of railway near San Antonio de Los Cobres, Argentina is actively used for tourism.

5.3.5 Roads

The HMN Project can be accessed from Salta year-round by a well-maintained network of roads. Two gravel Provincial Routes, 17 and 129, pass within 10 km of the Project. From the Provincial Routes, the Project is accessed by the unpaved Cuesta de Napoleón mining road, which links Provincial Route 17 and 129, and by dirt roads within the salar.

5.3.6 Water Supply

Fresh water in and around SHM is limited and potable water is trucked in. Water for general use in the northern SHM is obtained from a spring located five km N of the Project and managed by Borax Argentina for use at the Tincalayu Mine. The Sophia I, II, and III properties (Figure 5-2) are currently being evaluated as a potential source for industrial water required for future operations, including brine processing.

5.3.7 Camp and Communications

There are currently no camp facilities onsite at any of the HMN Project properties. The camp operated by Minera Santa Rita, just north of the Alba Sabrina property at the Providencia Project, is currently used to support exploration activities at the Project (Figure 5-2). Communication onsite is by satellite phone, and additional forms of communication and internet are available at the camp.

5.4 Physiography

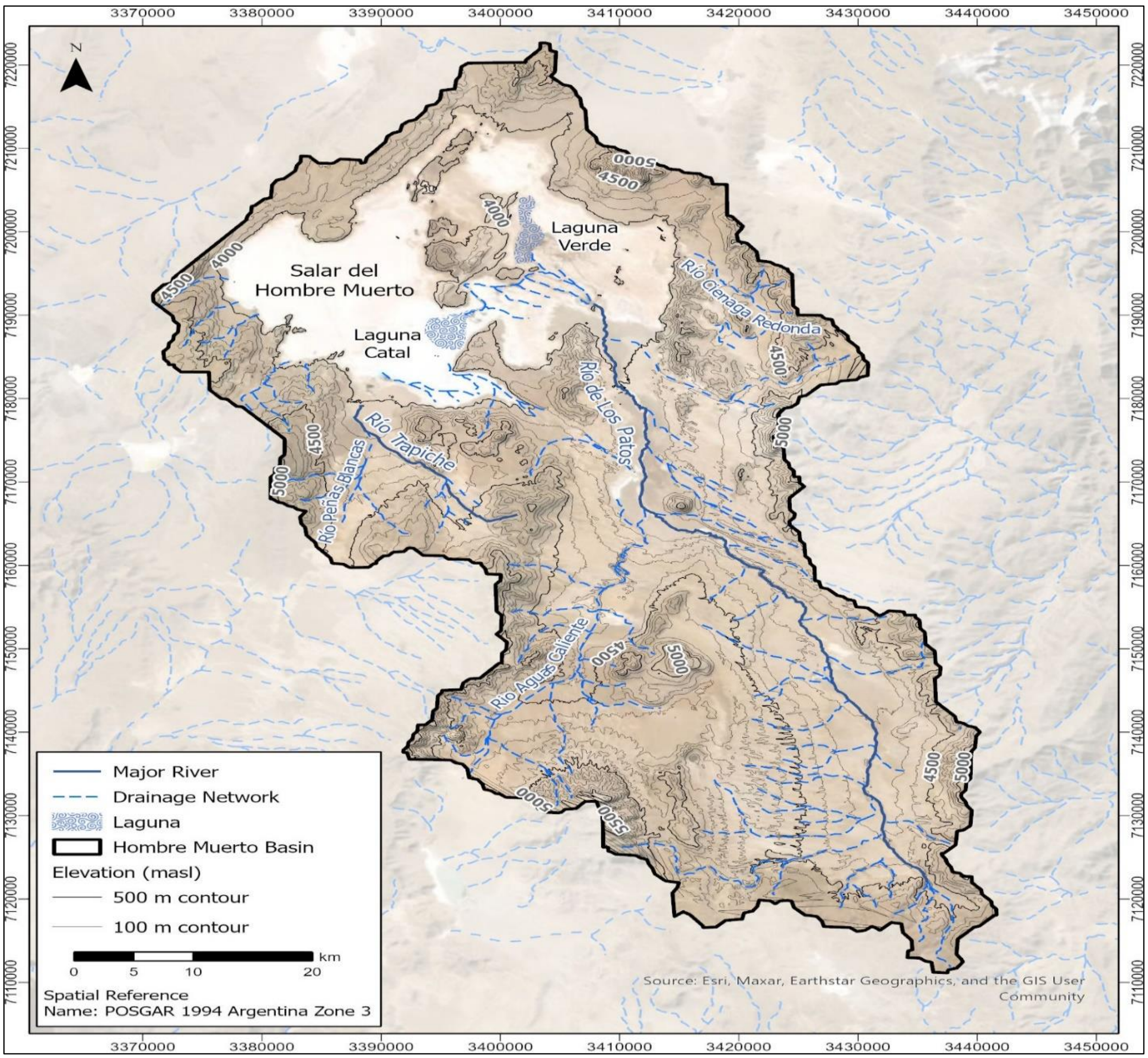
The SHM occupies an area of approximately 590 km^2 in the northern and lowest portion of the Hombre Muerto basin, an approximately 3900 k m^2 N-S elongated endorheic basin (Figure 5-3). The salar has an approximate average elevation of 4000 masl and the basin is surrounded by mountains with elevations over 5000 masl. Cerro Gallan is a volcanic caldera in the southern end of the Hombre Muerto basin. With an elevation of 6100 masl, it is the highest point in the basin. The highest point in the northern basin is Cerro Ratones (5790 masl). This andesitic stratovolcano separates the Hombre Muerto basin from the Centenario-Ratones basin to the northeast.

SHM is divided into the Eastern (Subcuenca Oriental) and Western (Subcuenca Occidental) Subbasins by three fault-bounded bedrock remnants: the Hombre Muerto Peninsula in the south, the Farallón Catal in the centre, and Tincalayu Peninsula in the north (Figure 5-4). The Eastern and Western Subbasins remain hydraulically connected through the salar deposits that infill the low-lying areas between the bedrock remnants (Integral, 2023).

The Farallón Catal is a homoclinal structure that dips to the east and rises approximately 400 m above the salar surface. It has a hilly to strongly hilly relief with slopes ranging between 12 and

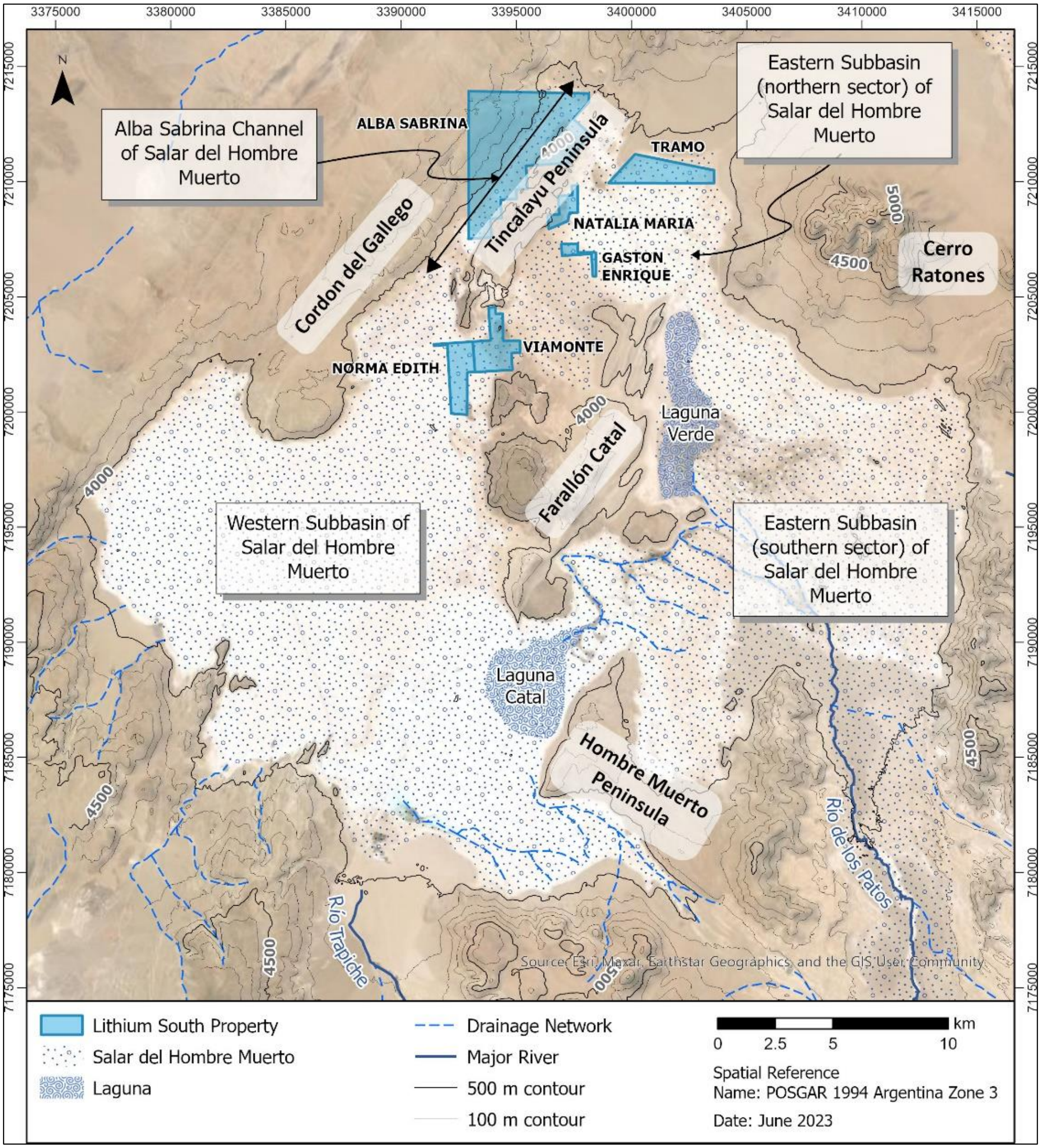
30% (ECA, 2022). The northwestern part of the salar is transected by the NE-SW trending Tincalayu Peninsula, forming the channel occupied by Alba Sabrina to the west and the northern sector of the Eastern Subbasin to the east. To the west, the Alba Sabrina channel is bound by the NE-SW trending Cordon del Gallego Range, which reaches elevations of up to 4600 masl. The northern margin of the salar is bordered by large, gently sloping alluvial fans. The location, topography, and geographic features of the HMN Project properties are shown on Figure 5-4.

Figure 5-3: Topography of the Hombre Muerto Basin



Source: GWI (2023)

Figure 5-4: Geographical Features of SHM



Source: GWI (2023)

5.5 Climate

The Argentine Puna is a cold, high altitude desert with an intense Andean Continental type climate. Precipitation, temperature, relative humidity, solar radiation, and wind speed for the SHM are summarized in Table 5-1 based on data from the following sources:

- Santa Rita weather station, Providencia Project: installed as part of the EBS at the HMN Project, and includes data from December 2018 – January 2022 (ECA, 2022); and

- Fénix Camp weather station, Fénix Mine: reported data from 1992-2001 (Montgomery & GAI, 2012).

The following general trends are noted:

- Precipitation trends are similar between the climate data sources with annual average values of 99.6 mm and 77.4 mm;

- Annual precipitation can be highly variable but is consistently low. Over the four complete years of record at the Santa Rita weather station (2018 through 2021), minimum and maximum annual precipitation ranged from 5.4 mm to 177.6 mm;

- Most of the precipitation (65% to 90%) occurs in the wet summer months of December, January, February, and March;

- The average annual temperature is approximately 5ºC, with a wide range varying from -20 to 27ºC, and daily variations of up to 35ºC;

- Trends in relative humidity tend to follow those of precipitation. Compared to dry months, the wettest months (typically December through March) have higher humidity by a factor of 1.5 to 2 times. On an average annual basis, relative humidity is 32%;

- Solar radiation is highest between October and March, with the maximum occurring in December; and

- Strong predominantly W, WNW, and WSW winds are characteristic of the Puna Region. The average annual wind speed is approximately 10 km/h, and maximum wind speeds of over 80 km/h can occur during the dry winter season. During the summer, warm to cool winds generally occur after midday and winds are usually calm during the night.

Table 5-1: Monthly Climatic Averages for the SHM

Climate Parameter	Month												Annual[1]
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Avg. Precip. (mm) [2]	11.8	10.0	4.3	0.1	0.3	0.2	0.0	0.1	0.6	0.0	0.0	72.2	99.6
Avg. Precip. (mm) [3]	35.6	20.0	7.8	1.1	0.7	1.0	1.2	0.9	1.6	0.0	0.4	7.1	77.4
Daily Temp. Mean (ºC) [2]	9.8	11.3	9.1	6.2	1.0	-0.9	-0.4	1.2	4.2	6.2	9.0	10.1	5.6
Daily Temp. Mean (ºC) [3]	11.7	11	9.1	5.6	1.6	-0.8	-1.6	0.4	2.7	5.4	7.4	9.6	5.2
Relative Humidity (%) [2]	60.9	45.4	35.0	27.5	30.1	30.1	25.5	23.8	20.6	19.8	21.6	45.6	32.2
Solar Radiation (W/m^2) [2]	256	265	233	192	150	147	152	200	243	272	230	276	223
Wind Speed (km/h) [2]	11.6	7.0	12.4	11.2	12.7	16.2	14.4	14.2	18.6	15.2	13.9	13.0	13.4
Wind Speed (km/h) [3]	8.3	8.8	8.2	9.5	10.1	10.6	11.2	11.1	12.9	12.5	10.7	9.5	10.3

Note:
[1] Annual statistics for precipitation aggregated as sum. All other annual statistics aggregated as average.

Source:
[2] Santa Rita weather station (ECA, 2022).
[3] Fénix Camp weather station (Montgomery and GAI, 2012).

Source: GWI (2023)

5.6 Flora

High altitudes, low temperatures, saline soils, and arid climate conditions have resulted in the development of xerophytic, halophytic, and psammophilous plant communities in the Puna region of South America. Common plant groups found within the Puna include Asteraceae, Poaceae, Solanaceae, Verbenaceae, and Fabaceae (ECA, 2022). Within the Hombre Muerto basin, plant communities are predominantly found in habitats formed by freshwater inputs including streams and riverbeds, vegas, alluvial fans, and river deltas as well as in higher elevation areas away from the high salinity salar surface (de la Fuente, 2008). Results of the EBS are summarized in Section 20.1.2.

5.7 Fauna

Animal species of the Puna have also adapted to the unique and challenging climate conditions. Fauna commonly found within the Hombre Muerto basin, some of which were observed during the EBS at the HMN Project, include (ECA, 2022):

- Mammals: Native mammals include vicuña, opossum, southern viscacha, highland tuco-tuco, several species of Andean mice, Molina's hog-nosed skunk, Andean fox, Pampas cat, and puma, among others. Domesticated animals found in the area are semi-feral donkeys, llamas, sheep, mules, and goats;

- Birds: Numerous migratory and permanent bird species are found within the Hombre Muerto basin. Forty-two native bird species were identified during the EBS survey, the majority of which were observed in the fresh and brackish water environments of the Rio Patos delta and vegas. Examples of birds commonly found in the SHM include the Sierra finch, grey-faced goldfinch, Aimara dove, Puna warbler, Cory's Hawk, Andean plover, flamingos, owls, and rheas, among others; and

- Reptiles: Lizards and spiny toads are found in various habitats throughout the basin.

Animal species observed within the HMN Project properties during the EBS (ECA, 2022) are summarized in Section 20.1.3.

6 HISTORY

6.1 Previous Exploration at the HMN Project

Previous exploration by Lithium One (previously Galaxy Resources), including surface sampling and geophysical surveys, was conducted near and over some parts of the Gaston Enrique, Natalia Maria, and Tramo Properties (Montgomery & GAI, 2012). Recent exploration work carried out by LIS (previously NRG Metals Inc.) at the HMN Project, which is documented in the technical reports by Montgomery (2017; 2018) and KPC (2019), is summarized in Section 9.

6.2 History of Mineral Exploration in Salar del Hombre Muerto

In the late 1970s and early 1980s, the Dirección General de Fabricaciones Militares facilitated lithium exploration in multiple salars throughout the Argentine Puna. Through mapping, surface sampling, and shallow brine sampling, SHM was selected for evaluation (Alonso, 2020). Livent (previously FMC Corporation), through its subsidiary Minera del Altiplano S.A., acquired exploration and development rights in the western sub-basin of SHM from the Argentine federal government and Catamarca Province in 1994. Pilot lithium production at the Fénix Mine commenced in 1997, followed by commercial lithium production in 1998 (Integral, 2023). Livent is currently the sole commercial lithium producer in SHM.

Additional lithium exploration in the eastern sub-basin of SHM has been ongoing since the early 2000s. The Posco Sal de Oro Project and Allkem Sal de Vida Project have reached an advanced exploration stage and are progressing toward lithium production. Further details are presented in Section 23.

Borate extraction has been conducted at the Tincalayu Mine (Tincalayu Peninsula) since 1954. The mine was originally operated by Rio Tinto, through its subsidiary Borax Argentina (previously Boroquimica SAMICAF). Allkem (previously Orocobre) acquired Borax Argentina in 2012. Since 2007, One Borax S.A., a privately owned company, has mined ulexite from the northeastern border of the HMN Project Tramo property.

7 GEOLOGICAL SETTING AND MINERALIZATION

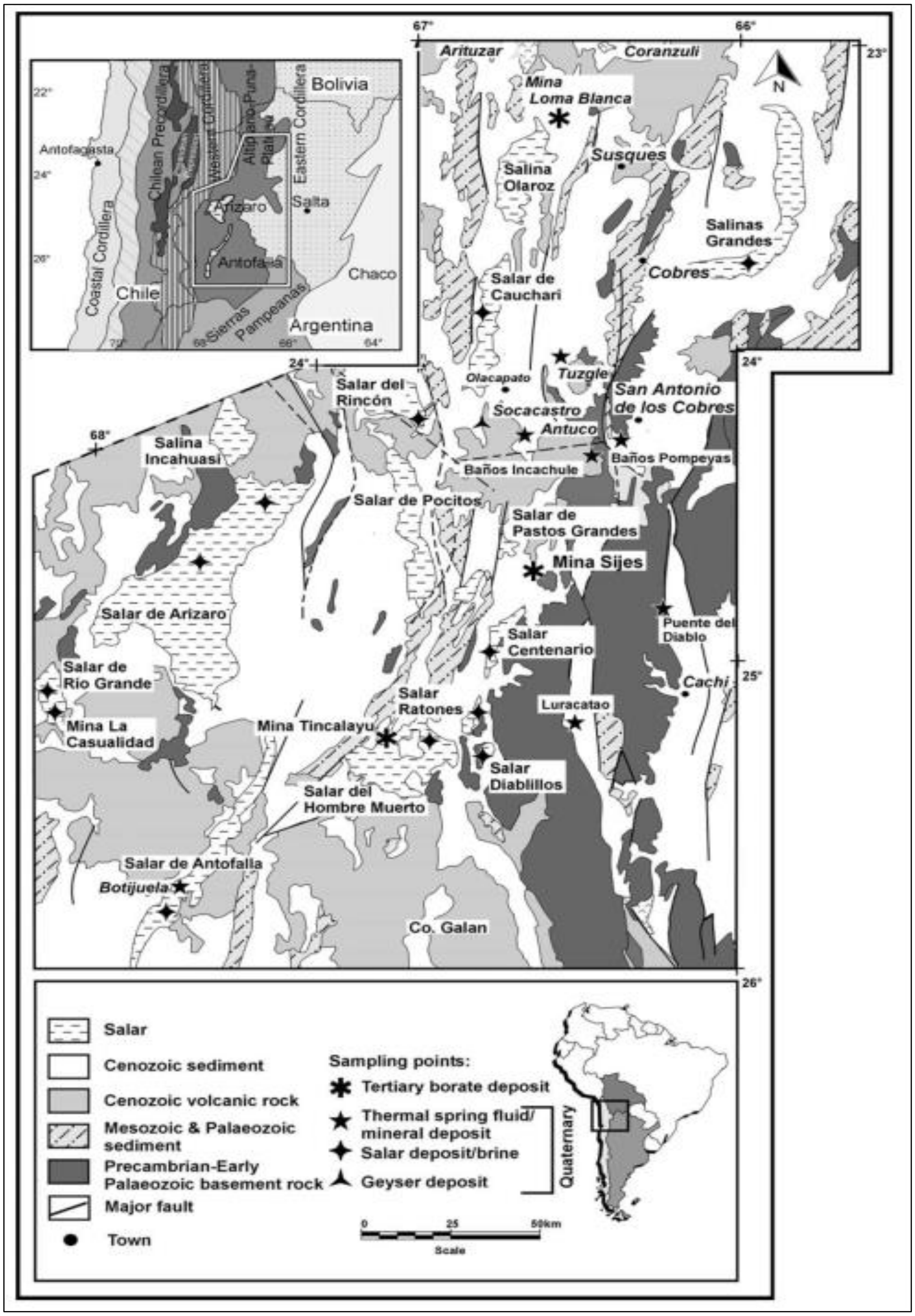
7.1 Regional Geology

Salar del Hombre Muerto is situated in the southern zone of the central Andean Puna-Altiplano plateau of South America. The plateau is confined by the reverse-faulted Sierra Pampeanas basement to the east, the magmatic arc of the Cordillera Volcánica Occidental to the west, and the Cordillera Oriental fold-and-thrust belt to the north. It spans approximately 2000 km in length by 300 km in width with an average elevation of 3700 masl. It is characterized by low-lying internally drained basins (salars), which are fault-bounded by mountain ranges and volcanic edifices (Kraemer et al., 1999; Voss, 2002; Carrapa et al., 2005; see Figure 7-1).

The Puna-Altiplano plateau was formed by a combination of compressional reverse faulting during the Middle to Late Miocene, and extension and crustal thinning from the Pliocene onward (Kraemer et al., 1999; Voss, 2002; Carrapa et al., 2005). Concurrent with these tectonic processes, erosion of uplifted regions led to the deposition of clastic sequences within the basins. This deposition reshaped regional drainage systems, leading to basin compartmentalization and the development of internal drainage systems (Carrapa et al., 2005).

Episodes of volcanic activity from the Miocene to Recent played a significant role in filling the basins and forming stratovolcanoes across the region (Voss, 2002). These geological events occurred within a predominantly arid environment, which facilitated the accumulations of evaporites, sediment, and brine within Puna-Altiplano salars, including SHM.

Figure 7-1: Simplified Regional Geology of the Puna-Altiplano Plateau



Source: Kasemann et al., (2004)

7.2 Geology of the Hombre Muerto Basin

A geological map and stratigraphic summary of the units that outcrop within the Hombre Muerto basin are provided on Figure 7-2 and in Table 7-1, respectively. They support the following geological summary of the Hombre Muerto basin and are based on geological studies by Hongn and Seggiaro (2001), among others referenced below. Bracketed numbers following the formation names below refer to associated numbers on Figure 7-2 and Table 7-1.

7.2.1 Pre-Andean Basement

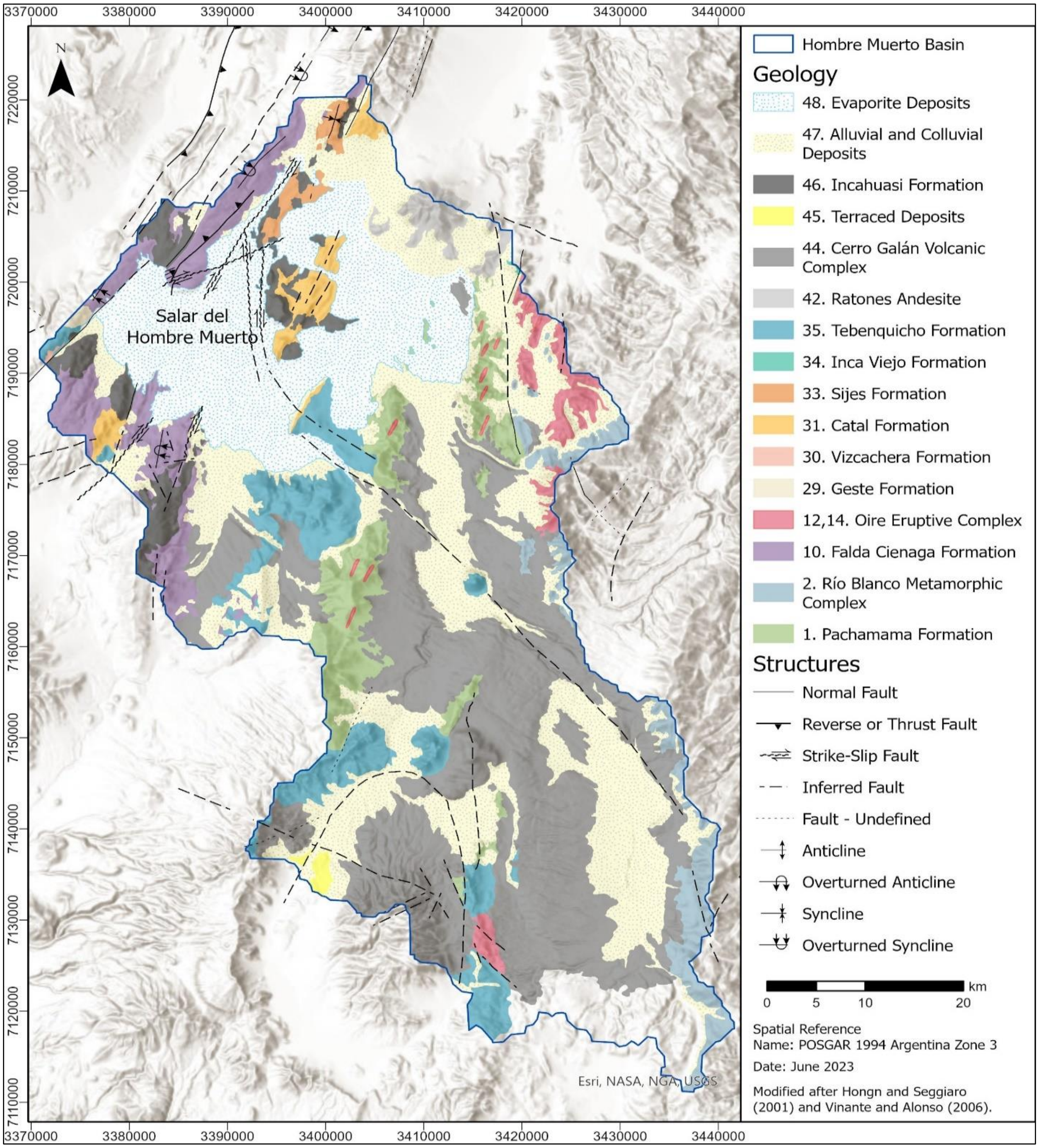
The oldest outcropping units within the Hombre Muerto basin are the Neoproterozoic-aged Pachamama Formation (1) and Río Blanco Metamorphic Complex (2). These metamorphic sequences form the pre-Andean basement, together with the Paleozoic-aged Falda Ciénaga Formation (10) sediments and Oire Eruptive Complex (12, 14) intrusions.

The Pachamama Formation is a Neoproterozoic medium-high grade metamorphic complex that outcrops along the southeastern margin of SHM and as isolated outcrops within the Eastern Subbasin. The Formation is assigned to the pre-Ordovician basement based on an estimated metamorphic peak of 508 Ma in the Hombre Muerto basin outcrops (Luccasen et al., 1996 in Hongn and Seggiaro, 2001). The Pachamama Formation is in tectonic contact with the younger Río Blanco Metamorphic Complex, which outcrops on the eastern perimeter of the Hombre Muerto basin. Both formations are intruded by Oire Eruptive Complex basic and ultrabasic mafic bodies.

The Falda Ciénaga Formation forms the Pre-Andean basement in the northwestern Hombre Muerto basin and Western Subbasin of SHM. The formation outcrops in the Cordon del Gallego Range along the northwestern margin of the salar and in the hills west of Río Trapiche. The outcrops are dominated by an alternating sequence up to 3000 m thick Ordovician marine greywackes and fine sediments with uncommon thin conglomerate beds up to two metres thick and minor intercalations of tuffs and volcanoclastic sandstones. The sequence is affected by very low to low grade metamorphism and was folded and faulted during the Late Ordovician deformation.

Younger Cenozoic-aged sedimentary and volcanic formations overlie the Pre-Andean basement unconformably. These units were deposited during the compressional and extensional regimes related to the Cenozoic stages of the Andean Orogeny, as described below.

Figure 7-2: Geology of the Hombre Muerto Basin

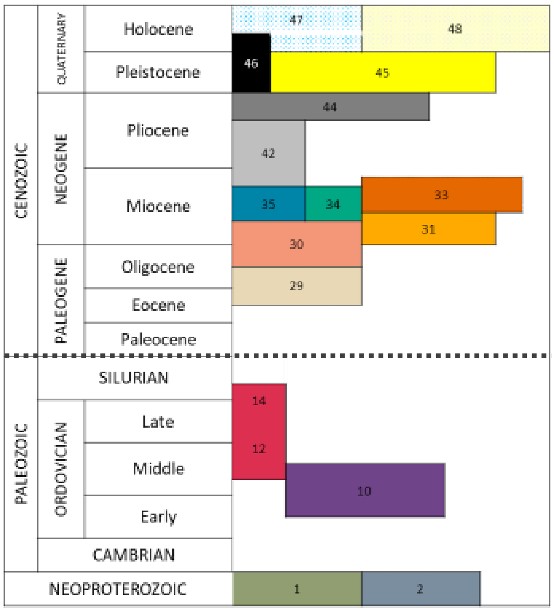


Note:

Lithological descriptions provided in Table 7-1.

Source: GWI (2023); modified after Hongn and Seggiaro (2001) and Vinante and Alonso (2006)

Table 7-1: Stratigraphy of the Hombre Muerto Basin



Dominant Lithology in Hombre Muerto Basin		Occurrence in Hombre Muerto Basin
48	Chlorides, borates, carbonates, sulphates	Dominates the salar surface and infill of the SW and parts of the E of SHM.
47	Gravels, sands, and clays	At the base of mountain ranges, along drainages, and at the margins of SHM.
46	Basalt and andesitic basalt	Lava flows, cinder cones, and volcanoclastic deposits in the NW portion of the basin, outcropping on the W margin of SHM, Farallón Catal, and Tincalayu Peninsula.
45	Conglomerate, gravel, and sand with thin layers of silt, clay, and volcanic ash	Confined to the southern end of the Farallón Catal within SHM, and to a small, terraced remnant in the southwest corner of the basin.
44	Dacitic ignimbrite and ignimbrite	Lava flows that dominate the southern 2/3 of the basin, sourced from the Cerro Galán Caldera located 60 km S of SHM.
42	Andesite	Forms the Cerro Ratones stratovolcano located on the NE margin of SHM.
35	Dacite and andesite	Lava flows with a wide aerial extent that form the Hombre Muerto Peninsula and Cerro Hombre Muerto on the S margin of SHM, surrounding the Cerro Galán Caldera, and outcropping on the W margin of the basin.
34	Dacitic porphyries	Occur as a small dacitic porphyry outcrop that intrudes the metamorphic basement at Cerro Blanco de Diablillos, located on the E margin of the basin.
33	Evaporites (halite), clay- and silt-rich sandstones	Forms the Tincalayu Peninsula, mined for borate.

Dominant Lithology in Hombre Muerto Basin		Occurrence in Hombre Muerto Basin
31	Conglomerates and sandstones with ignimbritic and volcanoclastic interlayers	Predominantly found on the Farallón Catal, with smaller occurrences to the NE, SW, and at the NW margin of Hombre Muerto Peninsula.
30	Conglomerates and sandstones with clay-rich interlayers and gypsum-rich evaporites	Small outcrops on the W margin of the basin; larger sequences occur outside of the basin between the Antofalla and Tolillar salars. Unconformably overlies the Geste Fm (29).
29	Conglomerate with interbedded quartz-rich and red sandstone	Small, isolated outcrop on the W margin of the basin, unconformably overlying the Ordovician sediments.
14	Coarse-grained granite and granodiorite with megacrysts	Located on the E side of the basin as pegmatite, aplite, and basic dykes that intrude the Pachamama Formation S of SHM; or as granite and granodiorite bodies at the S and E margins of the basin.
12	Pegmatite, aplite, and basic dykes	
10	Marine greywackes and clays with interlayers of quartz sandstones, dacitic lavas, and volcanoclastic sandstones	Confined to the W side of the basin and forms the Cordon del Gallego Range at the W margin (Alba Sabrina Property) of SHM, and Cerro Falda Ciénaga at the SW margin of SHM.
2	Schist, gneiss, phyllite, quartzite	Occurs on the eastern margin of the basin.
1	Schist and migmatites, interbedded metamorphic limestone and amphibolite	Outcrops on the SE margin of SHM, as rocky "islands" within the eastern subbasin of SHM, and within Sierra de Ciénaga Redonda S of SHM.

Note:
Numbers correspond to Figure 7-2.

Source: GWI (2023); modified after Hongn and Seggiaro (2001)

7.2.2 Jurassic – Cretaceous

The initial stages of the Andean Orogeny started in the Jurassic (approximately 140 Ma) with extensive volcanism and formation of a volcanic arc resulting from the eastward subduction of the Nazca Plate beneath the South American Plate (Ramos, 2009). Compression and uplift continued through the Cretaceous as tectonic activity intensified. This period saw the formation of large fold-and-thrust belts and the beginnings of significant mountain building (Charrier et al., 2007).

7.2.3 Paleogene and Neogene (Tertiary) Sedimentary Deposits

Uplift in the Eastern Cordillera of Argentina began approximately 38 Ma and is associated with the onset of continental sediment accumulation within an extensive foreland basin throughout the Puna (Jordan and Alonso, 1987 in Carrapa et al., 2005). The oldest remnants of continental sediments in the Hombre Muerto basin include small, isolated outcrops of the Geste Formation (29) along the western margin of the basin. The Geste Formation comprises fluvial and alluvial deposits assigned to the Middle Eocene to Oligocene, that overlie the Falda Ciénaga Formation in an angular unconformity.

Significant compressional reverse faulting across the Puna in the Late Oligocene to Early Miocene (20-25 Ma) initiated basin formation, followed by major uplift of the Altiplano-Puna plateau and further basin compartmentalization during the Middle to Late Miocene (10-15 Ma) (e.g., Kramer et al., 1999; Voss, 2002; Carrapa et al., 2005). Sediment deposition during this period of basin formation is represented by the following formations within the Hombre Muerto basin:

- The Vizcachera Formation (30), which rests on the Geste Formation in an unconformity, is a thick sequence of lower Oligocene to Middle Miocene fluvial, aeolian, and saline lake deposits in a small outcrop on the western margin of the basin. Outside of the Hombre Muerto basin, between the Tolillar and Antofalla salars this sequence is up to 3,500 m thick;

- The Catal Formation (31) comprises a thick sequence, almost 5,000 m, of Miocene red clastic sediments and upper conglomerate and pyroclastic layers deposited in a high-energy continental environment in a prevailingly arid climate (Alonso and Gutiérrez, 1986 in Conhidro, 2019). Ignimbrite and volcanoclastic intercalations within the Formation represent the first phase of Cenozoic magmatism (Section 7.2.4). This sequence outcrops on the Farallón Catal, on the eastern slope of Sierra de los Ratones, and the along northern end of Hombre Muerto Peninsula where it is overlain by Quaternary Alluvial and Colluvial Deposits (Section 7.2.5). The Formation trends NE-SW and dips 25-40° E (Conhidro, 2019); and

- The Sijes Formation (33) forms the Tincalayu Peninsula in the northern SHM and hosts the Tincalayu borate mine. The sediments were deposited during the Middle Miocene and include a lower halite layer over 150 m thick, a middle 30 m thick tincal layer, and an upper red silty-clay layer. The beds are faulted and folded and have a general NNE-SSW strike (Montgomery, 2018).

7.2.4 Magmatic Phases

Magmatic activity associated with the formation of the central Andean Puna-Altiplano plateau reached its peak during the Upper Miocene to Pliocene in the Argentine Puna. At this time, the magmatic arc generated by the subduction of the Nazca Plate beneath the South American plate had migrated east to the current position of the Cordillera Occidental and activated numerous volcanic complexes and fissures. Within the Hombre Muerto basin, the four magmatic phases of Cenozoic volcanism are recorded by the following Formations:

- First Magmatic Phase (11–15 Ma): The first phase occurred during the Middle Miocene prior to crustal extension and thinning and coincides with Eocene to Miocene sedimentation (Section 7.2.3). This phase includes the ignimbrite flows and volcanoclastic interbeds in the Catal Formation (31), Inca Viejo Formation (34), and Tebenquicho Formation (35);

- Second Magmatic Phase (4-7 Ma): Ratones Andesite (42) lava flows comprise the main part of the Cerro Ratones stratovolcano on the northeastern margin of SHM;

- Third Magmatic Phase (2-2.4 Ma): The Cerro Galán Volcanic Complex (44) originates from the Cerro Galán caldera, which developed along two N-S trending faults at the southern end of the Hombre Muerto basin. Volcanism culminated approximately 2 Ma with the eruption of 1000 km^3 of predominantly pyroclastic ignimbrite flows and formation of the Cerro Galán caldera; and

- Fourth Magmatic Phase (0.1-1.1 Ma): The final stage of magmatism occurred during a shift in the orientation of deformation and extension, which produced N-S, NNW-SSE, and NE-SW trending structures with strong strike-slip fault components. Within the Hombre Muerto basin, this phase is represented by the Incahausi Formation (46) basalt flows sourced from monogenetic volcanic fields and fissures. The Formation outcrops on the western margin of the salar, the Farallón Catal, and the Tincalayu Peninsula. Basalt flows also occur as an interlayer within the clastic and halite salar infill deposits east and west of the Tincalayu Peninsula (Section 7.3).

7.2.5 Quaternary Sedimentary Deposits

Quaternary deposits within the Hombre Muerto basin include clastic deposits grouped into the Terraced Deposits (45) and Alluvial and Colluvial Deposits (47), Incahausi Formation (46) basalt flows (Section 7.2.4), and Evaporite Deposits (48).

Terraced Deposits occur as small outcrops of Pleistocene-aged clastic deposits. The younger Alluvial and Colluvial Deposits have a much larger aerial extent and occur within the low-lying areas of the Hombre Muerto basin, around the margins of the SHM, and contribute to the salar infill material in certain sectors of the salar (Section 7.3). These unconsolidated to poorly consolidated deposits also form alluvial fans that encroach onto or incorporate into the margins of the salar.

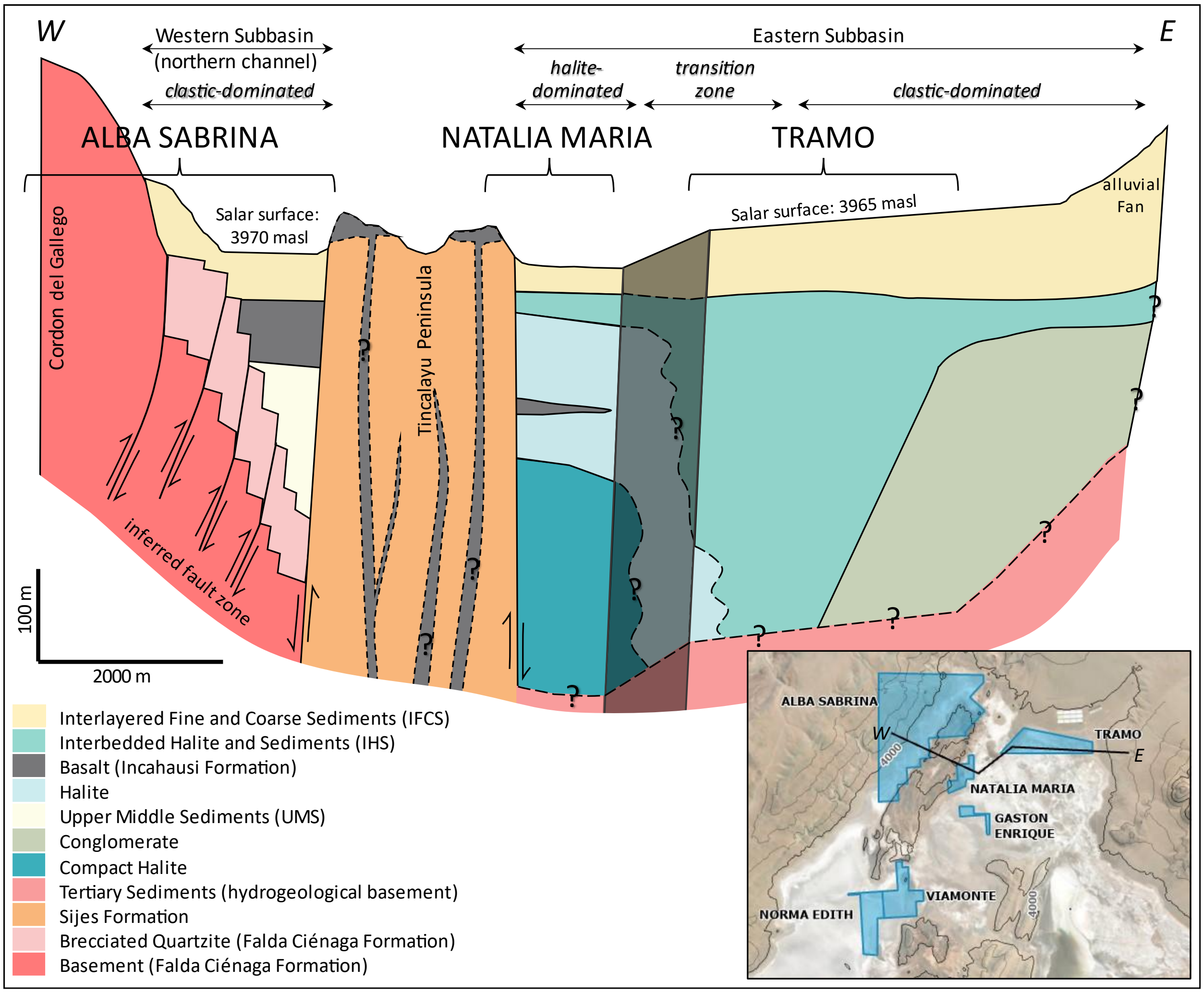
Evaporite Deposits (48) form the surface of most salars within the Argentine Puna and are compositionally zoned across the SHM. The eastern clastic and carbonate materials grade into gypsum and then to chloride in the west (Vinante & Alonso, 2006). Evaporite Deposits within the basin mostly formed within the last 100,000 years (Godfrey et al., 2003; Lowenstein et al., 1996).

7.3 Project and Salar Infill Geology

7.3.1 Salar del Hombre Muerto Infill Geology

Salar infill geology within the SHM is regionally variable. The channel occupied by Alba Sabrina, most of the northern sector of the Eastern Subbasin including Tramo, and the southern sector of the Eastern Subbasin are clastic sediment-dominated; while the Western Subbasin and the Natalia Maria area on the eastern margin of Tincalayu Peninsula in the Eastern Subbasin are halite-dominated (Figure 5-4 and Figure 7-3). Salar infill geology is also discussed in Section 14.2.

Figure 7-3: Conceptual Cross-Section Showing Structural Systems and Salar Infill Geology Across the Alba Sabrina, Natalia Maria, and Tramo Properties, Northern SHM



Source: GWI (2023)

7.3.2 Alba Sabrina Geology and Infill Geology

The Alba Sabrina property includes a NE-SW trending channel in the northwestern sector of the SHM, formed by the Tincalayu Peninsula (east side) and Cordon del Gallego Range (west side). The western half of the property extends onto the Cordon del Gallego Range, which was formed from up-thrust Falda Ciénaga Formation basement rocks. Falda Ciénaga is the oldest outcropping formation in the property, and comprises a stratified sequence of folded marine sediments that strike NNE-SSW and typically dip W. The eastern side of the property extends onto the Tincalayu Peninsula, which is formed by faulted and folded sandstones and evaporites of the Sijes Formation and dark gray to black Incahausi Formation lava flows.

Through tectonic activity, the younger Quaternary-aged alluvial deposits and salar infill materials are in direct contact with the Falda Ciénaga and Sijes Formation rocks at the margins of the channel. This semi-isolated salar channel is clastic dominated, with no halite intersected by drilling. Here, the bottom of the salar basin is demarcated by unaltered, low permeability Falda Ciénaga Formation quartzite. The basin infill sequence is up to 405 m thick along the eastern margin of the channel, adjacent to the Tincalayu Peninsula, and thins to the west.

The Brecciated Quartzite (BQTZ) unit comprises the top 50-150 m of the quartzite. It is considered part of the salar infill material, and an exploration target, because the degree of fracturing indicates aquifer potential. The BQTZ is yellowish, greenish, or grey, pervasively fractured to brecciated with clay-rich fracture fill and variable iron staining (Figure 7-4). The unit was intersected in all the 2022-2023 boreholes drilled at Alba Sabrina, except for the borehole drilled on the Tincalayu Peninsula (DDH-AS23-08), where it was not expected to occur. It is overlain by Upper Middle Sediment (UMS) in the deeper parts of the salar and Interlayered Fine and Coarse Sediments (IFCS) along the shallower western margin.

Figure 7-4: Brecciated Quartzite (BQTZ)

Notes:

Yellowish brecciated quartzite with clay-rich fracture fill and pervasive iron staining in Alba Sabrina (DDH-AS22-07A, 62.14-68.00 mbgs).

Source: GWI (2023)

The UMS unit occurs between the BQTZ and Basalt units, where basalt was intersected. The UMS is in direct contact with the IFCS elsewhere. Angular clasts of quartzite often occur towards the basal contact with the BQTZ (Figure 7-5); while the upper contact between the UMS and IFCS is transitional or marked by a thin (≤1 m) compact clay-rich horizon.

The unit is up to 170 m thick along the eastern margin and in the centre of the Alba Sabrina channel, where it was intersected in four boreholes; the unit pinches out towards the western margin of the salar, where it was intersected in one borehole (DDH-AS22-07A). Sediments in the UMS are unconsolidated, brown to reddish-brown, medium to coarse grained sand and minor fine-grained sand, with a silty-clay to clay-rich matrix and high to very high (4-5) visual porosity. Coarsening upwards sequences are noted in some locations.

Figure 7-5: Contact of Brecciated Quartzite (BQTZ) and Upper Middle Sediments (UMS) at 188 m in Alba Sabrina (DDH-AS22-03, 182.90-191.50 mbgs)

Source: GWI (2023)

The Basalt unit directly overlies the UMS and was intersected in two boreholes (DDH-AS22-03 and DDH-AS22-04). The thickest intersection was 110 m, and the flows appear to thin towards the north and west. The lower contact with UMS is characterized by basalt rubble and a potential void up to 10 m thick was intersected in one location.

The unit is characterized by multiple flows that range from highly vesicular, to amygdaloidal, to massive, with minor to pervasive fracturing (Figure 7-6). Vesicles up to one centimetre in size indicate aquifer potential in the vesicular horizons. Elsewhere, aquifer potential is related to secondary porosity facilitated by fracturing within the unit.

The basalt is dark gray with visible olivine and pyroxene within an aphanitic groundmass. Weathering is noted in the upper 2-8 m (Figure 7-7). This unit is considered to correlate with the Incahausi Formation basalts on the adjacent Tincalayu Peninsula, but has undergone some downward displacement, followed by deposition of overlying salar materials.

Figure 7-6: Basalt in Alba Sabrina

Notes:

A) Vesicular basalt with pervasive fracturing (DDH-AS22-03, 53.50-56.55 mbgs).

B) Amygdaloidal basalt with moderate fracturing (DDH-AS22-04, 108.50-109.80 mbgs).

C) Massive basalt (DDH-AS22-04, 123.00-124.90 mbgs).

Source: GWI (2023)

Figure 7-7: Contact between Basalt and Overlying Interlayered Fine and Coarse Sediments (IFCS) at 33.2 mbgs in Alba Sabrina (DDH-AS22-03, 30.30-35.65 mbgs)

Source: GWI (2023)

The IFCS unit overlies the BQTZ on the western margin of the basin, the Basalt in areas with basalt flows (Figure 7-7), and the UMS elsewhere. In areas where the UMS is directly overlain by IFCS, the contact is transitional and is indicated by an overall decrease in visual porosity and an increase in degree of consolidation.

The sediments are characterized by interlayers of brown, black, reddish-brown, grey, and greenish-grey coloured clay, fine- to medium-grained sand, and occasional gravel (Figure 7-8). Clay layers are compact with low visual porosity. The sandy layers often have a silty-clay to clay-rich matrix and rare calcareous cement, and the sediments are poorly to well consolidated with moderate to high visual porosity (Figure 7-7). The coarser sand and gravel layers contain angular volcanic clasts and are less consolidated than the finer-grained layers. In some areas, carbonate-rich concretions and caliche or travertine layers up to 5 m thick occur in the top 30 m of the IFCS (Figure 7-8).

Figure 7-8: Variation in Interlayered Fine and Coarse Sediments (IFCS) observed at Alba Sabrina

Notes:

A) Interlayered greyish travertine and unconsolidated brown fine to medium grained sand (2.0-17.68 mbgs).

B) Brown compact clay (38.0-44.00 mbgs) (DDH-AS22-06).

Source: GWI (2023)

7.3.3 Natalia Maria Infill Geology

The Natalia Maria property is a halite-dominated area of the SHM, on the eastern margin of Tincalayu Peninsula. The western half of the property extends onto the Tincalayu Peninsula where Sijes Formation sediments and Incahausi Formation basalts outcrop. The eastern half of the property is in the salar. Infill units intersected by drilling include Compact Halite (CH), Halite, Basalt, IHS, and an upper 35 m package of IFCS.

The CH unit was intersected at approximately 200 mbgs and extends to the bottom of the borehole (326 mbgs). It is interpreted as the hydrogeological basement for this stage of resource estimation and is not included in the Resource Estimate presented herein. This unit was not encountered at the Alba Sabrina or Tramo property, and its full extent is not known.

The CH unit is a thick unit of massive, compact halite with minor clastic layers (Figure 7-9). The halite is white to light grey with mottled reddish-brown horizons formed by interstitial clay and sand. Visual porosity is very low in the compact halite due to lithostatic compaction by overlying units, and moderate to low in the clastic horizons. Clastic layers are medium to coarse grained brown sand or sandy halite up to 5 m thick, and they increase in frequency towards the top of the intersected unit.

Figure 7-9: Compact Halite (CH) with an Approximately 1 m Thick Medium Grained Sand Interlayer at Natalia Maria (DDH-AS23-01, 294.75-301.0 mbgs)

Source: GWI (2023)

The CH unit grades upwards into the overlying Halite unit, which is characterized by increased clastic layers and increased interstitial clay and sand. A thin, two metre layer of basalt was intersected at 142 mbgs. The basalt is considered to be downward displaced Incahausi Formation, similar to the basalt intersected at Alba Sabrina.

The contact with the overlying IHS is also transitional. This transition is exhibited as an approximately 15 m thick clastic dominated sequence with thinner white to grey halite layers and increased frequency and thickness of clastic layers (Figure 7-10). The clastic layers are brown to blackish, medium to coarse grained sand with halite cement. The overall increase in clastic content is associated with increased (moderate) visual porosity in the IHS, in comparison to the underlying halite-dominated units.

The upper IFCS unit correlates to the shallow sedimentary deposits observed at Alba Sabrina and Tramo. At Natalia Maria, the IFCS fines upwards from brown to blackish medium- to coarse-grained sand, into brown fine- to medium-grained sand (Figure 7-11). The sands are unconsolidated with rare ulexite crystals.

Figure 7-10: Interbedded Halite and Sediments (IHS) in Natalia Maria (DDH-AS23-01, 33.40-41.00 mbgs)

Source: GWI (2023)

Figure 7-11: Interlayered Fine and Coarse Sediments (IFCS) in Natalia Maria, with Ulexite Crystal at Approximately 15.5 mbgs (DDH-AS23-01, 0.00-23.18 mbgs)

Source: GWI (2023)

7.3.4 Tramo Geology and Infill Geology

Tramo is in the clastic-dominated northeastern sector of the SHM. The property area is dominated by salar deposits, with a small outcrop of Sijes Formation in the southwest corner and alluvial fans on the northern, eastern, and western margins of the property.

Infill geology at Tramo is a combination of lithologies that occur on the other Project properties. Basal Conglomerate, IHS, and IFCS occur on the eastern side of the property. The western side of the property is dominated by IHS with an upper layer of IFCS (Figure 7-3). This westward increase in halite indicates a transition towards the halite-dominated region of the salar on the eastern margin of Tincalayu Peninsula. The hydrogeological basement has not been intersected by drilling at Tramo.

The basal Conglomerate unit is dominated by polymictic conglomerate layers and uncommon 1-5 m thick layers of consolidated, fine- to medium-grained sandstone with a clayey matrix. The conglomerate is greyish brown to light brown in colour with sub-angular to sub-rounded clasts ranging from 0.2-15 cm in a silt to medium-grained sand matrix (Figure 7-12).

Figure 7-12: Conglomerate at Tramo with a Layer of Compact Fine- to Medium-Grained Sand with a Clayey Matrix from 284.4-385.5 mbgs (TH18-01, 280.85-267.95 mbgs)

Source: GWI (2023)

The contact between the Conglomerate and the IHS on the eastern side of Tramo is characterized by a gradational decrease in the size and frequency of lithic clasts. The IHS unit intersected at Tramo is similar to the same unit intersected at Natalia Maria. Brown to light brown fine- to coarse-grained sands are interbedded with whitish-grey crystalline to sandy halite layers up to five metres thick and compact clay layers less than one metre thick (Figure 7-13). The sand layers are poorly consolidated to infrequently compact and friable with a clay to silt matrix. The thickness and frequency of halite layers increases to the west.

Figure 7-13: Interbedded Halite and Sediments (IHS)

Notes:
A) Eastern Part of Tramo (TH18-01, 123.50-134.15 mbgs).
B) Western Part of Tramo (TH18-02, 79.50-85.50 mbgs).

Source: GWI (2023)

The contact between the IHS and the IFCS is marked by the absence of halite layers and crystals in the upper sedimentary sequence. The IFCS sequence at Tramo is typically composed of interlayers of light brown, brown, light grey, black, and green coloured clay, silty clay, and fine- to medium-grained sands with a clay matrix and rare ulexite (Figure 7-14). The clay and silt layers are compact, and the sand layers are poorly consolidated.

Figure 7-14: Interlayered Fine and Coarse Sediments (IFCS) at Tramo

Notes:
Showing layers of light brown and light grey fine-grained sand, and brown silty clay (TH18-01, 0.00-17.22 mbgs).

Source: GWI (2023)

7.4 Hydrology

7.4.1 Rivers and Streams

The surface water drainage network of the basin is shown on Figure 5-3. Run-off from upslope areas is concentrated in collector creeks and streams that drain into the salar. The total surface water inflow to the salar is estimated at 147x106 m^3/yr (4.7 m^3/s; WMC, 1994); however, it can be much larger during wet years.

Rio de los Patos and its tributary Rio Aguas Caliente drain approximately 79% of the basin. Rio de los Patos is the only perennial water course that flows into the salar. The river flows N from its headwaters at Cerro Gallan, towards the alluvial fan on the southeastern corner of the SHM and into the Eastern Subbasin. As it enters the salar, it forms braided channels that spread out and flow N and W across the salar surface towards Lagunas Catal and Verde.

Flow rates ranging from 0.89 m^3/s to 1.42 m^3/s were measured at Rio de los Patos during the dry season in May and September 2011 (Montgomery and GAI, 2012), and flow rates up to 5 m^3/s were reported by MLA (2020). The highest flow rates occur during the wet season (Section 5.5). An estimated stream flow hydrograph for Rio de los Patos is shown on Figure 7-15.

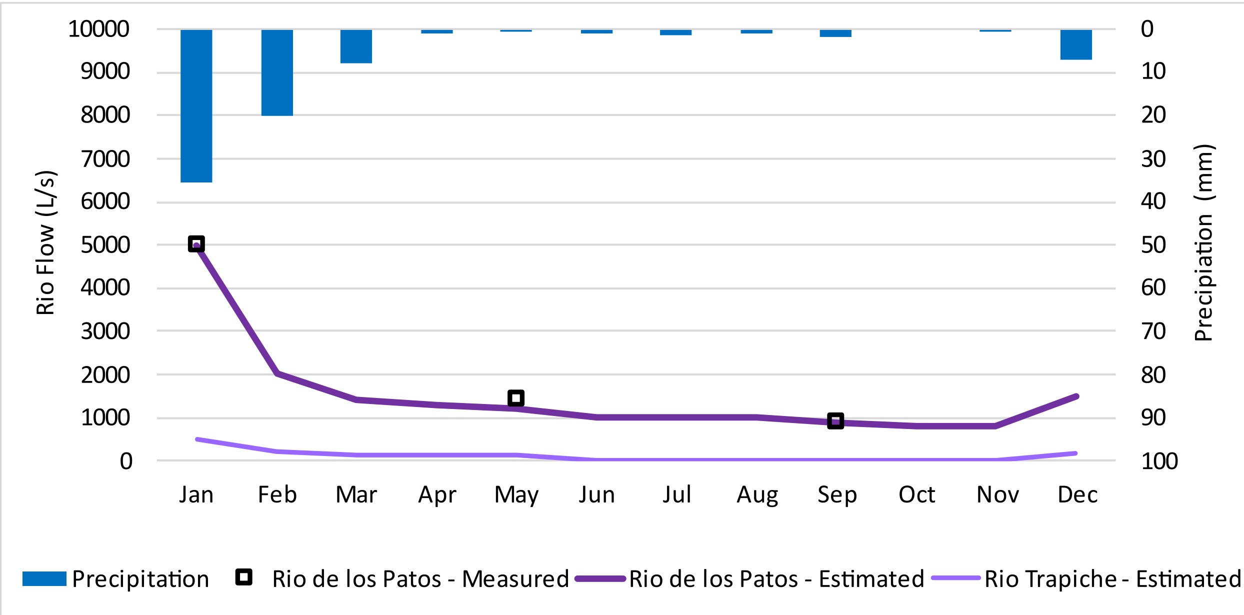
Rio Trapiche flows N into the alluvial fan at the southern end of the Western Subbasin (Figure 5-3), at the location of the Fénix Mine Camp (Figure 5-2). The river is ephemeral, with water infiltrating into the alluvial fan and recharging the Trapiche Aquifer before reaching the salar. Streamflow is limited by a dam that was built in 1994. An estimated stream flow hydrograph for Rio Trapiche is shown on Figure 7-15. Several other ephemeral streams and rivers within the basin infiltrate in the upslope areas before reaching the margins of the salar (Figure 5-3).

7.4.2 Lagunas

The SHM has two natural, large surface waterbodies. Laguna Catal occupies the area between Hombre Muerto Peninsula and Farallón Catal, and Laguna Verde is in the Eastern Subbasin adjacent to Farallón Catal (Figure 5-4). Brine discharge from the Fénix Mine has also resulted in the formation of an artificial lagoon N of the Fénix Project, with a surface area of 1.5 km^2 (Integral, 2023).

Both natural lagunas are extensive and shallow water bodies that are predominantly recharged by water from Río de Los Patos. The surface area of the lagunas varies in response to seasonal changes. Aerial photography interpreted by Integral (2023) indicates that the recent surface areas of Laguna Catal and Laguna Verde are approximately 9.0 km^2 and 3.7 km^2, respectively.

Figure 7-15: Measured and estimated stream flow for Rio de los Patos and Rio Trapiche



Notes:
10-year average of monthly total precipitation recorded at the Fénix weather station (Montgomery and GAI, 2012).

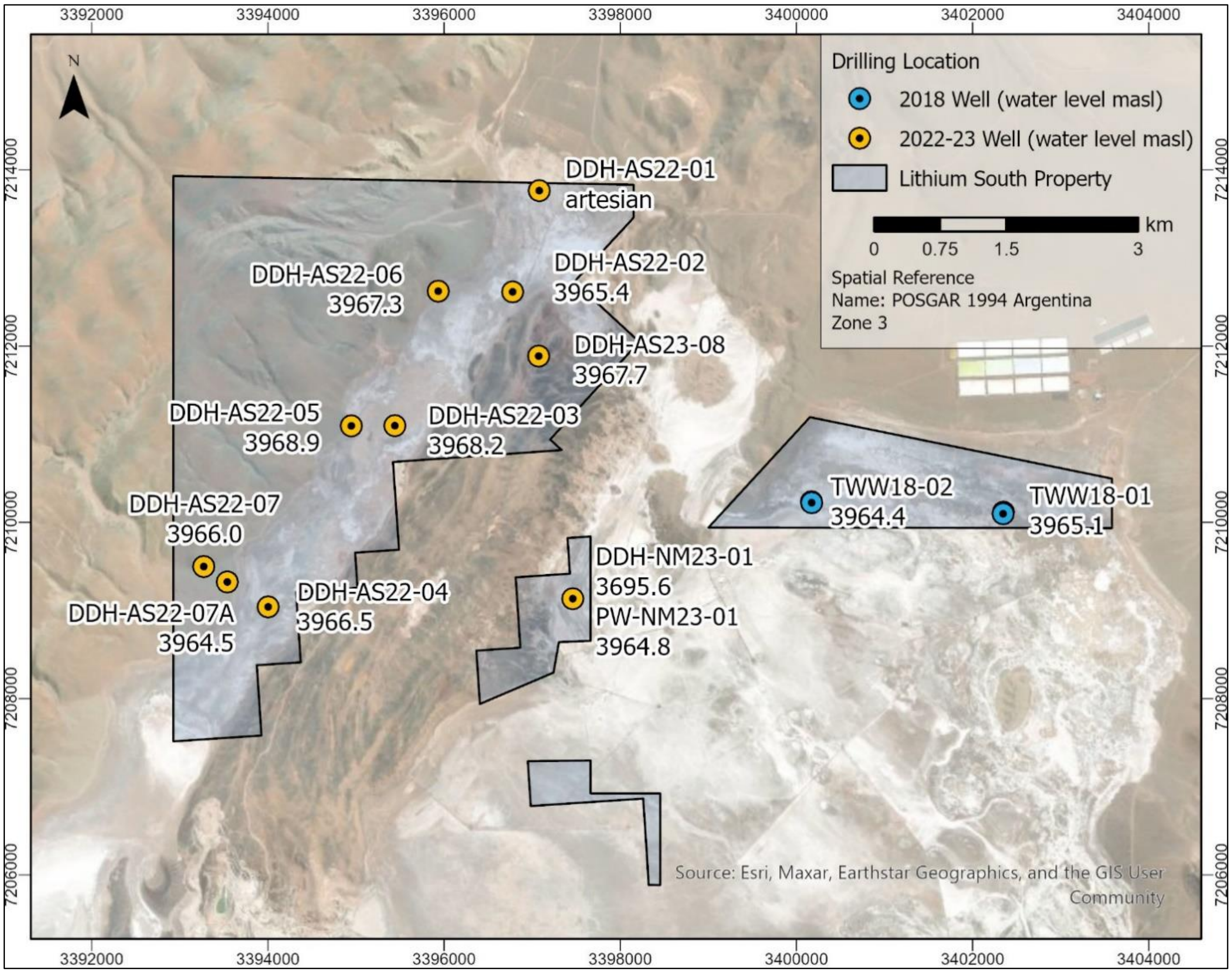
Source: GWI (2023)

7.5 Groundwater

Monitoring of subsurface brine levels is ongoing at the HMN Project. The average brine levels recorded at each well in June 2023 are shown on Figure 7-16. Most of the wells were screened across multiple geological units. Consequently, the brine levels represent a composite value for the screened units.

Average brine levels are higher in Tramo and Natalia Maria in comparison to Alba Sabrina. On both sides of Tincalayu, water moves down the alluvial fans towards the salar. Within the Alba Sabrina channel, there is a slight hydraulic gradient from NE to SW towards the Western Subbasin. On the eastern side of Tincalayu, there is a slight hydraulic gradient from the eastern margin of the salar and Tincalayu towards the western margin of the Tramo property.

Figure 7-16: Average Brine Levels Recorded in June 2023 at the HMN Project



Source: GWI (2023)

7.6 Water Balance

7.6.1 Overview

A preliminary water balance was formulated for natural conditions in the SHM (i.e., no brine production) using FEFLOW software, based on the conceptual model shown in Figure 7-17. Model parameters are based on preliminary estimates. Results of this water balance were not used in the Mineral Resource Estimate presented herein, but they provide a starting point for potential future Reserve Estimates. A qualitative description of the water balance is provided below.

7.6.2 Inputs

- Precipitation: Recharge from direct precipitation onto the salar surface was simulated based on monthly precipitation averages from the Fénix weather station (Table 5-1);

- Groundwater flow into the salar: Later inflow from upslope areas of the surrounding subbasins consists of runoff and lateral groundwater flow (from infiltration) components. These inflows were simulated along the model perimeter according to their alignment with surrounding sub-basins. Inflow rates were simulated as rate of precipitation over the upslope subbasin area multiplied by a partitioning coefficient to discount detention, storage, and evaporation;

- Surface flow into the salar: River flows from Rio de los Patos and Rio Trapiche are represented as having perennial and ephemeral flows, respectively. Simulated river flow rates used were those shown on Figure 7-15; and

- Geothermal waters: Thermal springs are also a source of recharge to the salar and the broader basin (MLA, 2020). Thermal spring inflows are omitted from the conceptual model because: 1) they are assumed to be small relative to the other inputs and 2) they may partially originate from precipitation which is already accounted for.

7.6.3 Outputs

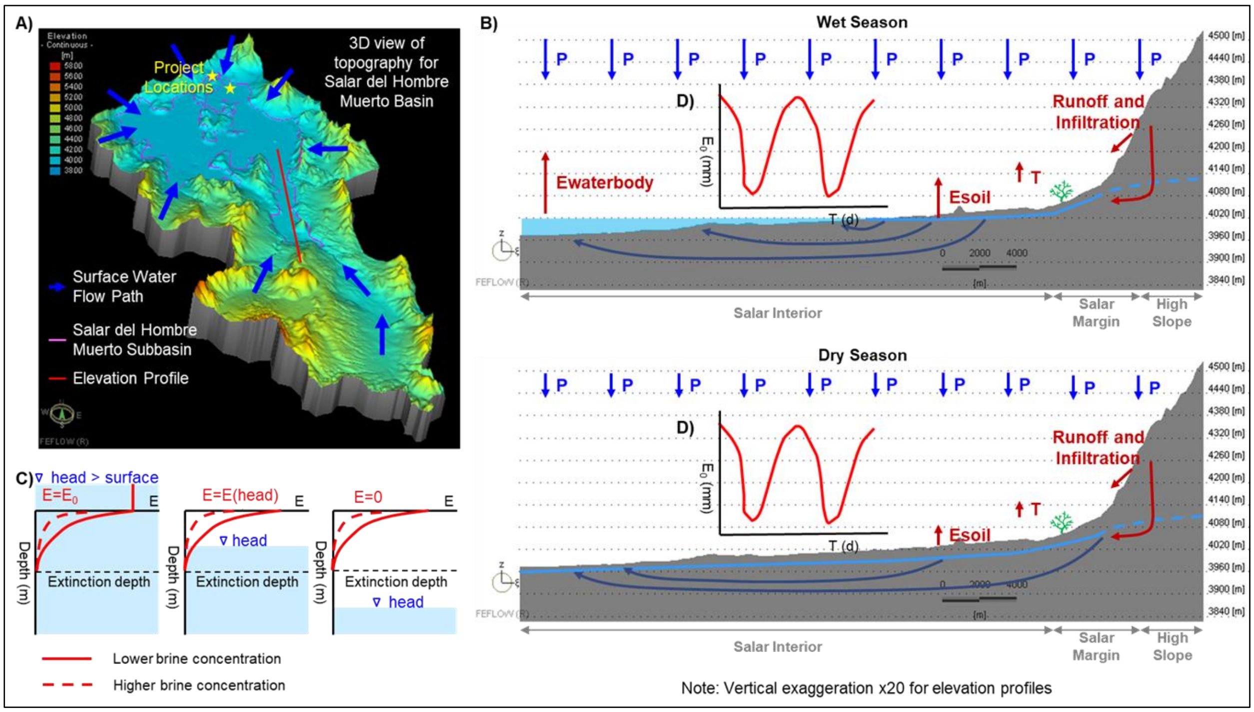
- Evaporation: Under natural conditions, evaporation accounts for all outflow from the salar (i.e., endorheic conditions). Evaporation from the salar varies according to seasonal climatic conditions (potential evaporation), depth to water table, and in relation to brine concentration. Within the context of the salar, evaporation rates are expected to be relatively high along the margins of the salar where subsurface freshwater may be close to the ground surface. It is also high in the areas where the Rio de los Patos and Trapiche Rivers discharge into, and seasonally inundate, the salar with freshwater from upland areas:

  - Potential evaporation (E0): Monthly average potential evaporation for the salar was based on data for the Cauchari and Olaroz salars, located 150 km N of the SHM and at a similar altitude (3950 masl). Based on these values, Burga et al. (2019) estimated an average annual potential evaporation range of 2554 mm/yr (7 mm/d) to 3060 mm/yr (8.4 mm/d) for the Cauchari-Olaroz Project. The net evaporation rate used for the process modelling used is 2,371 mm/year; and

  - Actual evaporation: This is limited by the availability of water and is a function of water table depth. Evaporation is at a maximum when water is at or above ground surface. As the water table declines and depth to water table increases, evaporation decreases, until it becomes zero at the extinction depth (Figure 7-17). HMN Project drilling and geophysical data indicates that the water table in the SHM is between one and two mbgs. A 1.5 mbgs extinction depth is assumed for the current water balance and will be further evaluated for any future numerical Reserves modeling.

- Transpiration: Vegetation is scarce in the SHM and is limited to the margins of the salar. Consequently, transpiration is assumed to be negligible, for this preliminary water balance; and
- Production pumping: This preliminary water balance is based on natural conditions and does not consider pumping.

Figure 7-17: Conceptual Diagram Illustrating Components of the Conceptual Water Balance for the SHM



Notes:

A) Ground surface topography and surface water flow paths.

B) Conceptual inflow and outflow features for the SHM along profile line.

C) Evaporation process dependency on depth of water and brine concentration.

D) Seasonality of potential evaporation (E0).

Source: GWI (2023)

7.6.4 Water Balance Results

The preliminary water balance components for the SHM are presented graphically on Figure 7-18 and summarized on an annual basis in Table 7-2. Over multiple years, inflows are balanced by evaporative outflows, as is expected in an endorheic basin. During wetter years, greater inflows are balanced by an increase in evaporation. Conversely, during drier years, lesser inflows are balanced by a reduction in evaporation. Seasonal trends and variations in magnitude of the water balance components are summarized as follows:

- Inflows to the salar are driven by precipitation and consist of direct precipitation to the salar (blue line), lateral subbasin inflows (orange line), perennial Rio del los Patos inflows (dark purple line), and ephemeral Rio Trapiche inflows (light purple line);
- Inflows are greatest during the wet season (December through March), and smallest during the dry seasons (April through November);
- On an annual basis, inflows are balanced by evaporative outflows (green line). Inflow water budget components flow through the groundwater system causing a lag in evaporation. Evaporation is dependent upon water availability, which is greatest during the wet season and least during the dry season. The rate of evaporation peaks when the water is near the ground surface. It gradually decreases and then stops as the water table approaches and then reaches the extinction depth; and
- The difference in the timing and magnitude of all inflows and evaporative outflows results in seasonal water balance surpluses and deficits (dashed black line). When inflow rates are greater than evaporative outflow rates the salar is in a state of water surplus. Conversely, when the rate of evaporation is greater than the inflow rates the salar is in a state of water deficit. The annual water balance surplus/deficit curve is primarily influenced by inflows during the wet season and evaporative outflow during the dry season.

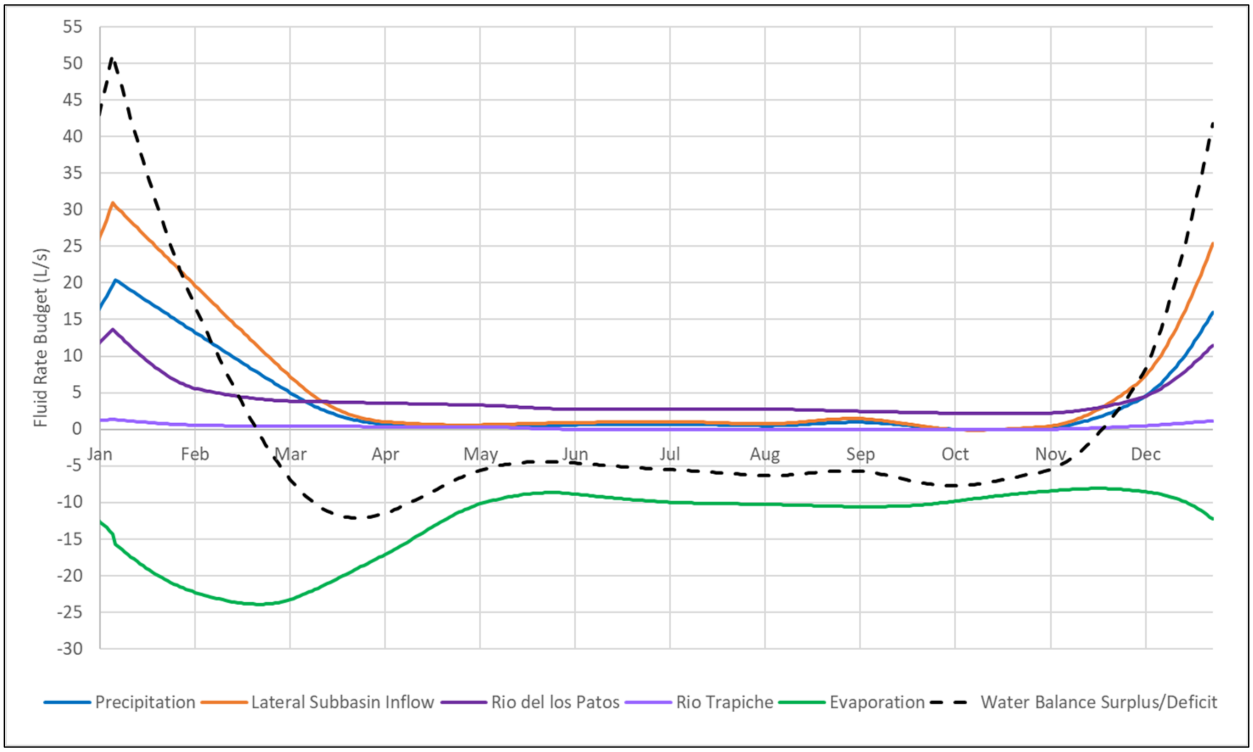
Table 7-2: Simulated Annual Water Balance, Under Natural (non-pumping) Conditions, for the SHM

Annual Water Balance	Salar del Hombre Muerto	
	Average rate (L/s)	Annual rate (mm/yr)
Inflows		
Precipitation	1281	65.3
Lateral Inflows	1949	99.4
Rio de los Patos	1420	72.4
Rio Trapiche	96	4.9
Total Inflows	4764	242
Outflows		
Evaporation	4658	237.4
Pumping	0	0
Total Outflows	4658	237.4

Notes:
Sum of inflows balance sum of outflows with an error tolerance of 2%, which is primarily attributed to the evaporative outflows lagging inflows, see Figure 7-18.

Source: GWI (2023)

Figure 7-18: Average Annual Rate Budget for Water Balance Components for the SHM



Source: GWI (2023)

7.7 Mineralization

Brine Resources in the Alba Sabrina, Natalia Maria, and Tramo properties of the HMN Project are defined relative to a 500 mg/L lithium cut-off (Section 14). Sampling methods and results are presented in Sections 10 and 11, and resource estimation methods are described in Section 14.6.

Table 7-3 compares the chemistry from the HMN Project with other lithium brine projects. As indicated in the table, HMN Project lithium and potassium grades are favourable relative to other projects. Sulphate (SO_4) and magnesium (Mg) are considered brine impurities in that they affect the cost of brine processing. As indicated in the table, both parameters compare favourably with the other brines in the group, in that their ratios are at the low ends of both ranges.

Table 7-3: Comparison of the HMN Project Mineral Resource Brine Chemistry (500 mg/L lithium cut-off) with Other Lithium Brine Deposits

Company	Salar, Country	Project	mg/L					Density (g/cm^3)	Mg/Li (ratio)	SO_4/Li (ratio)
			Li	K	Mg	SO_4	B			
Lithium South [1]	SHM, Argentina	HMN	736	7205	2409	12,230	441	1.20	3.27	16.62
Allkem [2]	SHM, Argentina	Sal de Vida	775	-	-	-	-	-	-	-
Galan Lithium [3]		HM West	880	7653	-	-	-	-	-	-
Galan Lithium [4]		Candelas	672	5193	-	-	-	-	-	-
SQM [5]	Atacama, Chile		1835	22,626	11,741	20,180	783	1.22	6.40	11.00
Zhabuye Lithium [6]	Zhabuye, China		1258	34,241	13	67,963	3709	1.30	0.01	54.02
Lithium Power [7]	Maricunga, Chile	Stage One	953	6993	-	-	-	1.20	-	-
Zijin [8]	Tres Quebrada, Argentina	3Q	923	8353	1531	453	1348	1.22	1.66	0.49
Western Mining Group [6]	East Taijinaier, China		808	86,654	17,404	178,475	1061	1.26	21.53	22.80
Allkem [9]	Olaroz, Argentina	Olaroz	698	5230	1332	-	974	1.20	1.91	-
Ganfeng / LAC [10]	Cauchari – Olaroz, Argentina		592	4801	1403	16,866	1094	1.22	2.37	28.49
Ganfeng Lithium [11]	Pozuelos, Argentina	PPG	505	3487	2920	8843	-	-	5.78	17.51
	Pastos Grandes, Argentina		464	4736	3081	9827	-	-	6.64	21.18
Tibet Summit [12]	Diablillos, Argentina	Sal de Los Angeles	501	5512	-	-	556	-	-	-
Comibol [13]	Uyuni, Bolivia		424	8719	7872	10,294	242	1.21	18.57	24.29
Rio Tinto [14]	Rincon, Argentina	Rincon Li	395	7513	3419	12,209	-	1.22	8.66	30.91
Ganfeng Lithium [15]	Llullaillaco, Argentina	Mariana	314	9710	4360	15,600	603	1.22	13.89	49.68
CITIC Guoan [6]	West Taijinaier, China		257	101,219	8447	183,581	380	1.23	32.81	713.05

Notes:
1. Results documented in this Technical Report; Measured + Indicated Resources (500 mg/L cut-off).
2. Montgomery et al., 2022.
3. Galan, 2023: Measured + Indicated + Inferred Resources (no cut-off).

4. Galan, 2019: Indicated Resource (500 mg/L cut-off).
5. SQM, 2009.
6. Data from Dr. Haizhou Ma, Institute of Salt Lakes, China.
7. AWC & Worley, 2022: Measured + Indicated Resources (no cut-off).
8. GWI and Worley, 2021: Measured + Indicated Resources (800 mg/L cut-off).
9. Hydrominex, 2022: average brine grades used to calculate resource.
10. Burga et al., 2020: Measured + Indicated Resources (500 mg/L cut-off).
11. GDH Group Engineering, 2019: Measured + Indicated Resources (Pastos Grandes: 100 mg/L cut-off; Pozuelos: 330 mg/L cut-off).
12. AWC & Reidel, 2017: Measured + Indicated Resources.
13. Data from Roskill, 2009.
14. SRK, 2016. Measured Resource (200 mg/L cut-off).
15. Golder & Geos, 2021: Measured + Indicated + Inferred Resources (230 mg/L cut-off).

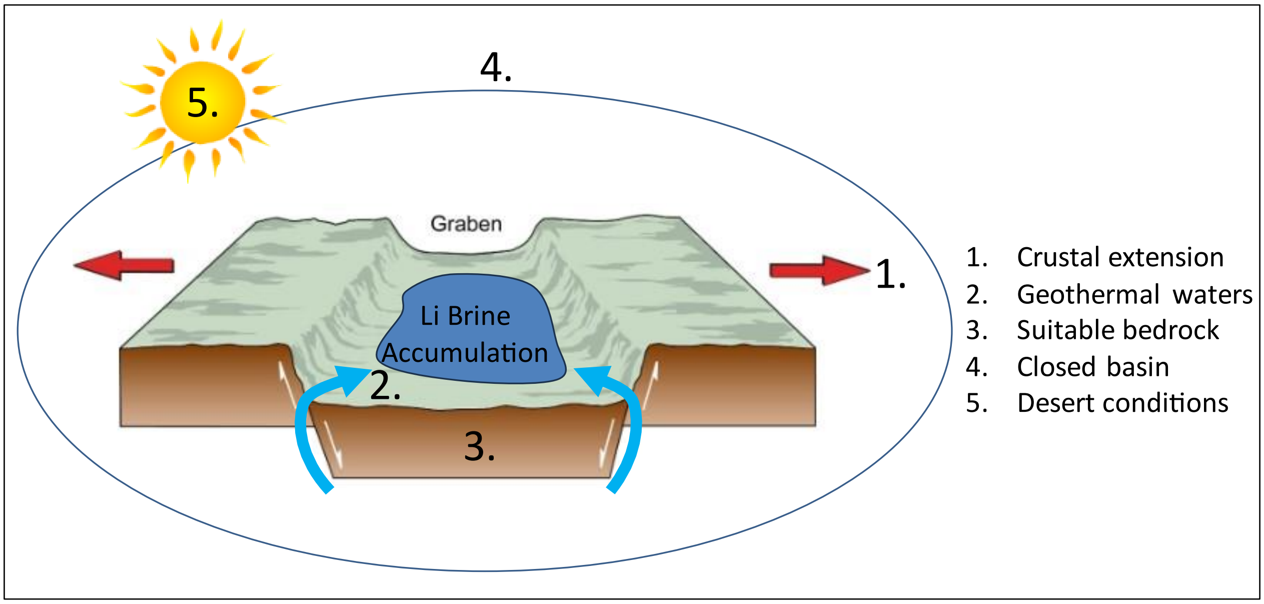
Source: GWI (2023)

8 DEPOSIT TYPES

A simple, general conceptual model for accumulation of lithium brines is shown on Figure 8-1. Brine deposits containing economically important quantities of lithium can form in salars where the following favourable conditions are coincident:

- The salar catchment is "closed," which means the outflow of water from the catchment (by processes other than evaporation) is negligible, in terms of the catchment water balance;
- A significant portion of the catchment area contains bedrock of suitable composition (i.e., containing lithium that can be leached from their original source);
- Geothermal waters have contacted the bedrock through fault systems and have become moderately concentrated in lithium (and other solutes);
- The moderately concentrated waters have accumulated in the low-lying area of the closed catchment;
- The prevailing climate is suitable to promote high rates of evaporation from the accumulated water (i.e., dry air, high winds, and minimal precipitation), leading to the formation of brine within the salar; and
- Given the preponderance of lithium-bearing salars that are defined by fault-bounded dropped basins, this also appears to be an important condition. The process of basin lowering may provide a more prolonged period and a more focused zone for brine accumulation. The bounding faults may also be a direct source of lithium-enriched geothermal waters to the salar.

Figure 8-1: Conceptual Model for Accumulation of Lithium Brine in Salars and Playas



Source: GWI (2023)

The SHM meets these conditions. The salar catchment is closed with no apparent natural outflows. Volcanic rocks of the Cerro Galan caldera and Cerro Ratones, and geothermal activity within the basin are potential sources of lithium to the salar (Godfrey et al., 2013). There is clear evidence that evaporation has led to the accumulation of evaporites and lithium brines in the near surface of the salar and at depth. The salar has a complex structural history and is characterized by a number of down-dropped, fault-bounded subbasins.

In terms of infill materials, salars that contain brine deposits are of two principal lithologic types: clastic-dominant and evaporite-dominant. The formation of one or the other may depend on the energy of the system during deposition. Evaporite formation may be favoured during relatively dry periods of low inflow, and deposition of clastic materials during higher inflow periods. Similarly, deposition of clastic materials may be favoured around the margins of the salar basin, while the more quiescent central zone may be dominated by evaporites. Consequently, both types of deposits may occur at different levels and zones of a given salar, depending on the prevailing conditions of deposition.

Evaporite-dominant salars contain mostly halite deposits, which can reach hundreds of metres in thickness. In the shallower zones, the porosity and permeability of halite may be amenable to economic extraction of brines. In the deeper zones of evaporite-dominant salars, permeability may decrease due to evaporite cementation and recrystallization. Salar de Atacama (Chile) is a classic example of an evaporite-dominant salar.

Clastic-dominant salars are characterized by predominantly clastic strata interbedded with minor evaporites, particularly halite. Porosity and permeability of the clastic layers are controlled by lithology, stratigraphy, and faults. Clastic-dominant salars are exemplified by the Silver Peak deposit in Nevada and Argentina's Cauchari Salar.

The SHM has two large, hydraulically connected subbasins with aspects of both salar types. A conceptual cross-section of the salar is shown on Figure 7-3. The Eastern Subbasin is predominantly clastic-dominated and transitions into a halite-dominated salar along the northwestern margin of the subbasin adjacent to the Tincalayu Peninsula. Tramo is located within the clastic-dominated region of the northern sector of the Eastern Subbasin, and Natalia Maria in the halite-dominated region.

The Western Subbasin is halite-dominated with a halite core up to 900 m thick that transitions into an outer clastic-dominated perimeter at the margins (Integral, 2023). Alba Sabrina occupies a clastic-dominated NE-SW trending channel located at the northern margin of the Western Subbasin. The salar infill geology is further described in Section 7.3 and a conceptual model of the deposit types within the HMN Project properties is shown on Figure 7-3.

9 EXPLORATION

9.1 Overview

Exploration by LIS at the HMN Project was conducted over four field seasons:

- 2016-17 Program: first reported by Montgomery (2017);
- 2018 Program: first reported by Montgomery (2018) and KPC (2019);
- 2021 Program: first reported by GWI (2023); and
- 2022-2023 Program: first reported by GWI (2023).

Previously reported exploration work is summarized in Table 9-1; and exploration work conducted in 2022-2023 is summarized in Table 9-2.

Table 9-1: Summary of the 2016-2017 and 2018 Exploration Work at the HMN Project

Exploration Component	Property[1]	Purpose	Description
Surface sampling (2016-17 and 2018)	AS, GE, NE, NM, T, V	To map shallow brine distribution and to compare dry- vs. rainy-season shallow brine chemistry; and to confirm previous sampling results	• 27 total samples collected, excluding QA/QC samples, as follows: – 10 samples collected from pits and auger holes during the dry season (Oct 2016) – 10 samples collected during the rainy season (Jan-Feb 2017) at AS, NM, and Tramo – 7 samples collected at AS, NM, and Tramo (Jan 2018)
Geophysics CSAMT survey (2016-17)	AS, NM, T	To map subsurface resistivity trends for use in siting boreholes	• 10 stations in two lines; one line-oriented NE-SW transecting AS, one line-oriented E-W transecting AS, NM, and Tramo
Diamond drilling (2018)	T	To collect core and discrete-level brine samples; to install observation wells and monitor pumping tests	• 681 m of drilling in 2 boreholes • Construction of 2 observation wells • 47 core samples collected, 20 analyzed for Sy 2 • 35 depth discrete brine samples collected from 2 boreholes, excluding QA/QC samples
Rotary drilling (2018)	T	To install pumping wells and conduct pumping tests	• 801 m of drilling in 2 boreholes • Construction of 2 pumping wells

Exploration Component	Property[1]	Purpose	Description
Pumping test program (2018)	T	To measure hydraulic parameters and brine chemistry	• 2 step tests completed in 2 pumping wells • 2 x 72-hr constant rate tests completed in 2 pumping wells • 20 composite brine samples collected, excluding QA/QC

Notes:
[1] AS = Alba Sabrina; GE = Gaston Enrique; NE = Norma Edith; NM = Natalia María; T = Tramo; V = Viamonte
[2] Specific yield

Source: GWI (2023)

Table 9-2: Summary of the 2021 and 2022-2023 Exploration Work at the HMN Project

Exploration Component	Property[1]	Purpose	Description
TEM survey (2021)	AS, GE, NE, NM, V	To map subsurface resistivity trends for use in siting boreholes	• 135 soundings, 500 m spacing • 36 survey lines • Readings at 2 frequencies: 25 Hz, 2.5 Hz
Diamond drilling program (2022-2023)	AS, NM	To collect core and discrete-level brine samples; to install observation wells; to collect composite brine samples from wells	• 2167.5 m of drilling in 10 boreholes • Construction of 10 observation wells • 85 core samples collected from 8 boreholes and analyzed for S_y [2] • 51 depth discrete brine samples collected from 9 boreholes, excluding QA/QC samples • 13 composite brine samples collected from 11 observation wells, excluding QA/QC samples
Tricone drilling program (2022-2023)	NM	To install observation wells; to collect composite brine samples from wells	• 45 m of drilling in 1 borehole • Construction of 1 observation well • 1 composite brine sample collected

Notes:
[1] AS = Alba Sabrina; GE = Gaston Enrique; NE = Norma Edith; NM = Natalia María; T = Tramo; V = Viamonte
[2] Specific yield

Source: GWI (2023)

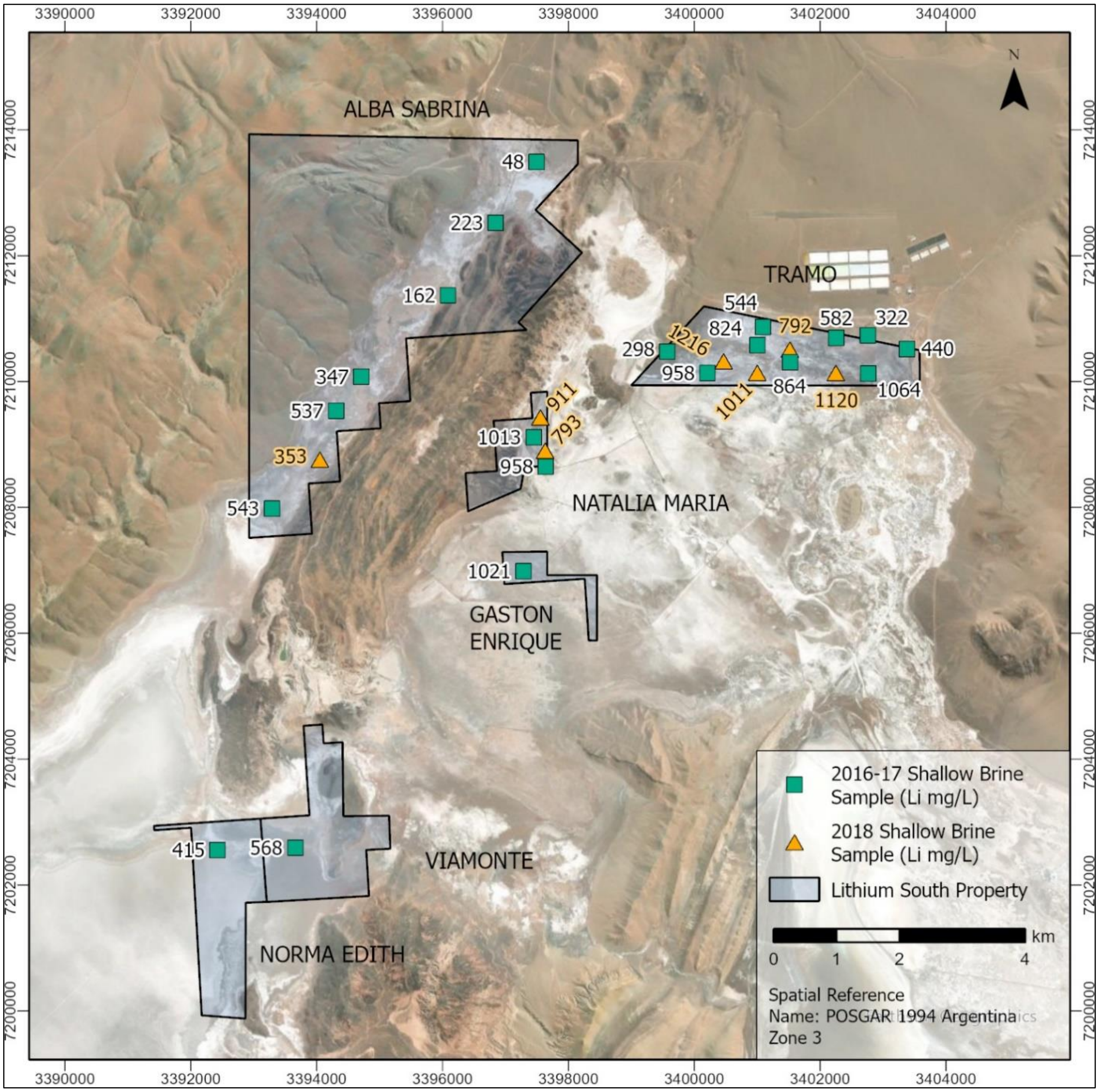
9.2 2016 - 2017 and 2018 Surface Brine Sampling Program

Surface brine samples were collected from hand dug pits or auger holes at the HMN Project during the 2016-2017 and 2018 field programs, which were first reported by Montgomery (2017) and Montgomery (2018), respectively. Sample locations are shown on Figure 9-1, sampling methods are described in Section 11, and detailed results are described by Montgomery (2018). The objectives and results of the sampling programs are as follows:

- The first set of 10 brine samples was completed during the dry season in October 2016, for a general indication of lithium concentrations at the HMN Project;
- The second set of 10 brine samples were collected during the rainy season in January and February 2017 to study the impact of precipitation dilution on near-surface brines. Sampling was limited to Alba Sabrina, Natalia Maria, and Tramo because heavy rains and flooding prevented sampling in the other project areas;
- Based on the 2016-17 sampling program, shallow brines are impacted by precipitation dilution, with dry and rainy season lithium averages of 445 mg/L and 242 mg/L, respectively, at Alba Sabrina, and 802 mg/L and 538 mg/L, respectively, at Tramo. However, it is noted that precipitation dilution is generally limited to the upper several metres of the aquifer; and
- An additional seven brine samples were collected in January 2018, to confirm previous sampling results. Samples confirm elevated lithium in shallow brines at Alba Sabrina and Tramo. Higher average lithium in the 2018 samples in comparison to the 2016-17 samples collected from Tramo, 974 mg/L and 538 mg/L, respectively, is attributed to lower precipitation in 2018.

Surface sample results were not used in the updated Mineral Resource Estimate.

Figure 9-1: Surface or Shallow Brine Samples Collected at the HMN Project, with Lithium Results in mg/L

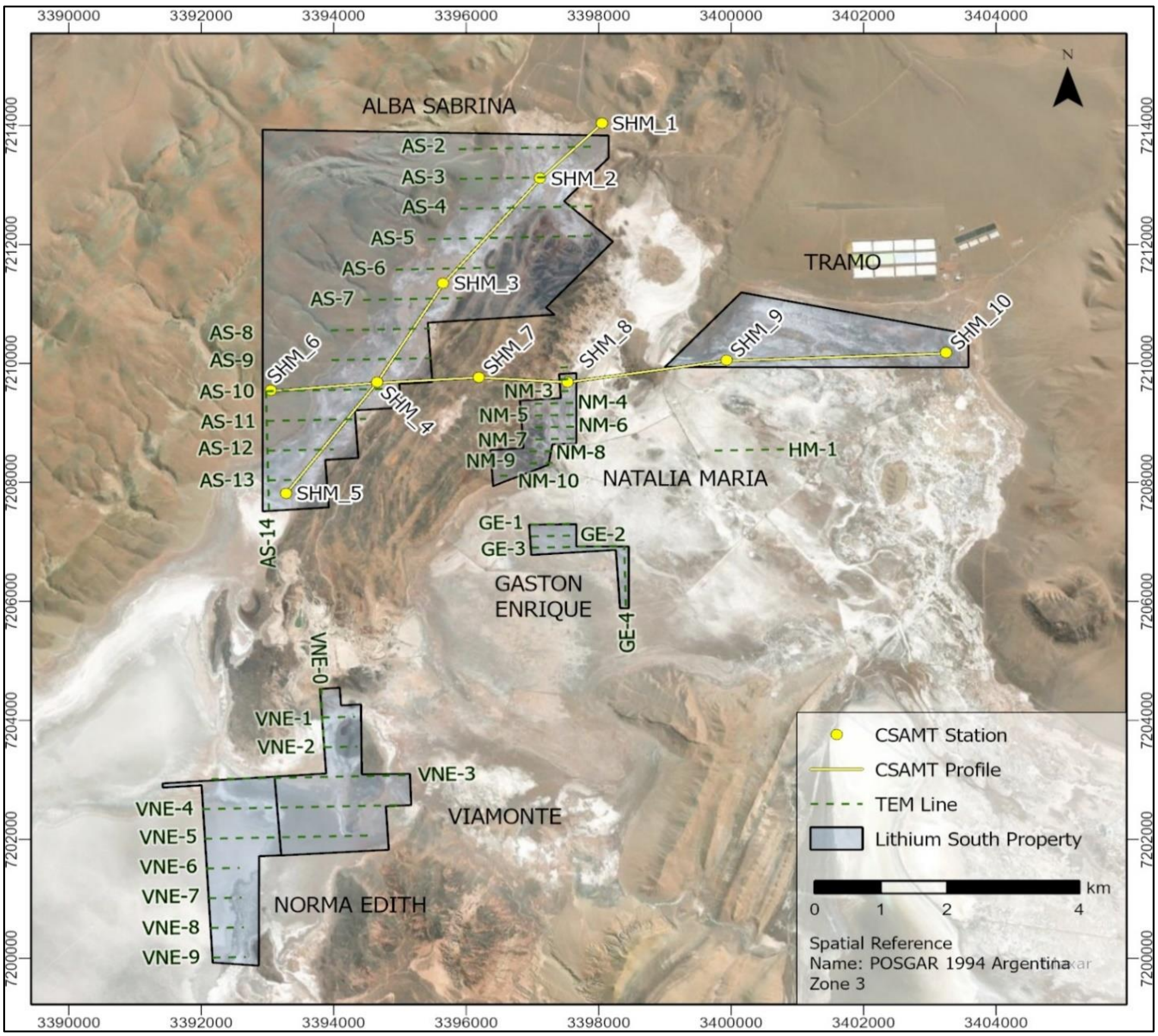


Source: GWI (2023)

9.3 2018 CSAMT Geophysical Survey

A controlled source audio-frequency magnetotellurics (CSAMT) geophysical survey was completed in January 2017 by Geophysical and Exploration Consultants S.A., of Mendoza, Argentina, under the supervision of senior geophysicist Sascha Bolling. Data was collected at 10 CSAMT stations along two profiles (Figure 9-2) and results were first reported by Montgomery (2018).

Figure 9-2: CSAMT and TEM Survey Locations at the HMN Project

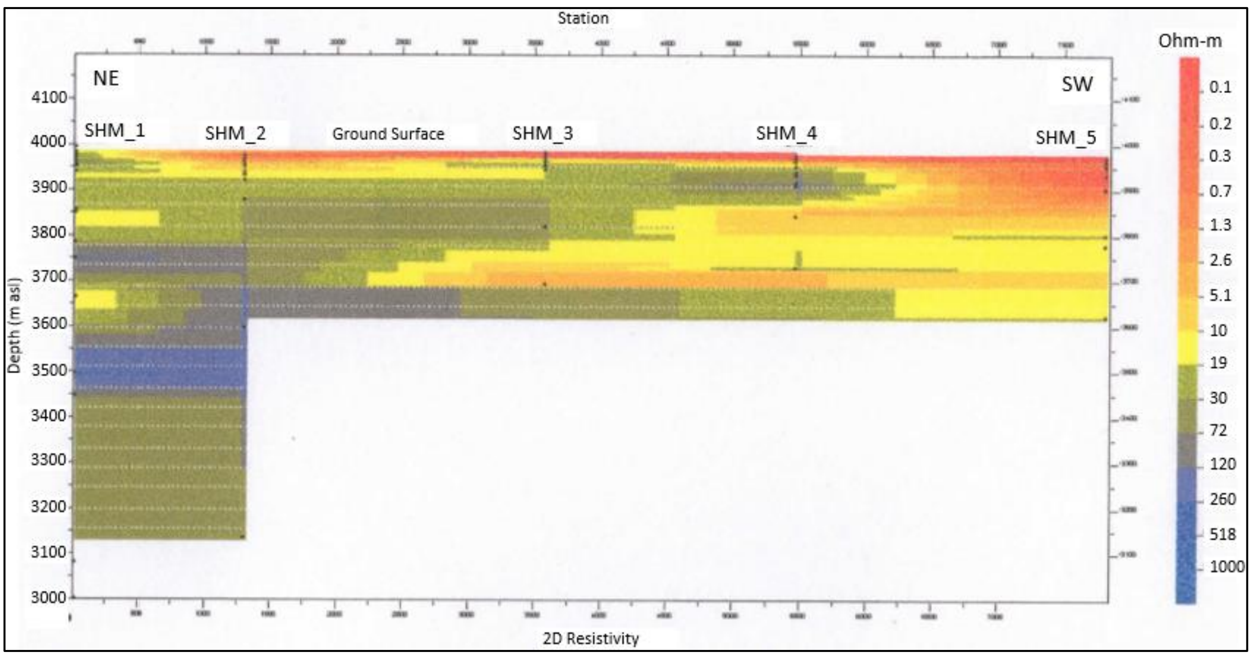


Source: GWI (2023)

The Alba Sabrina line is 7800 m long and includes five CSAMT stations (SHM_1 through SHM_5) that transect the Property from NE to SW (Figure 9-3). The following resistivity (R) trends are observed (Figure 9-3):

- A near-surface, low-R to moderate-R horizon (<0.1-10 ohm-m) up to 60 m thick indicates brine close to surface. This low-R horizon increases to over 250 m thick towards the SW end of the survey, between SHM_4 and SHM_5;
- A deeper low-R layer occurs from approximately 200 – 300 mbgs at station SHM_3, and shallows towards the SW end of the survey and joins the shallower, low-R horizon described above;
- Higher-R horizons at the NE end of the survey are interpreted as fresh water or brine layers diluted by freshwater inflows into the basin;
- The anomaly is open to the SW and at depth between SHM_4 and SHM_5; and
- Drilling along the NE-SW Alba Sabrina line confirms brine within the low-R horizons as well as within the moderate-R horizons.

Figure 9-3: NE-SW CSAMT Profile Across Alba Sabrina, Stations SHM_1 through SHM_5

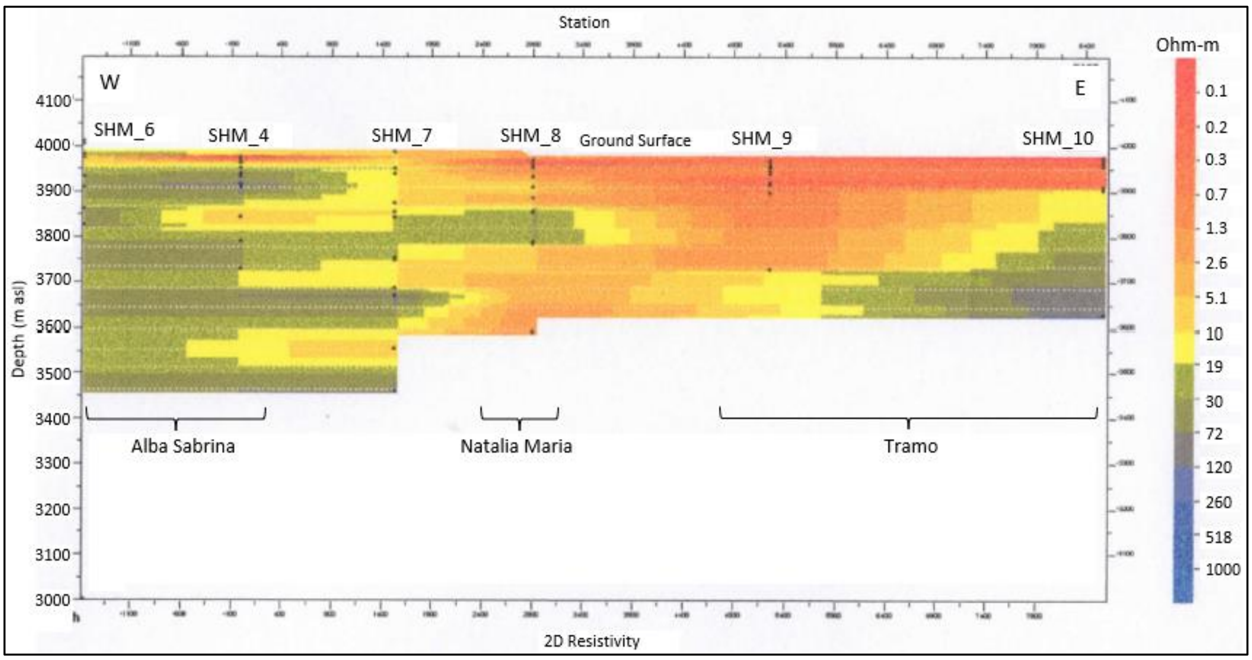


Source: GWI (2023)

CSAMT stations SHM_6 through SHM_10 are oriented along a 9600 m W-E trending line that transects the Alba Sabrina, Natalia Maria, and Tramo Properties (Figure 9-4). Resistivity trends identified along this transect include:

- A 6,000 m long, low-R horizon (<0.1-1 ohm-m) up to 250 m thick is observed between SHM_8 at Natalia Maria, and SHM_10 on the eastern border of Tramo;
- The low-R anomaly is open at depth in the central part of the survey line, between Natalia Maria and the central part of Tramo; and
- Low-R horizons at Tincalayu Peninsula, located between Alba Sabrina and Natalia Maria at station SHM_7, indicate potential for brine within the Sijes Formation.

Figure 9-4: W-E CSAMT Profile Showing Approximate Locations of Alba Sabrina, Natalia Maria, and Tramo; Stations SHM_4 and SHM_6 through SHM_7



Source: GWI (2023)

9.4 2021 TEM Geophysical Survey

9.4.1 TEM Overview

The Transient Electromagnetic (TEM) survey was completed by Quantec Geosciences in August and September 2021, to investigate subsurface resistivity trends and support borehole planning. A total of 133 TEM soundings were surveyed along 36 profiles across the Alba Sabrina, Gaston Enrique, Natalia Maria, Norma Edith, and Viamonte properties (Figure 9-2).

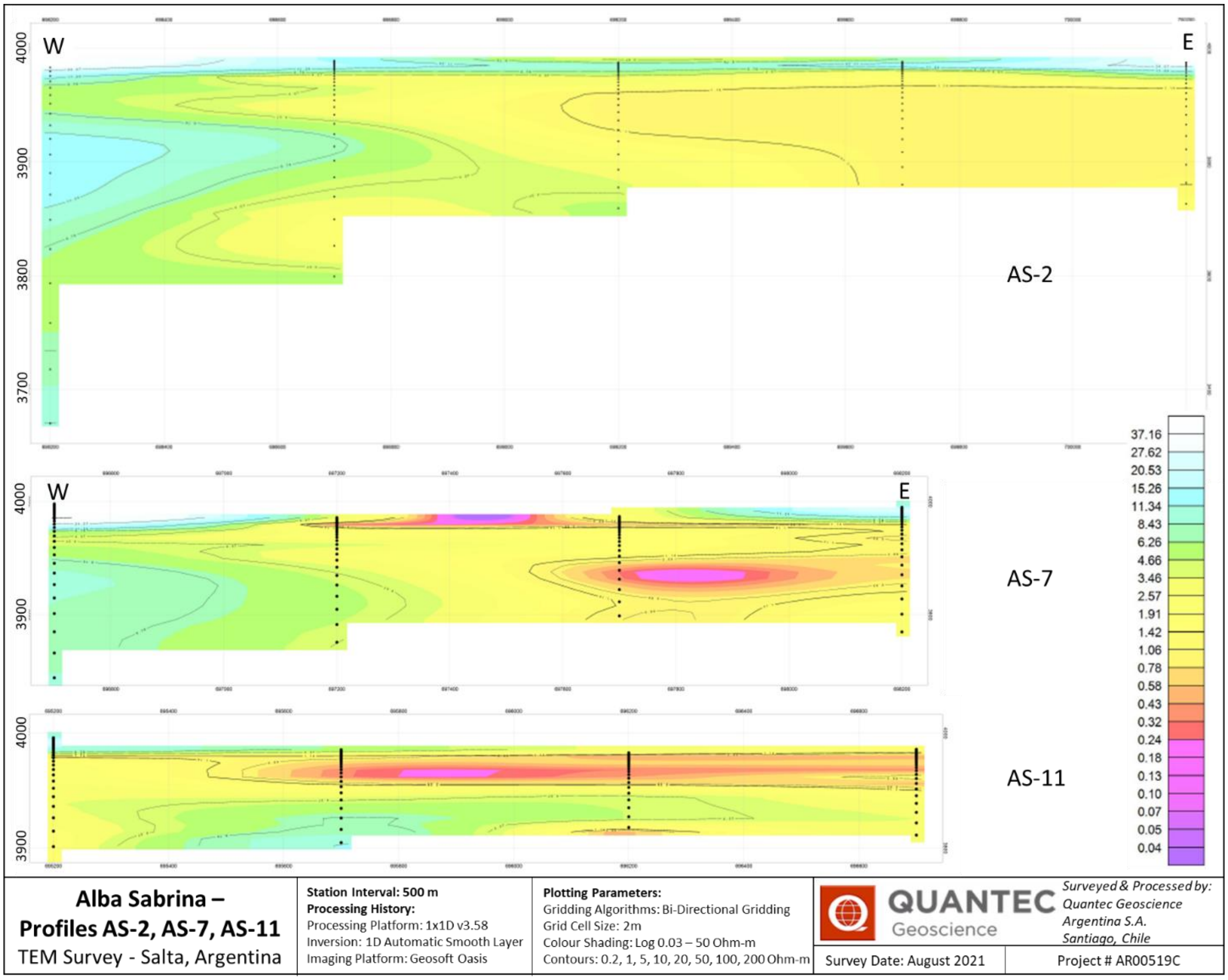
A Geonics TEM58 Digital Protem receiver, Geonics TEM-37 transmitter, and Geonics 3D-3 surface coil antenna were used for the surveys. Data were collected using a moving-loop method in which the receiver was positioned at the centre of a square, single-turn transmit loop. Transmit loop dimensions were fixed at 200 x 200 m, and soundings were collected every 200 m to 500 m at two frequencies (25 Hz and 2.5 Hz). Geophysical data were modelled by Quantec Geosciences using a 1-dimensional discrete layer methodology to generate various resistivity versus depth products, including as 36 smooth-layer and discrete-layer inverted profiles.

9.4.2 Alba Sabrina TEM Results

Thirteen TEM profiles were generated with soundings for the Alba Sabrina property: 12 W-E profiles and one S-N profile (Figure 9-2). Forty-nine soundings were recorded on a 500 m x 500 m grid. Example smooth-layer profiles are shown on Figure 9-5. Resistivity trends are similar to those observed in the CSAMT profiles, and are summarized as follows:

- A thin, high-R horizon occurs at the northern end, along the western margin, and on some parts of the eastern margin (e.g., AS-2, -6 through -11) of the survey area. This horizon is noted in the CSAMT survey (Section 9.3) and is similarly interpreted as fresh water or brine layers diluted by freshwater inflows into the basin;
- The underlying low-R to very low-R horizon (R < 4 ohm-m and < 1 ohm-m, respectively) is unconfined at depth by the TEM survey in the E and central parts of the survey area; and
- Drilling at Alba Sabrina confirms brine within the low-R layers and freshwater dilution in the near surface brines on the western margin of the salar (Section 10.5).

Figure 9-5: Alba Sabrina W-E Smooth-Layer Inverted TEM profiles AS-2, AS-7, and AS-11 (locations shown on Figure 9-2)



Source: GWI (2023)

9.4.3 Natalia Maria TEM Results

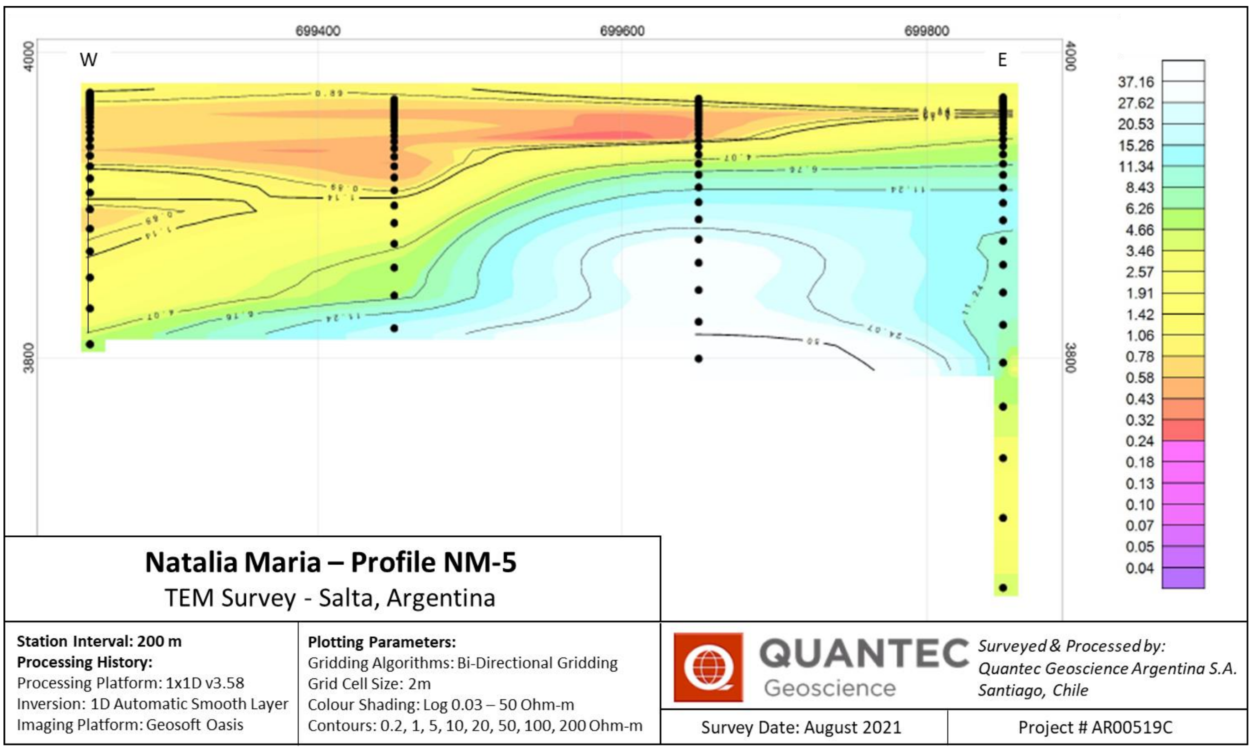
The TEM survey at Natalia Maria includes 30 soundings on a 200 m x 200 m grid that covers the salar area and extends onto the eastern margin of Tincalayu Peninsula. An example profile is shown on Figure 9-6, and resistivity trends observed in the 10 W-E profiles are as follows:

- A surficial, low-R horizon (R < 4 ohm-m) is present across the survey area;
- The low-R horizon is thinnest (< 20 m) on the eastern side of the Natalia Maria property, where it is underlain by a high-R layer. The high-R layer is unconfined at depth. Survey lines

NM-1, NM-3, and NM-5 (NM-5 shown on Figure 9-6) indicate that this layer may thin E of the Natalia Maria property and that a lower-R horizon may occur at depth;

- The low-R horizon thickens to approximately 80 m on the western margin of the survey, towards the Tincalayu Peninsula; and
- Drilling on profile NM-5 confirms upper brine saturated sediments underlain by interbedded halite and sediments, and basal low permeability massive halite at approximately 190 mbgs.

Figure 9-6: Natalia Maria Example W-E Smooth-Layer Inverted TEM Profile, NM-5 (location shown on Figure 9-2)



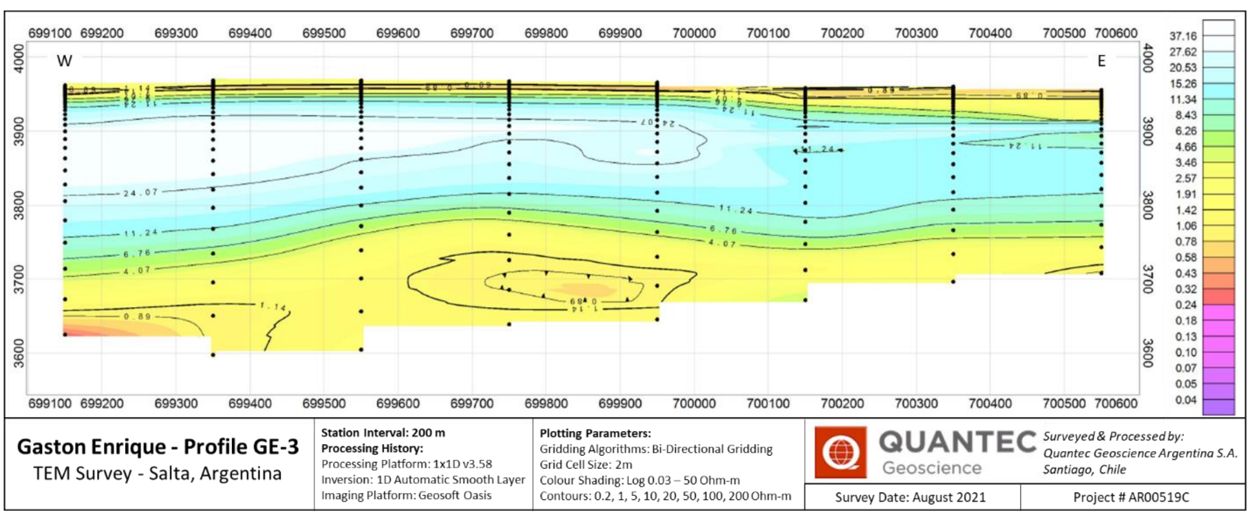
Source: GWI (2023)

9.4.4 Gaston Enrique TEM Results

Three W-E profiles and one N-S profile were modelled for Gaston Enrique, based on 21 soundings arranged in a 200 m x 200 m grid across the property. The TEM profiles highlight the following resistivity trends, as shown in the example smooth-layer inverted TEM profile on Figure 9-7:

- A thin, 25 – 50 m, low-R surface layer occurs across the property;
- The underlying moderate- to high-R layer (>4 ohm-m) varies from 250 m thick on the western side of the survey, to 150 m thick eastern margin of the survey. This layer also thickens and deepens slightly to the N; and
- The lower low-R layer shallows towards the centre of the survey area from approximately 350 mbgs in the NW to approximately 180 mbgs in the centre of the property. The low-R horizon is unconfined at depth in the TEM surveys and is the main target horizon for future exploration drilling at Gaston Enrique.

Figure 9-7: Gaston Enrique Example W-E Smooth-Layer Inverted TEM Profile, GE-3 (location shown on Figure 9-2)



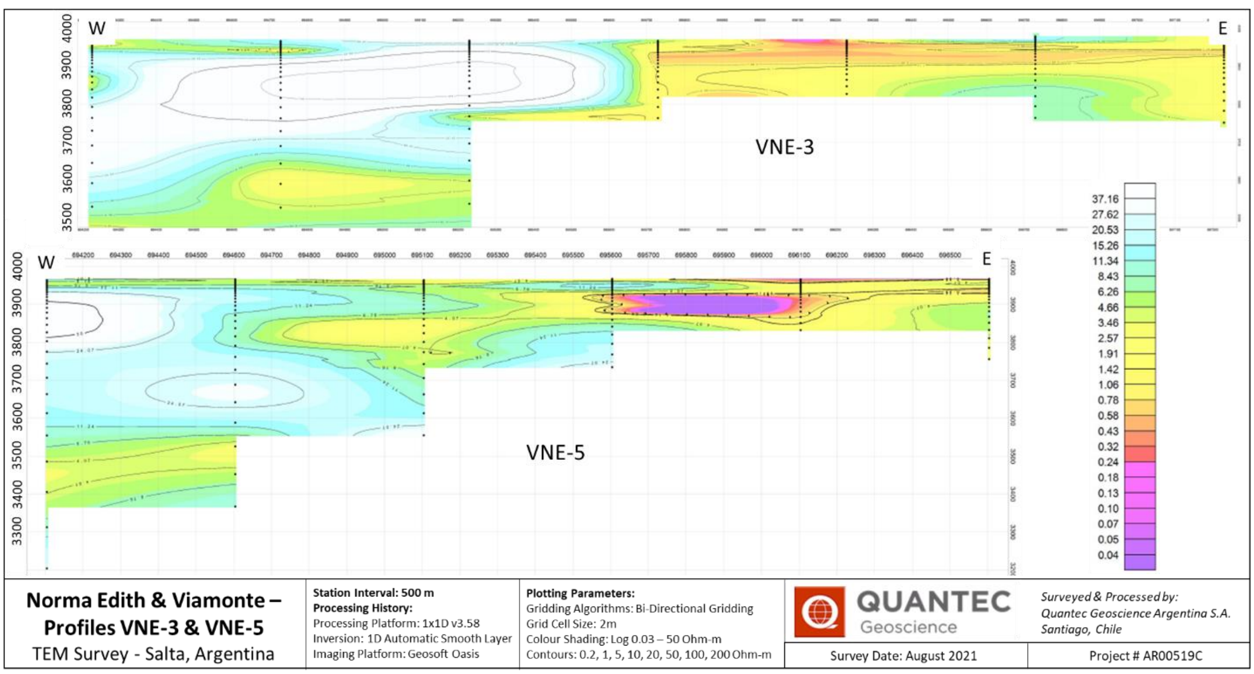
Source: GWI (2023)

9.4.5 Norma Edith and Viamonte TEM Results

The Norma Edith and Viamonte TEM survey comprised 33 soundings on an approximately 500 m x 500 m grid. Nine W-E lines and one S-N line were modelled for the properties. Example smooth-layer profiles are shown on Figure 9-8, and the following resistivity trends are observed at Norma Edith and Viamonte:

- A very thin low-R to moderate-R layer extends across the surface of survey area;
- The western side of the survey area, within the Norma Edith Property, is characterized by a thick high-R horizon that extends from near surface to approximately 400 mbgs. This is underlain by a moderate-R horizon. Both the low-R and moderate-R layers extend to the southern margin of the survey area, along the Norma Edith property; and
- The eastern portion of the survey area, the Viamonte property, is characterized by a thick, low-R to very low-R layer that is the main target for future exploration drilling within the Norma Edith and Viamonte properties. This horizon extends to the northern end of the survey area and is unconfined in the VNE-0 through VNE-3 profiles.

Figure 9-8: Norma Edith and Viamonte Example W-E Smooth-Layer Inverted TEM Profiles, VNE-3 and VNE-5 (location shown on Figure 9-2)



Source: GWI (2023)

9.5 2018 Pumping Tests

Pumping tests were conducted by Wichi Toledo S.R.L., Salta, Argentina, at two pumping wells in 2018:

- TWW18-01: results first reported by Montgomery (2018); and
- TWW18-02: results first reported by KPC (2019).

The locations of the pumping tests and an example of a pumping test set-up are shown in Figure 9-9.

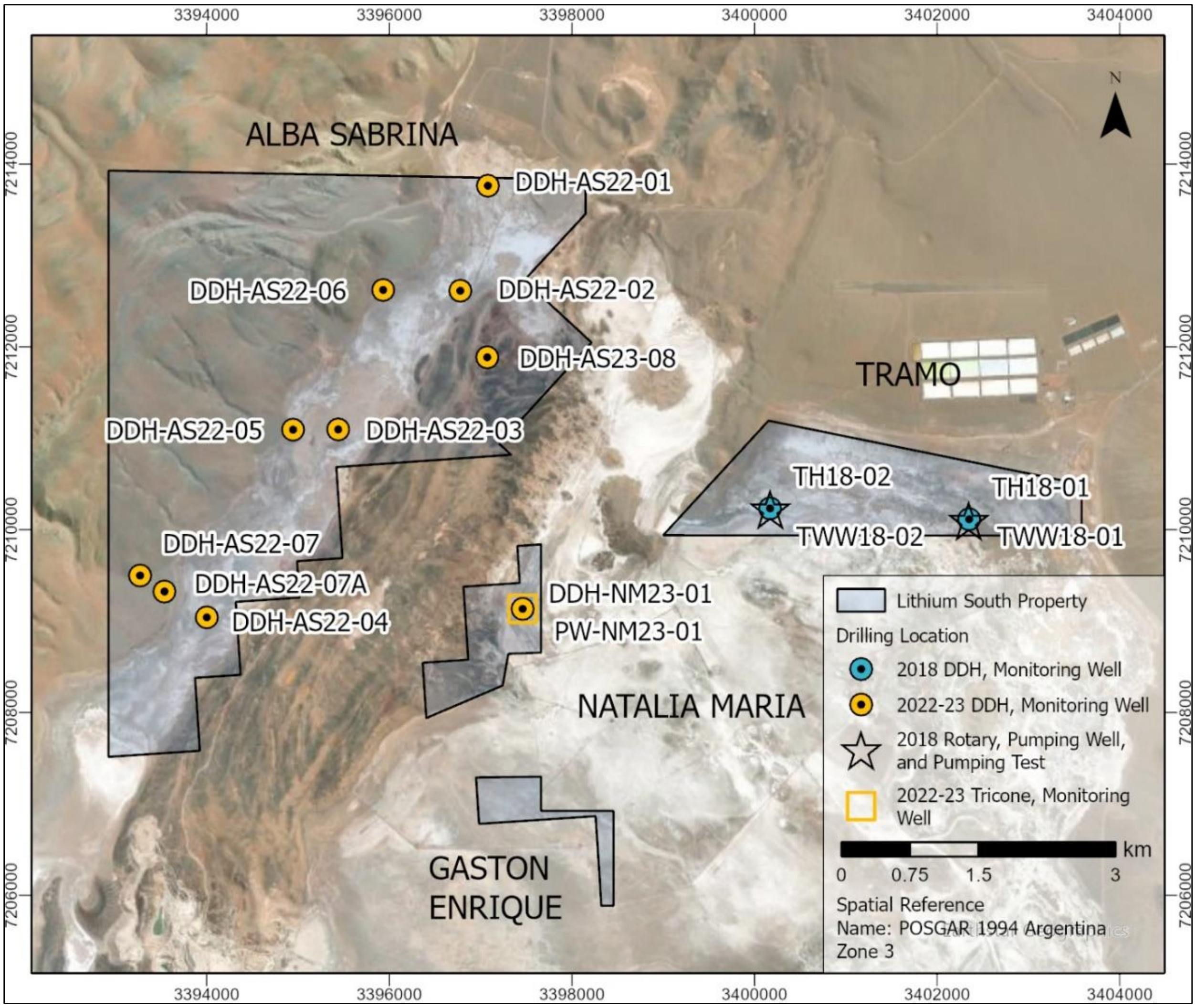
Pumping tests were performed as follows:

- A step test was conducted at three progressively higher flow rates to determine an effective pumping rate for the constant rate test;
- After completing the step test and allowing the brine levels to recover, a 72-hr constant flow test was performed (Figure 9-9);
- Piezometric levels were measured with a graduated sounder during the tests, in the pumping well and correlated observation well;
- Data were interpreted by Montgomery & Associates using Aqtesolv software (HydroSOLVE, 2008) and verified manually. Using methodology developed by Theis (1935), transmissivity was calculated from drawdown data using the logarithmic graphical method. Water level recovery measurements were analyzed using the semi-logarithmic graphical recovery method; and
- Logarithmic drawdown and semi-logarithmic recovery graphs for the pumping and observation wells were generated with computed aquifer transmissivity.

Figure 9-9: 72-hr Constant-Rate Pumping Test Set-up at TWW18-01

Source: GWI (2023)

Figure 9-10: Location of Boreholes, Installed Wells, and Pumping Tests at the HMN Project



Source: GWI (2023)

Table 9-3: Summary of the Tramo Property Pumping Test Results from the 2018 Field Season

Parameter	TWW18-01		TWW18-02	
Test Interval (mbgs)	0 - 401		0 - 372	
Tested Geological Units [1]	IFCS, IHS, Conglomerate		IFCS, IHS	
Test Type	Step	Constant	Step	Constant
Number of Pumping Rates	3	1	3	1
Duration (hr)	2 / pumping rate	72	2 / pumping rate	72
Average Pumping Rate (m^3/hr)	9.4 17.2 24.2	25	11 19.2 26.3	20.1
Drawdown after 24-hrs of pumping (m)		12.97		35.79
Specific Capacity (L/s/m) [2]		1.9		0.6
Transmissivity (m^2/d) from pumping well (Theis (1935) Recovery Method)		55		120
Transmissivity (m^2/d) from monitoring well (Theis (1935) Drawdown Method)		61		100

Notes:

[1] IFCS: Interlayered Fine and Coarse Sediments; IHS: Interbedded Halite and Sediments.

[2] Litres per second per metre.

Source: GWI (2023)

9.6 Data Processing

Borehole log information, laboratory data, and well configurations were compiled and processed in a Microsoft Excel database. All relevant spatial site information and mapping is compiled in ESRI ArcGIS Pro and Manifold System GIS. Project topographic data, Google Earth, and ESRI satellite imagery were used to identify topographic and hydrologic features.

10 DRILLING

10.1 Overview

The two drilling programs completed at the HMN Project, summarized in Table 10-1 and Table 10-2, are as follows:

- 2018 drilling program: two diamond drillholes (DDH) and two rotary holes drilled at Tramo; and
- 2022-2023 program: 10 DDHs, nine drilled at Alba Sabrina and one drilled at Natalia Maria; and one tricone hole drilled at Natalia Maria.

These drill programs were designed to test for lithium-rich brines within conductive geophysical target horizons and to support Resource estimation at the Alba Sabrina, Natalia Maria, and Tramo properties by:

- Collecting samples for subsurface brine chemistry characterization;
- Characterizing salar geology based on lithology and porosity (Sy) data collected from continuous core samples, downhole geophysics, and other drilling information; and
- Installing observation and pumping wells for hydrogeological characterization.

The location and chronology of boreholes are shown on Figure 9-9. Brine sampling results are presented in Section 10.5, and sampling methods are presented in Section 11.2.

10.2 Diamond Drilling

10.2.1 Diamond Drilling Methods

The following methods were used during the 2018 and 2022-2023 diamond drilling field campaigns:

- Vertical coreholes were drilled in HQ and/or PQ diameter to the target depth or to the maximum depth that the equipment was able to achieve;
- Core recovered during drilling was transferred into core boxes and photographed;
- Drill logs were prepared to record recovery percentage, lithology, and visual porosity; porosity samples were collected, and the core was stored and labelled;
- Depth-discrete brine samples were collected during drilling or upon completion of drilling (Section 11.2.3);

- Downhole geophysics was performed at select boreholes; and
- Upon completion of drilling, an observation well was installed at each DDH location, and composite brine samples were collected from the developed wells (Section 11.2.5).

10.2.2 2018 Diamond Drilling

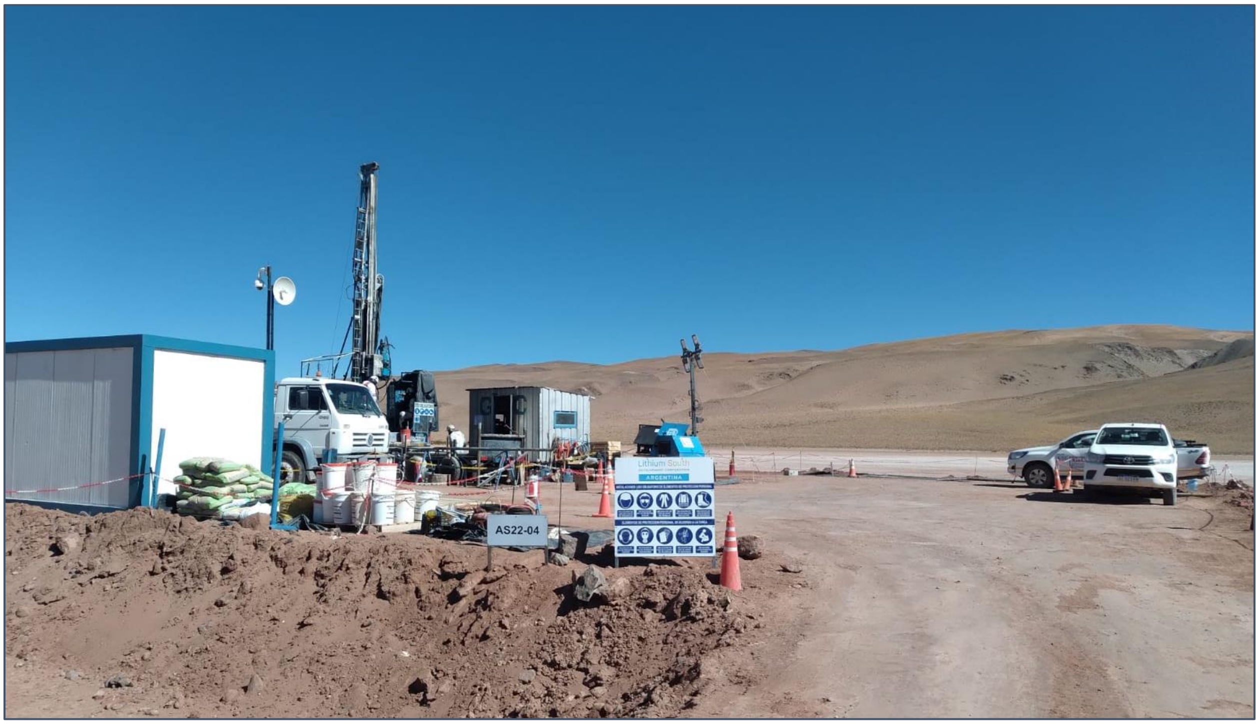
Results of the 2018 DDH program were first reported by Montgomery (2018). Two vertical DDHs, TH18-01 and TH18-02, were drilled on the Tramo Property in April and July 2018 by AVG Falcon, of Salta, Argentina. Drilling was completed with a HYDX-6 drill rig using triple tube PQ3 and HQ3 drilling methods. Downhole geophysical surveys were conducted by Aminco S.R.L.

Observation wells were installed at each location using 2-inch schedule 80 PVC and 2-inch slotted PVC (0.75 mm slot size). Wells were completed with surface steel casing, a surface sanitary cement seal, and lockable cap.

10.2.3 2022-2023 Diamond Drilling

Ten vertical DDHs were drilled by GYC Andalgalá Perforaciones S.R.L., Catamarca, Argentina, between August 2022 and April 2023 (Figure 10-1). Wireline drilling methods were used, and HQ-diameter core was recovered from each DDH. Tricone drilling was used at DDH-AS22-04, from 260-308 m, and equipment was reduced to NQ-diameter to achieve the target depth of 411 mbgs. A range of biodegradable additives were used during drilling, including: Bentoget, Poliget, Get trol, Softcore, Cytemp, EcoLube, gom xántica, Viscosan, and Bioxan.

Figure 10-1: Diamond Drilling at DDH-AS22-04, August 10, 2022



Source: GWI (2023)

Core recovery, lithology, and visual porosity logs were prepared onsite by LIS personnel. Porosity samples were collected during and after drilling, at depths identified by GWI. Downhole geophysical surveys were completed at nine of the boreholes. The conductivity survey at DDH-AS22-07 was implemented by Zelandez Services Argentina S.R.L., Salta, Argentina, and all other downhole surveys were conducted by Mercoaguas, Salta, Argentina. Observation wells were installed with 2-inch PVC screen and casing.

10.3 2022-2023 Tricone Drilling

One tricone borehole, PW-NM23-01, was drilled at Natalia Maria by GYC Andalgalá Perforaciones S.R.L., Catamarca, Argentina, in March 2023. Drill cuttings were described by LIS personnel. The purpose of this borehole was to install a shallow observation well in the IFCS unit, adjacent to the deeper observation well DDH-NM23-01. The observation well was installed with 2-inch PVC screen and casing.

10.4 2018 Rotary Drilling

The 2018 rotary drilling program was first described by Montgomery (2018). Wichi Toledo S.R.L. drilled both rotary boreholes using conventional mud rotary methods, circulating drilling fluids prepared from polymer mixed with locally sourced brine. Pumping wells were installed with PVC screen and casing. Gravel pack and fill materials were installed in the annular space surrounding the well screen, and clean salty water was used to clean the well for 24-hours. Borehole and well specifications are summarized in Table 10-1.

Table 10-1: Drilling and Well Construction Specifications for the 2018 Rotary Boreholes and Pumping Wells Installed at the Tramo Property, HMN Project

Drilling and Well Specifications	TWW18-01		TWW18-02	
	From (mbgs)	To (mbgs)	From (mbgs)	To (mbgs)
12 ¾ inch diameter drilling	0	174	0	190
8.5-inch diameter drilling	174	401	190	400
Reamed to 17.5 inches	0	401	0	372
10-inch PVC Casing [1]	0	174	0	132
8-inch PVC Casing [1]	174	401	132	372

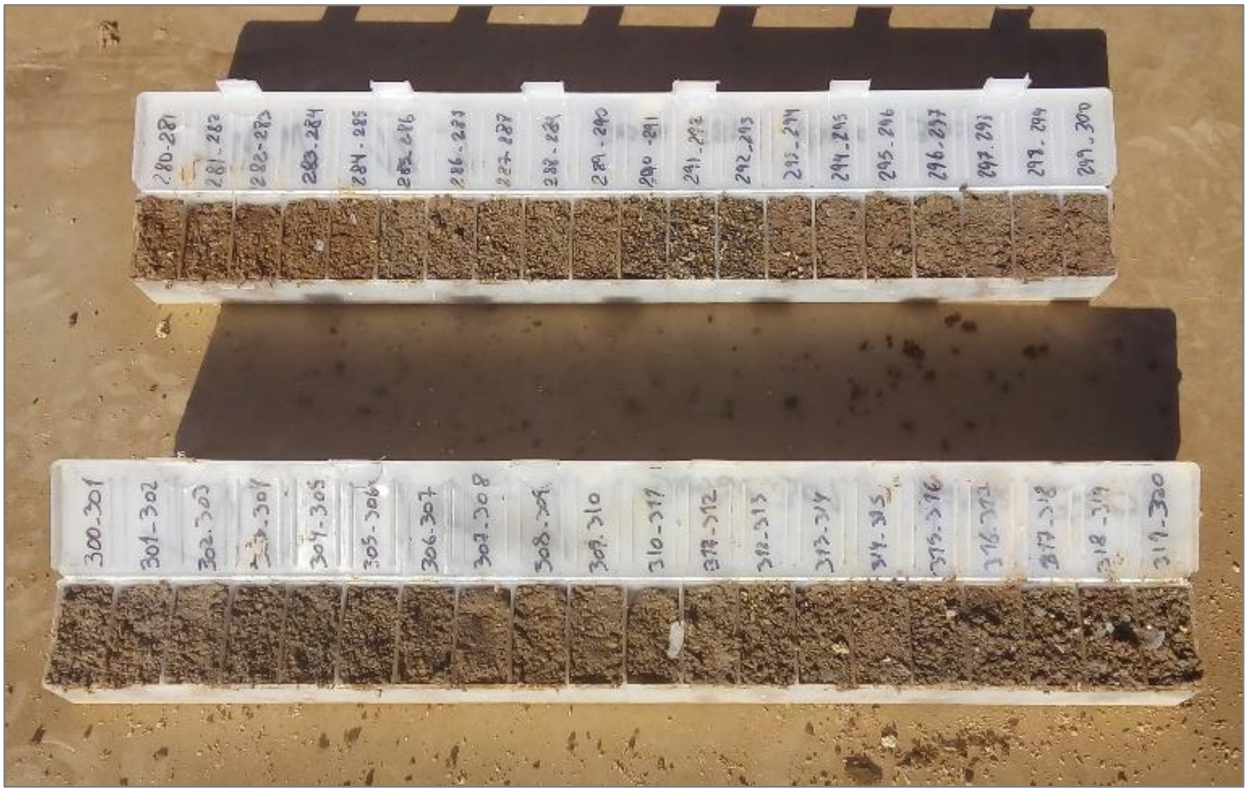
Note:

[1] Intervals of PVC casing and screened PVC, screen slot size = 0.75 mm

Source: GWI (2023)

Unwashed and washed drill cuttings were logged and stored in labelled plastic cuttings boxes (Figure 10-2). Downhole geophysical surveys were conducted by Mercoaguas. Both rotary boreholes were completed as pumping wells. Pumping test are summarized in Section 9.5, and brine sampling from each pumping well is described in Section 11.2.4.

Figure 10-2: Example Rotary Chip Trays Used for Logging, 320-360 mbgs, TWW18-01



Source: GWI (2023)

10.5 Subsurface Brine Chemistry

Subsurface brine samples were collected during the 2018 and 2022-2023 drilling programs and 2018 pumping tests, as described in Section 11.2. Sample locations and average lithium grade at each location are shown on Figure 10-3, and a summary of the results is shown by borehole in Table 10-2. Overall, there is good agreement between depth discrete samples and samples collected from developed long-screen wells at the same borehole or platform location.

One packer sample, sample HMN-135 collected at Alba Sabrina from borehole DDH-AS22-03, was excluded from the borehole averages and from the data set used for brine grade interpolation (Section 14.4). Sample HMN-135 has a lithium concentration of 320 mg/L and a depth interval of 200 to 260 mbgs. This concentration is considered erroneously low in relation to neighbouring samples, both laterally and vertically (see Figure 10-3 and Figure 10-4). The low lithium grade is attributed to contamination from drilling fluids and shallow, fresher water caused by an incomplete seal in the packer assembly during sampling.

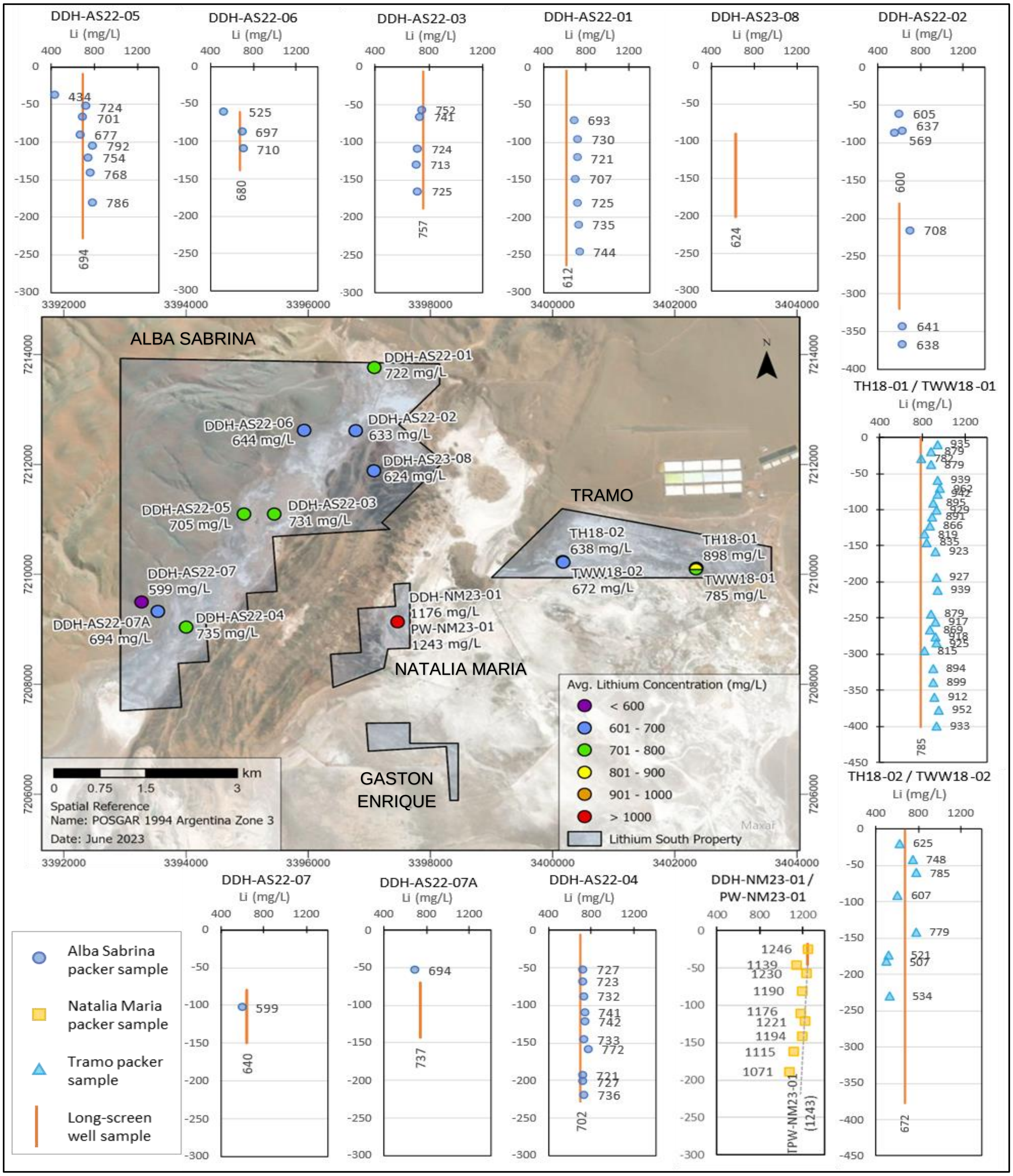
The following spatial trends in lithium (Li) brine grade are noted in the discrete-level packer samples:

- The Natalia Maria property has the highest overall Li grade, with Li results ranging from 1071 to 1246 mg/L and averaging 1103 mg/L;
- Lithium grades at Tramo increase towards the east, averaging 638 and 898 mg/L in boreholes TH18-02 and TH18-01, respectively. The overall average for the property is 769 mg/L;
- Alba Sabrina has the lowest overall brine grade of 698 mg/L Li;
- Below average Li values are in the shallowest samples collected from DDH-AS22-05, DDH-AS22-06, and DDH-AS22-07. These values indicate dilution by freshwater inflow into the salar through the alluvial fans at the western margin of the salar; and
- On a salar-wide basis, a depth-dependent trend is not apparent in Li grades (see Figure 10-3 and Figure 10-4).

General spatial trends for potassium (K), boron (B), magnesium to lithium ratio (Mg/Li), calcium to lithium ratio (Ca/Li), and sulphate to magnesium ratio (SO_4/Mg) and the relationships between these brine constituents are shown on Figure 10-5 through Figure 10-14. These trends indicate that each property has unique brine chemistry characteristics.

The highest average concentrations of K and B occur at Natalia Maria. Alba Sabrina has the highest average Mg/Li ratio (3.53), whereas Tramo has the highest average Ca/Li ratio (1.23). Mg/Li and Ca/Li ratios are very low, averaging 3.27 and 0.93, respectively. Brine chemistry trends are further discussed in Section 14.6.

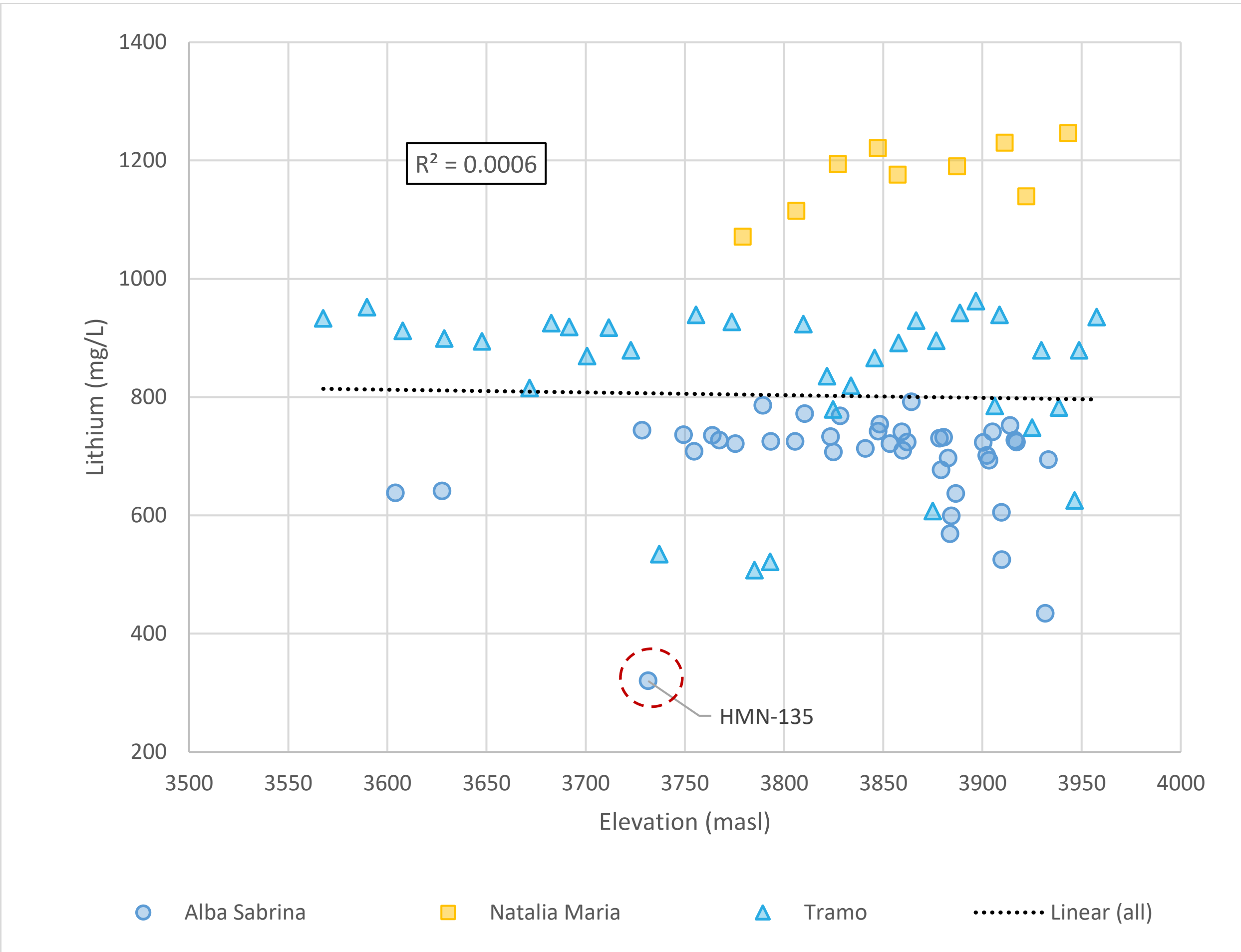
Figure 10-3: Distribution of Lithium in the 2018 and 2022-2023 Brine Samples



Source: GWI (2023)

Map values at boreholes labelled with "DDH" and "TH" are calculated from packer samples averaged over the drill hole (blue circle on graphs), except for DDH-AS23-08. Values at boreholes labelled with "PW", "TWW", and DDH-AS23-08 are averages of samples collected from developed wells (orange lines on graphs represent screen length and placement).

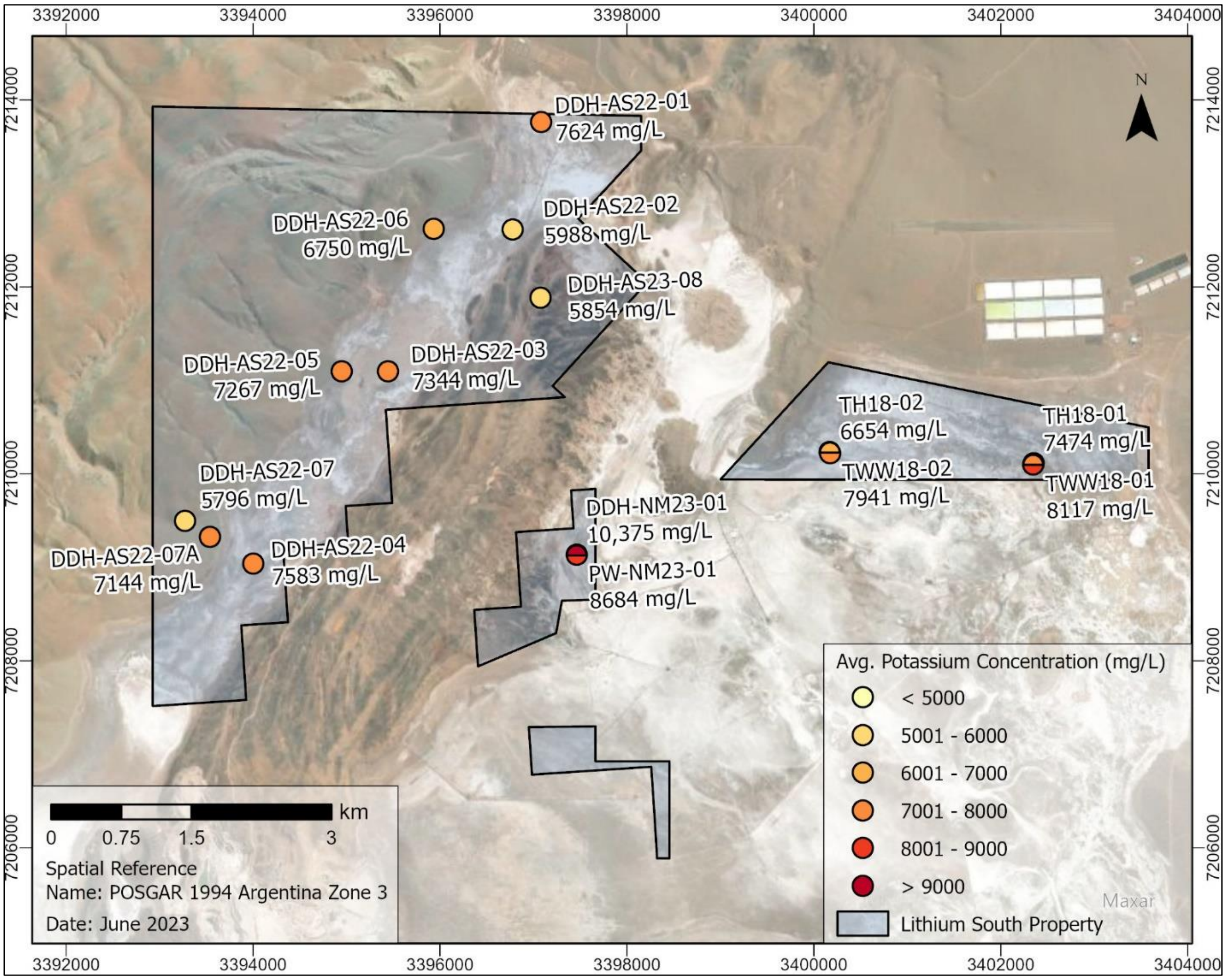
Figure 10-4: Elevation vs. Lithium Graph of Depth Discrete Brine Samples Collected during the 2018 and 2022-2023 Drilling Programs, Showing No Apparent Trend in Lithium Grade with Depth



Source: GWI (2023)

Sample HMN-135 excluded from Resource and R^2 value (circled).

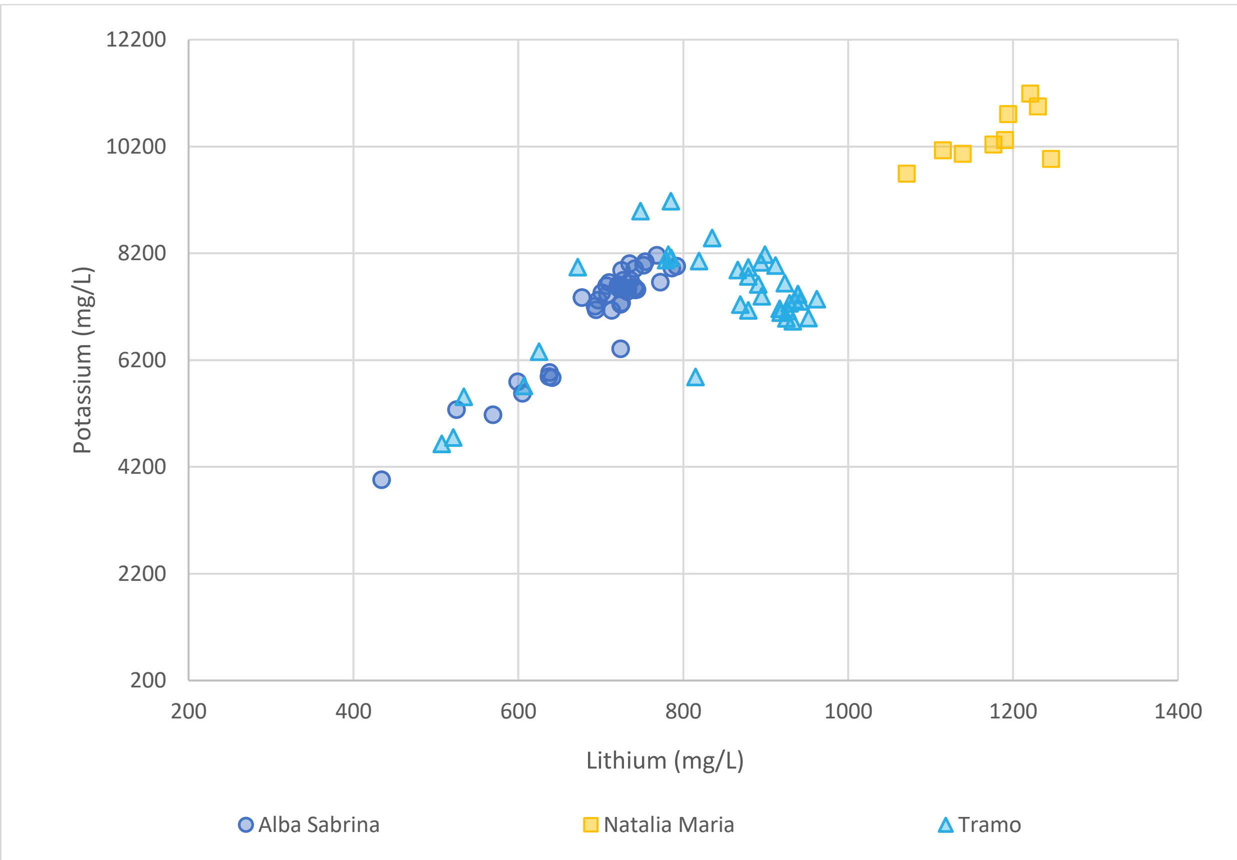
Figure 10-5: Distribution of Potassium in the 2018 and 2022-2023 Boreholes



Source: GWI (2023)

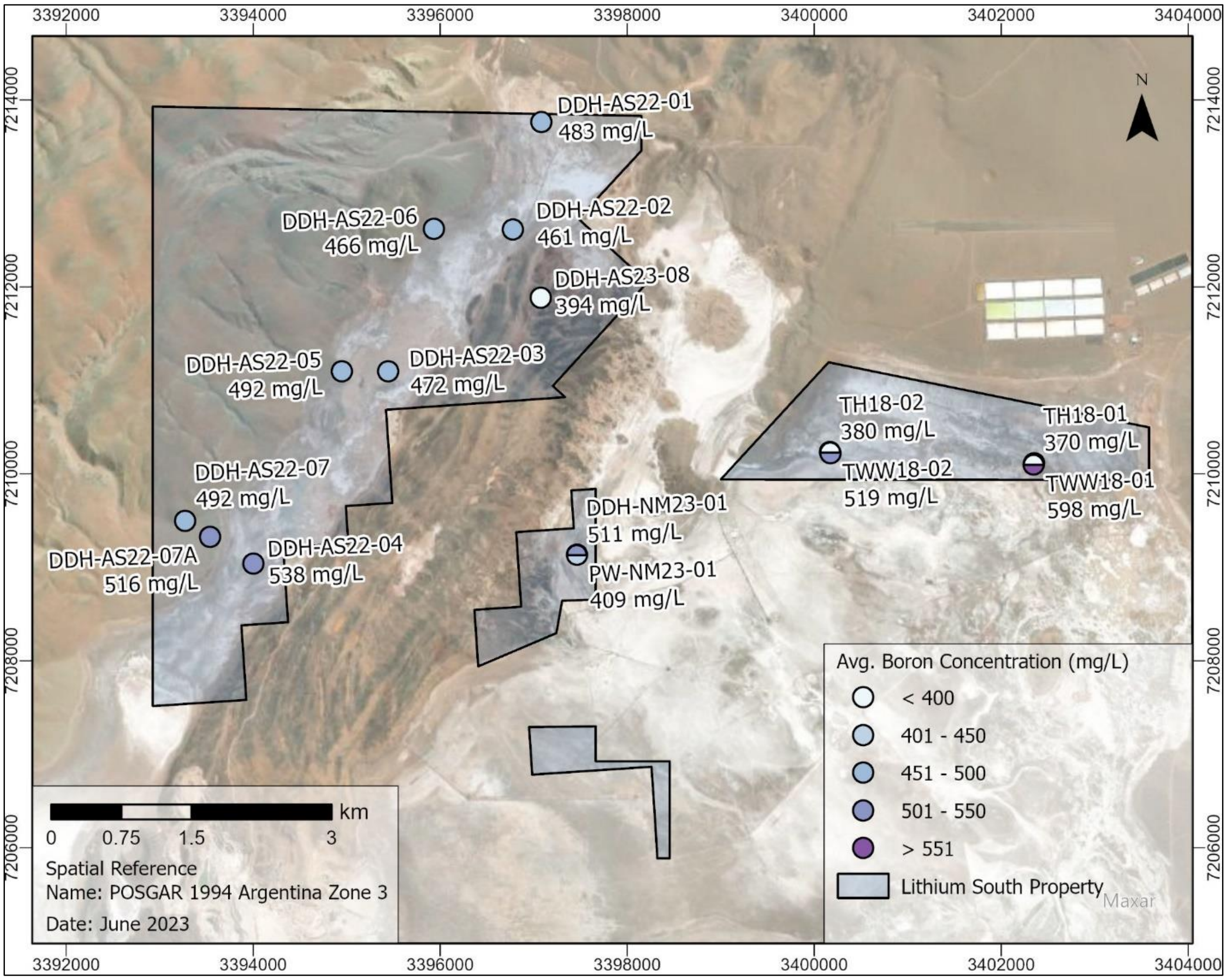
Values at boreholes labelled with "DDH" and "TH" are calculated from packer samples averaged over the drill hole, except for DDH-AS23-08. Values at boreholes labelled with "PW", "TWW", and DDH-AS23-08 are averages of samples collected from developed wells.

Figure 10-6: Lithium versus Potassium for Brine Samples



Source: GWI (2023)

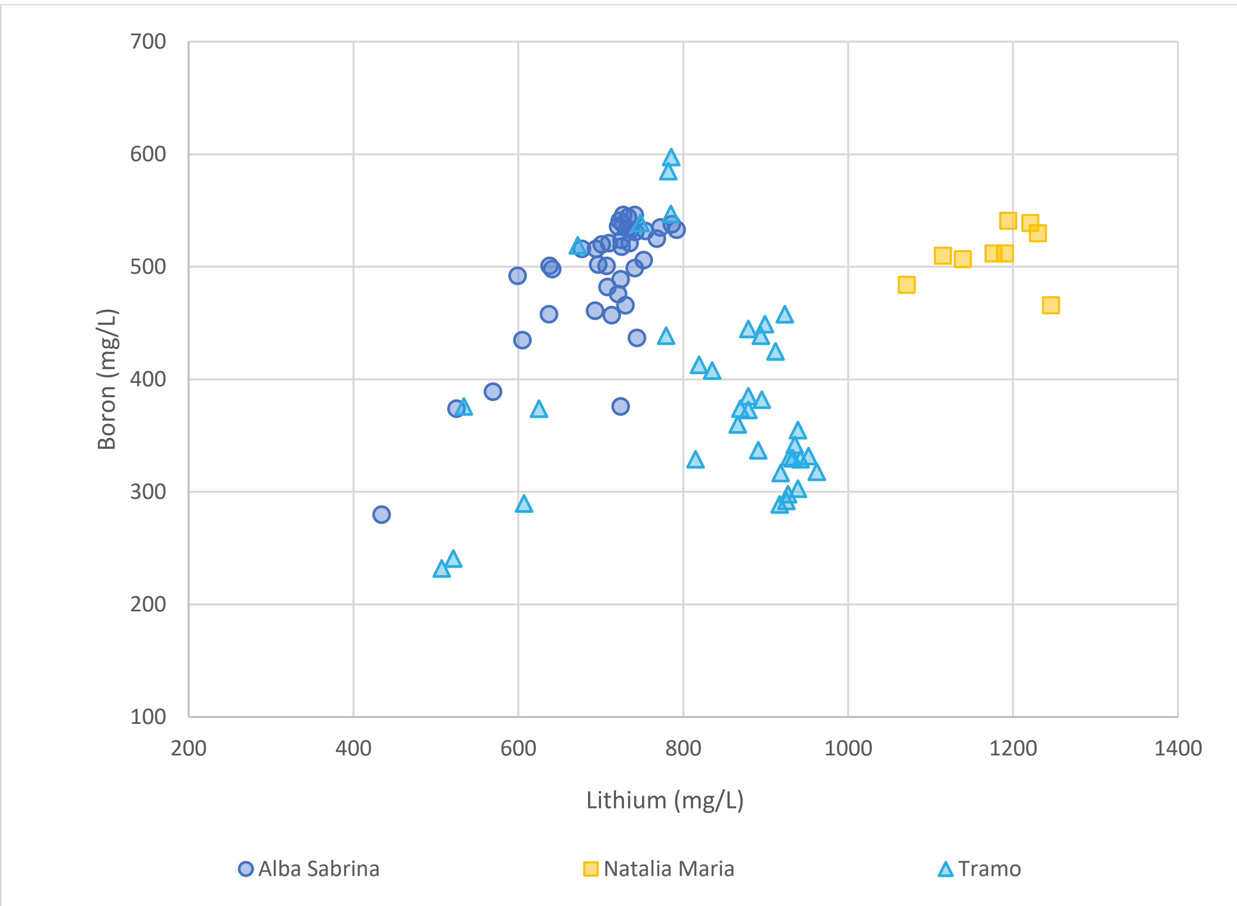
Figure 10-7: Distribution of Boron in the 2018 and 2022-2023 Boreholes



Source: GWI (2023)

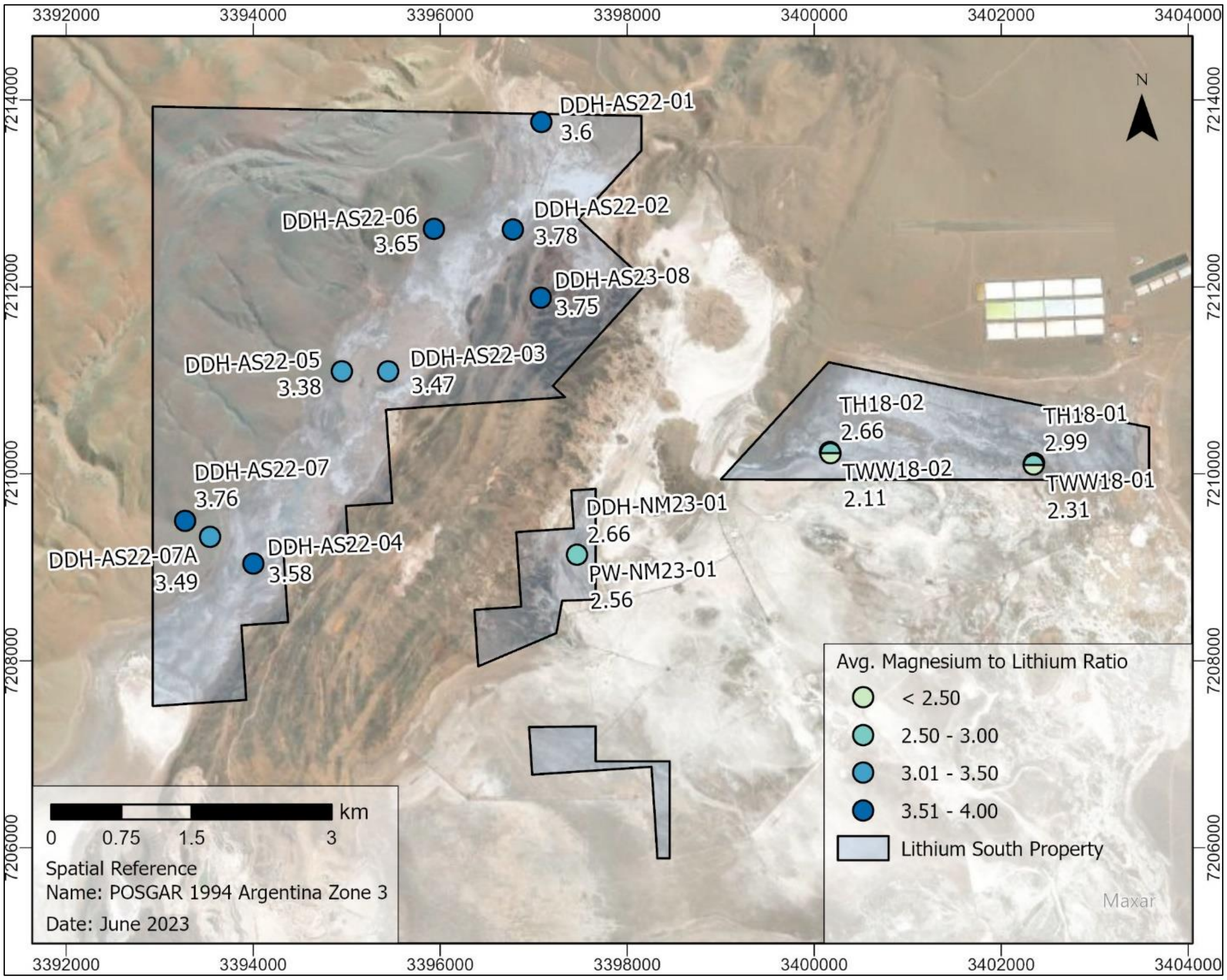
Values at boreholes labelled with “DDH” and “TH” are calculated from packer samples averaged over the drill hole, except for DDH-AS23-08. Values at boreholes labelled with “PW”, “TWW”, and DDH-AS23-08 are averages of samples collected from developed wells.

Figure 10-8: Lithium versus Boron for Brine Samples



Source: GWI (2023)

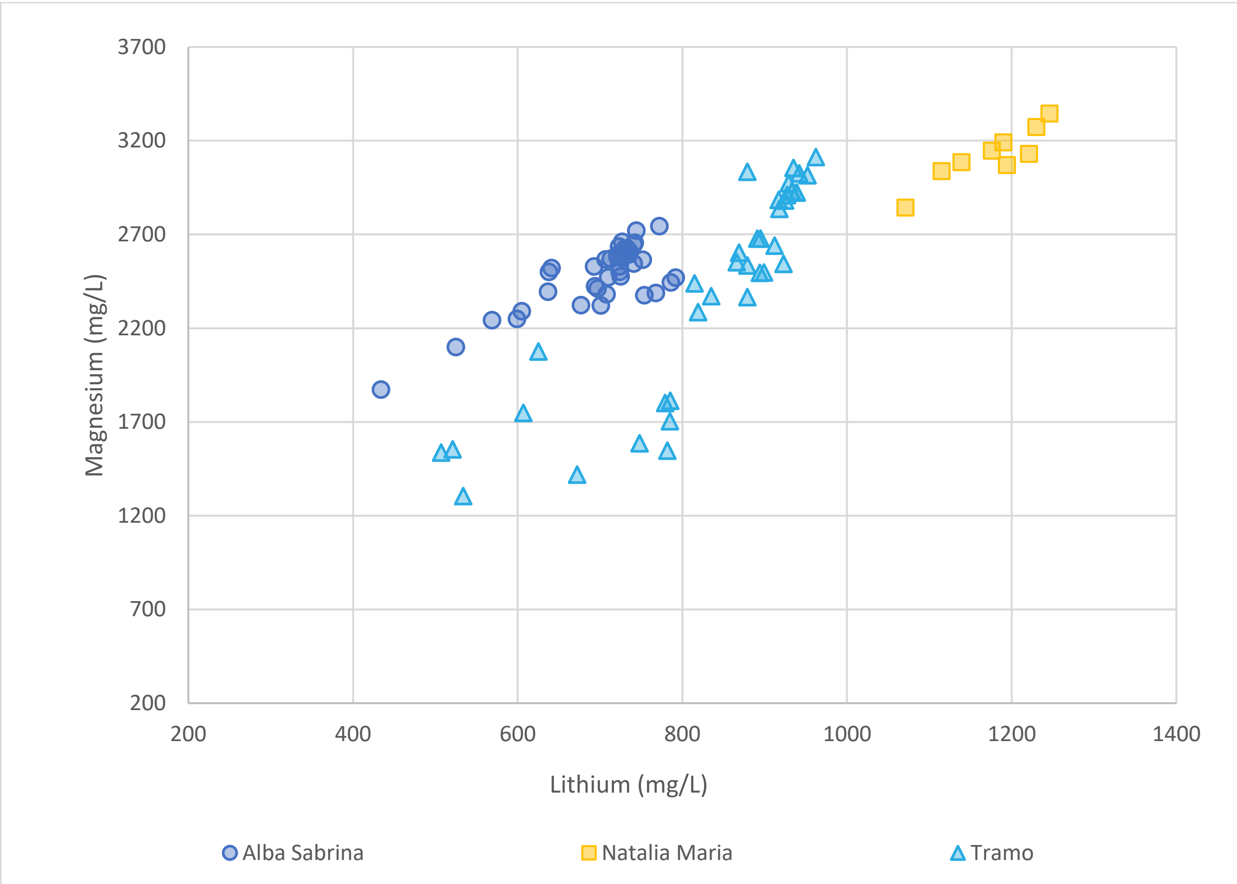
Figure 10-9: Distribution of the Magnesium to Lithium Ratio in the 2018 and 2022-2023 Boreholes



Source: GWI (2023)

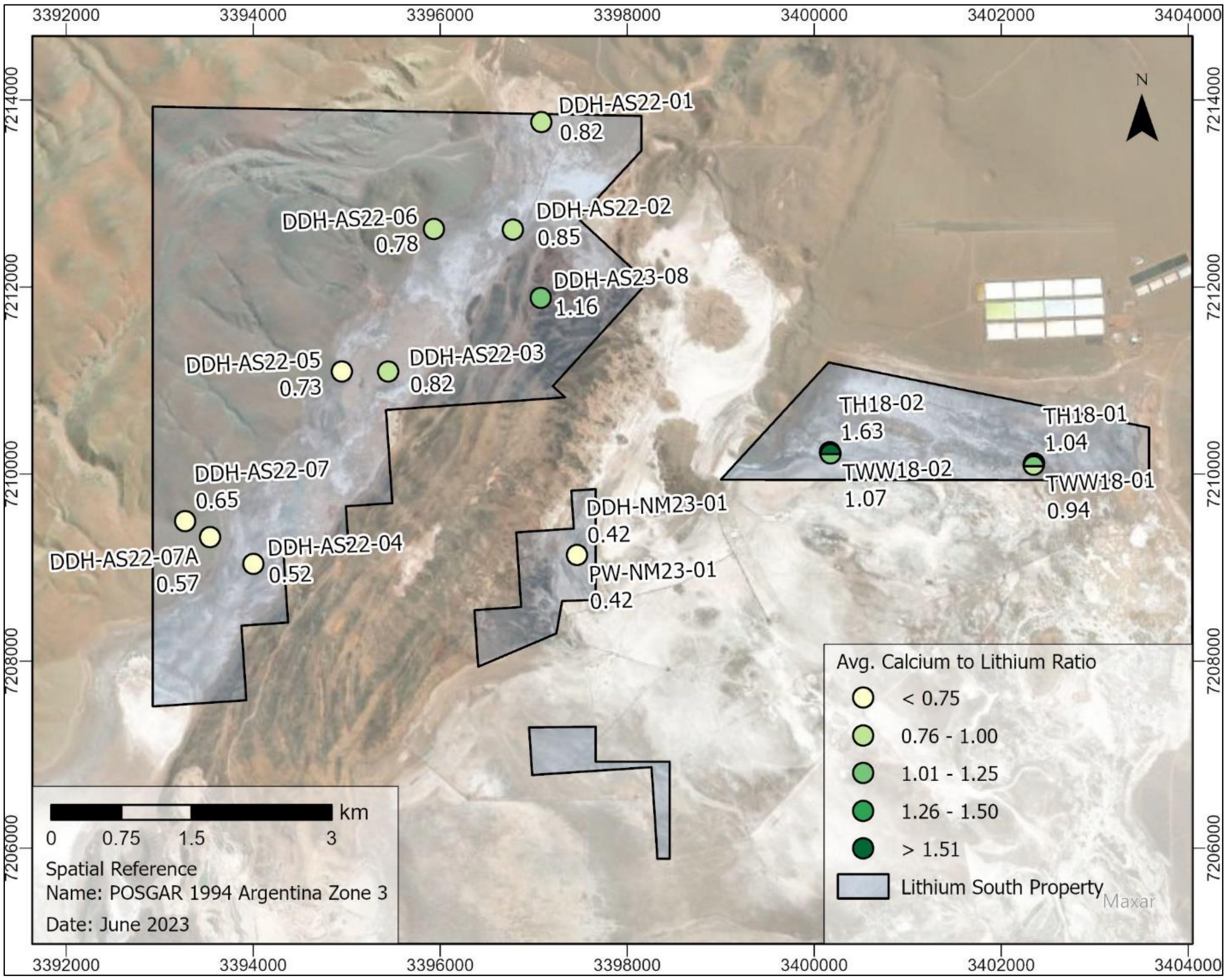
Values at boreholes labelled with “DDH” and “TH” are calculated from packer samples averaged over the drill hole, except for DDH-AS23-08. Values at boreholes labelled with “PW”, “TWW”, and DDH-AS23-08 are averages of samples collected from developed wells.

Figure 10-10: Lithium versus Magnesium for Brine Samples



Source: GWI (2023)

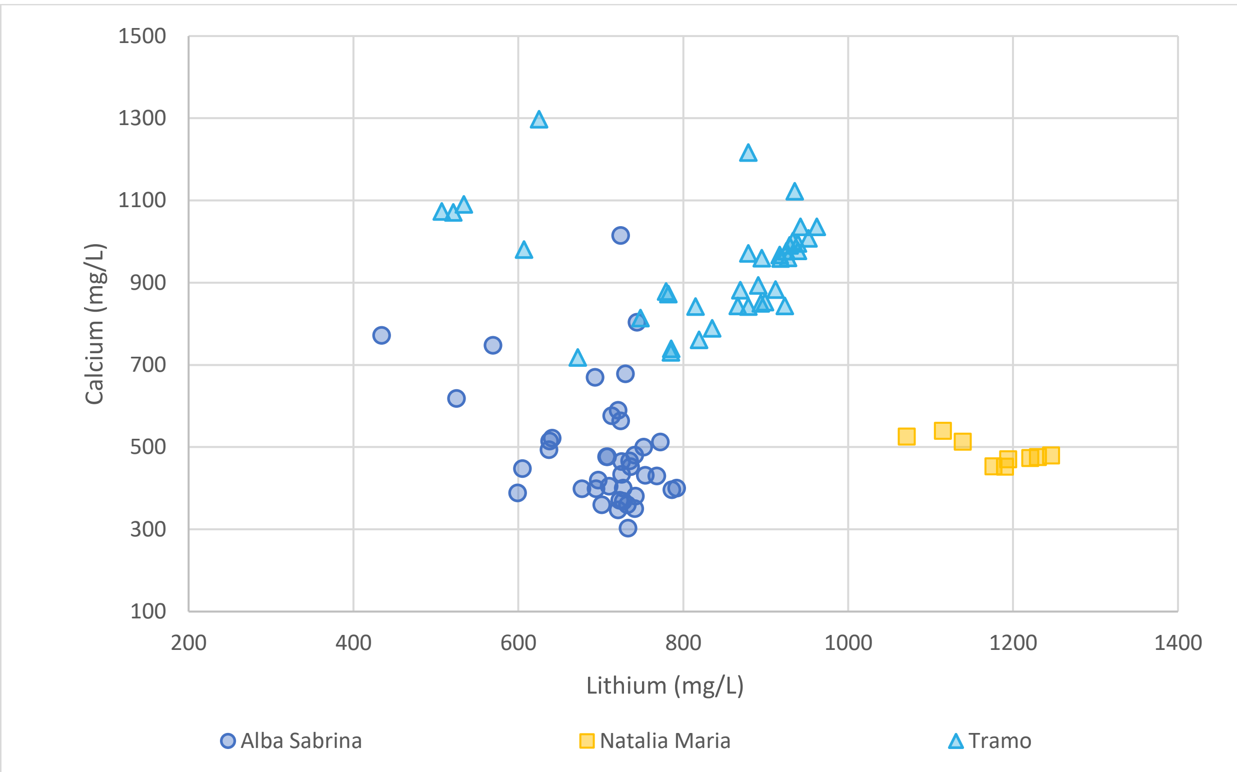
Figure 10-11: Distribution of the Calcium to Lithium Ratio in the 2018 and 2022-2023 Boreholes



Source: GWI (2023)

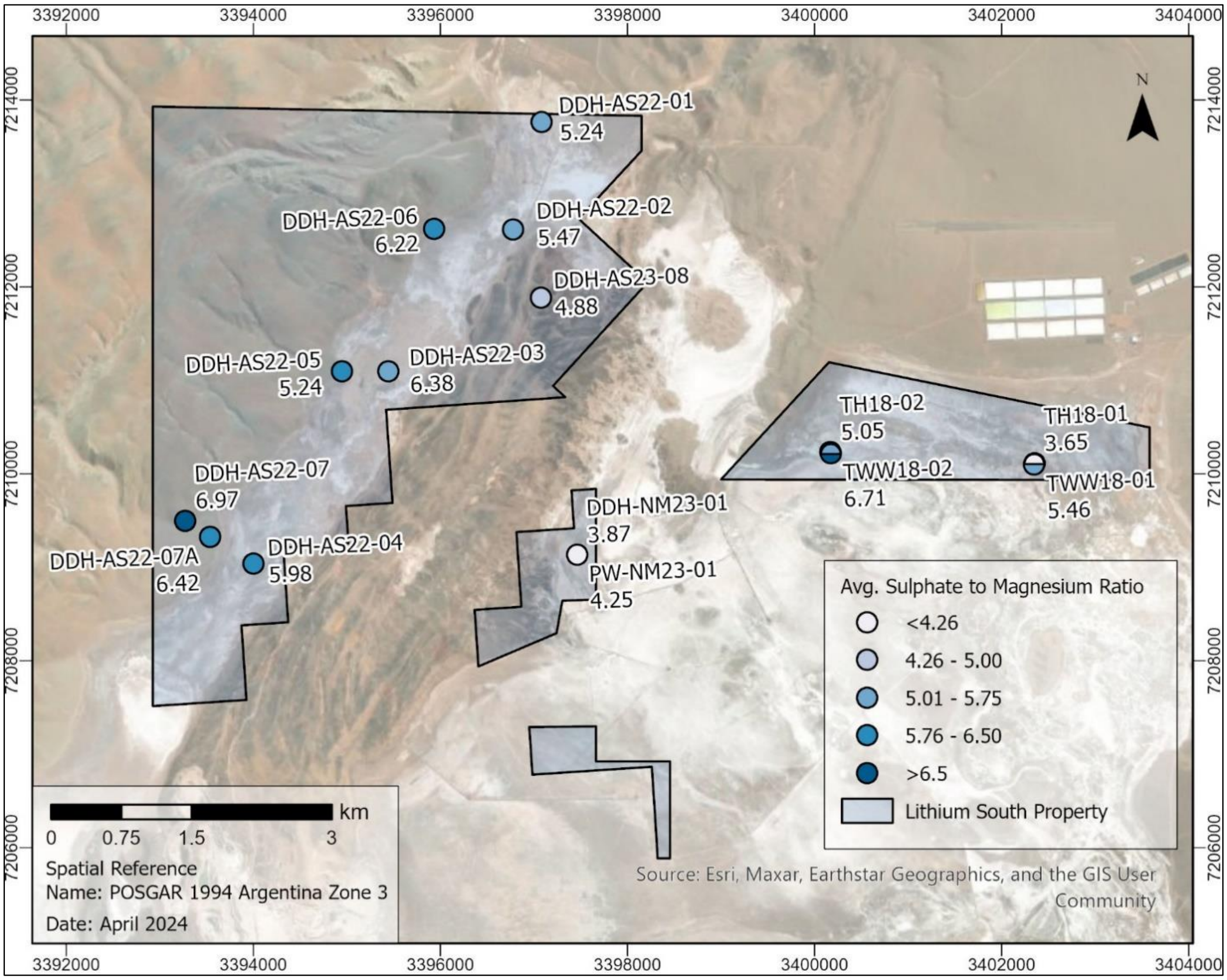
Values at boreholes labelled with "DDH" and "TH" are calculated from packer samples averaged over the drill hole, except for DDH-AS23-08. Values at boreholes labelled with "PW", "TWW", and DDH-AS23-08 are averages of samples collected from developed wells.

Figure 10-12: Lithium versus Calcium for Brine Samples



Source: GWI (2023)

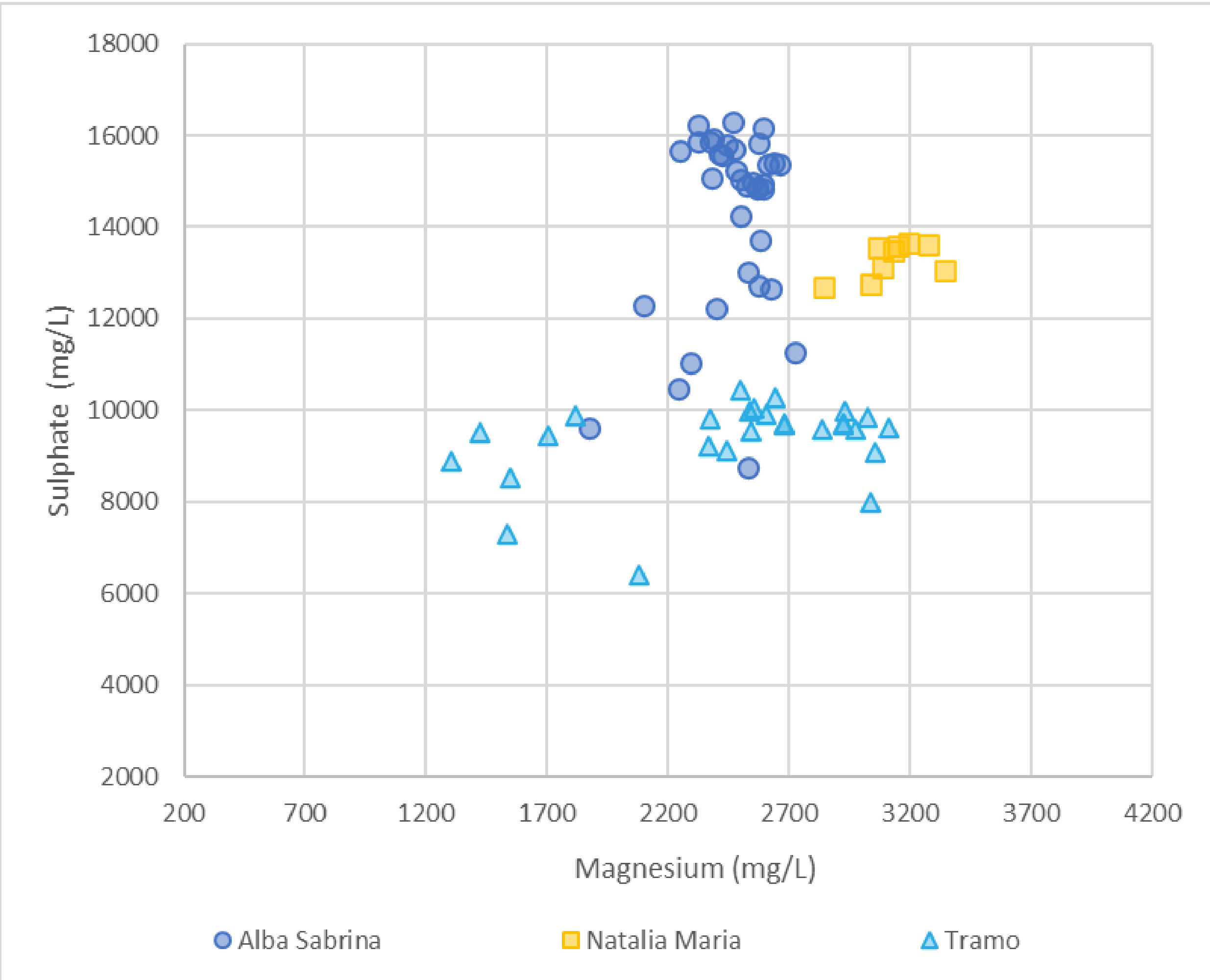
Figure 10-13: Distribution of the Sulphate to Magnesium Ratio in the 2018 and 2022-2023 Boreholes



Source: GWI (2024)

Values at boreholes labelled with “DDH” and “TH” are calculated from packer samples averaged over the drill hole, except for DDH-AS23-08. Values at boreholes labelled with “PW”, “TWW”, and DDH-AS23-08 are averages of samples collected from developed wells.

Figure 10-14: Magnesium versus Sulphate for Brine Samples



Source: GWI (2024)

10.6 Characterisation of Specific Yield (Sy)

Core samples from the 2018 and the 2022-2023 drilling programs were submitted to GeoSystems Analysis Inc. (GSA) in Tucson, Arizona, USA to estimate Sy using the Rapid Brine Release (RBR) extraction method (Section 11.3). The cores were also analyzed for bulk density, total porosity, and field water capacity (Section 11.3). These hydraulic parameters are described as follows:

- Specific Yield (Sy) – The ratio between the volume of water that can be drained by gravity from a given rock, sediment, or soil and the total bulk volume of that material;
- Bulk density – The dry weight of rock, sediment, or soil per unit volume of that sample;
- Total porosity (Pt) – The total volume of pore or void space present within a unit volume of rock, sediment, or soil, measured as a percentage. This parameter provides a measure of the material's capacity to hold and transmit fluids; and
- Field water capacity – The water content retained within the rock, sediment, or soil after excess water has been drained. It represents the amount of water that the rock, sediment, or soil can retain after drainage.

A total of 79 core samples were analyzed from 11 DDHs during the 2018 and 2023-22 drilling programs (Table 10-2). Example 2022-2023 core samples submitted for analysis are shown on Figure 10-15. Results from the 20 Tramo property core samples analyzed in 2018 were first reported by Montgomery (2018) and are presented in Table 10-2 and Table 10-3 in the context of the updated geological units.

Table 10-2: Summary of Core Samples Collected for RBR Analysis, 2018 and 2022-2023 Porosity Samples

Borehole [1]	Number of Samples Collected	Number of Samples Analyzed	Core Size	Number of Samples Analyzed by Geological Unit [2]							
				IFCS	IHS	B	H	UMS	Cgl	CH	BQTZ
DDH-AS22-01	13	7	HQ	6				1			
DDH-AS22-02	14	11	HQ NQ [3]	6				5			
DDH-AS22-03	15	14	HQ	3		4		6			1
DDH-AS22-04	15	7	HQ	2		2		2			1
DDH-AS22-05	6	3	HQ	2							1
DDH-AS22-06	6	5	HQ	4							1
DDH-AS22-07	2	1	HQ								1
DDH-AS22-07A	3	1	HQ	1							
DDH-NM23-01	11	10	HQ	2	1		5			2	
TH18-01 [4]	37	10	HQ	3	2				5		
TH18-02 [4]	10	10	HQ	3	7						
Total	**132**	**79**		**32**	**10**	**6**	**5**	**14**	**5**	**2**	**5**

Notes:

[1] AS = Alba Sabrina; NM = Natalia María; T = Tramo

[2] IFCS = Interlayered Fine and Coarse Sediments; IHS = Interbedded Halite and Sediments; B = Basalt; H = Halite; UMS = Upper Middle Sediments; Cgl = Conglomerate; CH = Compact Halite; BQTZ = Brecciated

[3] Quartzite

[4] The three core samples collected from the Brecciated Quartzite unit intersected in DDH-AS22-02 are NQ diameter.

Previously reported by Montgomery (2018).

Source: GWI (2023)

Figure 10-15: Example Core Samples Collected and Analyzed During the 2022-2023 Drilling Program, and Sy Results for Each Sample

	Interlayered Fine and Coarse Sediments (IFCS) – Alba Sabrina S_y = 0.277 (S_y^* = 0.150)		Interlayered Fine and Coarse Sediments (IFCS) – Natalia Maria and Tramo S_y = 0.051 (S_y^* = 0.051)
	Interbedded Halite and Sediments (IHS) S_y = 0.159 (S_y^*= 0.150)		Basalt S_y = 0.063 (S_y^* = 0.063)
	Halite Sy = 0.072 (S_y^* = 0.072)		Upper Middle Sediments (UMS) Sy = 0.332 (S_y^* = 0.150)
	Compact Halite (CH) Sy = 0.088 (S_y^* = 0.088)		Brecciated Quartzite (BQTZ) Sy = 0.030 (S_y^* = 0.030)

Notes:
Sy = value estimated by laboratory, depth corrected if applicable.
Sy* = conservative value applied to calculate average for geological unit.

Source: GWI (2023)

RBR (Sy) results are summarized by geological unit in Table 10-3. The following observations are noted:

- Twenty-four of the 2022-2023 samples analyzed had anomalously high porosity and Sy results, due to the unconsolidated nature of the core samples;
- The Sy values were highly variable across the IFCS unit (0.028 – 0.386). Sediments identified as IFCS had a higher overall visual porosity and lower degree of consolidation in Alba Sabrina in comparison to those in Natalia Maria and Tramo;
- Core samples collected from the CH unit had a higher average Sy (0.100; two samples) than that for the Halite unit (0.068; five samples), despite low visual porosity and poor packer sample recovery from the CH unit; and
- Results for the BQTZ unit are based on five samples. Several other core samples collected from the unit were not analyzed because they were fractured or brecciated, as opposed to whole core pieces.

The following adjustments were made based on these trends:

- Sy values are potentially affected by limitations in sampling unconsolidated materials: Prior to calculating the average Sy for each geological unit, any Sy values greater than 0.15 were lowered to 0.15. This approach added a degree of conservatism. The resulting average values are consistent with published values for analogous projects;
- IFCS: The average Sy for IFCS at Alba Sabrina was based on the core samples collected from Alba Sabrina; Sy for the IFCS east of Tincalayu was calculated based on Natalia Maria and Tramo results;
- CH: This unit was assigned an Sy value of zero and is not included in the current Resource Estimate, based on low visual porosity and poor recovery of brine during packer sampling within the unit. Future hydraulic testing may support the existence of secondary porosity (fracturing) within this unit; and
- BQTZ: The average value for BQTZ is considered acceptable for this stage of Resource Estimation. Additional hydraulic testing is recommended, to better estimate the impact of secondary porosity on recoverable brine.

Mean Sy values based on these adjustments were used to estimate the recoverable brine stored in each geological unit found within the Alba Sabrina, Natalia Maria, and Tramo Properties (Table 10-3; Section 14.2.3). Sampling procedures and analytical methods are discussed in Section 11.3.

Table 10-3: Univariate Statistics for RBR Results, and Final Sy Values Used for Resource Calculations

Unit	Count	Minimum S_y	Maximum S_y	Mean S_y	Standard Deviation	Final S_y
Interlayered Fine and Coarse Sediments (IFCS) - All	32	0.028	0.386	0.147	0.101	-
Interlayered Fine and Coarse Sediments (IFCS) – Alba Sabrina	24	0.028	0.386	0.160	0.102	0.111
Interlayered Fine and Coarse Sediments (IFCS) – Natalia Maria and Tramo	8	0.051	0.126	0.089	0.029	0.089
Interbedded Halite and Sediments (IHS)	10	0.026	0.246	0.106	0.063	0.096
Basalt	6	0.005	0.113	0.053	0.045	0.053
Halite	5	0.061	0.072	0.068	0.016	0.068
Upper Middle Sediments (UMS)	14	0.068	0.332	0.192	0.089	0.131
Conglomerate	5	0.038	0.143	0.087	0.050	0.087
Compact Halite (CH)	2	0.088	0.111	0.100	0.016	0
Brecciated Quartzite	5	0.030	0.185	0.093	0.060	0.086
Total	**79**					

Source: GWI (2023)

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 Overview

The following sections describe the sample collection and analytical methods used for the 2016-17, 2018, and 2022-2023 Programs. Sample preparation was not required for the brine samples or for the core samples collected during these Programs. No samples were collected during the 2021 Program.

All 2022-2023 Program oversight (e.g., sample collection, drilling, well construction, QA/QC, and secure transport) was performed by LIS personnel, with oversight by Dr. Mark King (QP). The QP considers that the HMN Project dataset and QA/QC procedures are acceptable for evaluation of brine Resources, with no significant and systematic bias.

11.2 Brine Sample Collection and Analysis

11.2.1 Overview of Brine Sample Collection and Field Parameters

All brine samples were collected in clean sample bottles that were sealed and labelled. Field parameters, including temperature, electrical conductivity, pH, and density, were measured and recorded for each sample. Samples were stored on site in coolers until delivery to Alex Stewart International Laboratory (ASI) by LIS personnel. The chain-of-custody protocol for the 2022-2023 Program is outlined in Section 11.6.

11.2.2 Surface Brine Sampling Methods

Surface brine sampling methods for the 2016-17 and 2018 Programs were originally described by Montgomery (2017; 2018). In summary, samples were collected from shallow, two- to three-metre-deep hand-augured pits using a bailer. Brine samples were poured into a clean collecting container, solids were allowed to settle, and brine samples were decanted into one litre bottles.

11.2.3 Packer Brine Sampling Methods

Packer systems were used to collect brine samples from discrete formation levels in the 2018 and 2022-2023 DDHs. Samples were obtained during drilling, and sampling was conducted as follows:

- 2018 (Montgomery, 2018): Brine was purged from the packer interval until minimal to no traces of drilling mud were observed in the sample;

- 2022-2023 Program:
  - Simple and double packers were operated by GYC Andalgalá Perforaciones S.R.L., under the technical direction of the LIS project geologist;
  - Brine was purged until at least three packer interval volumes were removed, while purge volumes, pumping rates, and clarity were recorded; and
  - Brine samples were collected into clean 500 mL containers.

11.2.4 Pumping Test Brine Sampling Methods

Brine samples were collected directly from the discharge pipe at regular intervals during the 2018 pumping tests at TWW18-01 and TWW18-02, as described by Montgomery (2018) and KPC (2019).

11.2.5 Observation Well Brine Sampling Methods

Brine samples were collected from each of the 2022-2023 Program boreholes after the completion and development of each observation well. Each well, except for DDH-AS22-01, was cleaned and developed by air lift prior to sampling. Brine samples were collected into 500 mL containers directly from the pump discharge pipe. Observation well DDH-AS22-01 is under artesian conditions, and samples were collected into 500 mL containers from the well head. Field parameters were recorded, and samples were stored as per LIS chain of custody protocol.

11.2.6 Brine Analysis

All brine samples were submitted to ASI in Mendoza, Argentina for analysis. ASI is an independent commercial ISO 9001-2008-certified laboratory and was selected for assaying all brine samples from the HMN Project. ASI used the analytical methodologies listed in Table 11-1.

Table 11-1: ASI Laboratory Methods Used for Analysis of the HMN Project Brine Samples

Method	Constituent	Detection Limit (mg/L)	2016-17 and 2018 Programs	2022-2023 Program
ICP-OES (inductively-coupled plasma—optical (atomic) emission spectrometry)	Boron (B)	0.05	All samples	-
		1	-	All samples
	Barium (Ba)	0.01	All samples	All samples
	Calcium (Ca)	0.025	-	-
		2	All samples	All samples
	Iron (Fe)	0.01	All samples	-
		0.3	-	All samples

Method	Constituent	Detection Limit (mg/L)	2016-17 and 2018 Programs	2022-2023 Program
	Potassium (K)	0.25	All samples	-
		2	-	All samples
	Lithium (Li)	0.05	All samples	-
		1	-	All samples
	Magnesium (Mg)	0.05	All samples	-
		1	-	All samples
	Manganese (Mn)	0.05	All samples	-
		0.01	-	All samples
	Sodium (Na)	0.1	All samples	-
		2	-	All samples
	Strontium (Sr)	0.005	All samples	-
		0.5	-	All samples
Argentometric	Chloride (Cl^-)	5	Select samples	All samples
Gravimetric	Sulphate (SO_4)	10	Select samples	All samples
	Total Dissolved Solids (TDS)		Select samples	All samples
Pycnometer	Density		Select samples	All samples
Volumetric (acid/base titration)	Alkalinity (as $CaCO_3$)		Select samples	All samples
	HCO_3		Select samples	All samples
Potentiometric	Conductivity		All samples	-

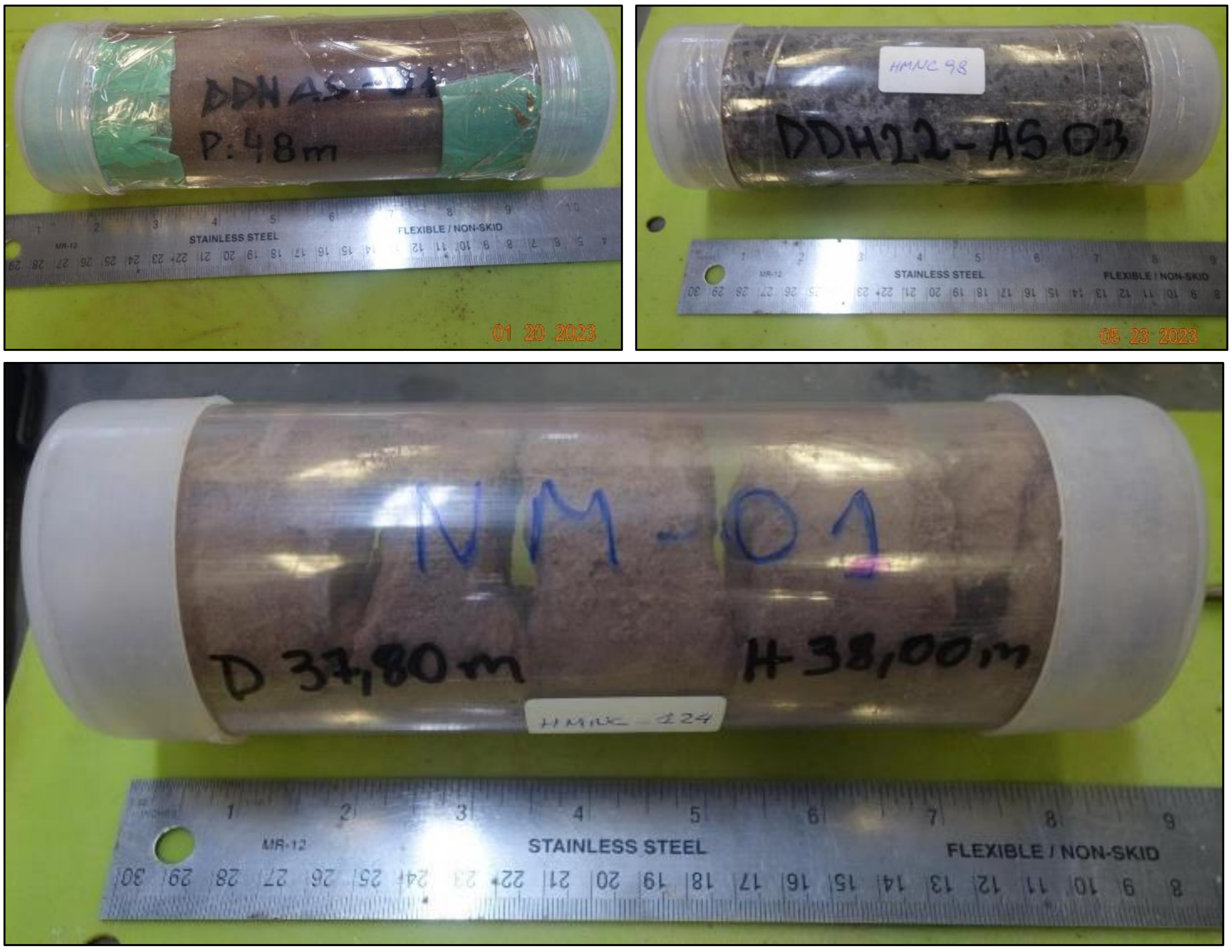
Source: GWI (2023)

11.3 Porosity Sampling Methods and RBR Analysis

11.3.1 Porosity Sampling Methods

Porosity samples were collected from HQ and NQ core retrieved during the 2018 and 2022-2023 Programs. Core samples ranged from 15 to 40 cm long, and full diameter core was selected when possible. The samples were placed in acrylic sleeves with plastic caps, labelled, sealed with tape, weighed, and securely packed for shipment (Figure 11-1).

Figure 11-1: Example 2022-2023 Program Core Samples Received by GSA Laboratory for Analysis



Source: GWI (2023)

11.3.2 Porosity Analysis

Core was submitted to GeoSystems Analysis Inc. (GSA) in Tucson, Arizona, USA for analysis. Analytical methods used to evaluate the 2018 and 2022-2023 porosity samples are shown in Table 11-2. Test results were used to estimate average Sy values, for use in the Resource Estimate.

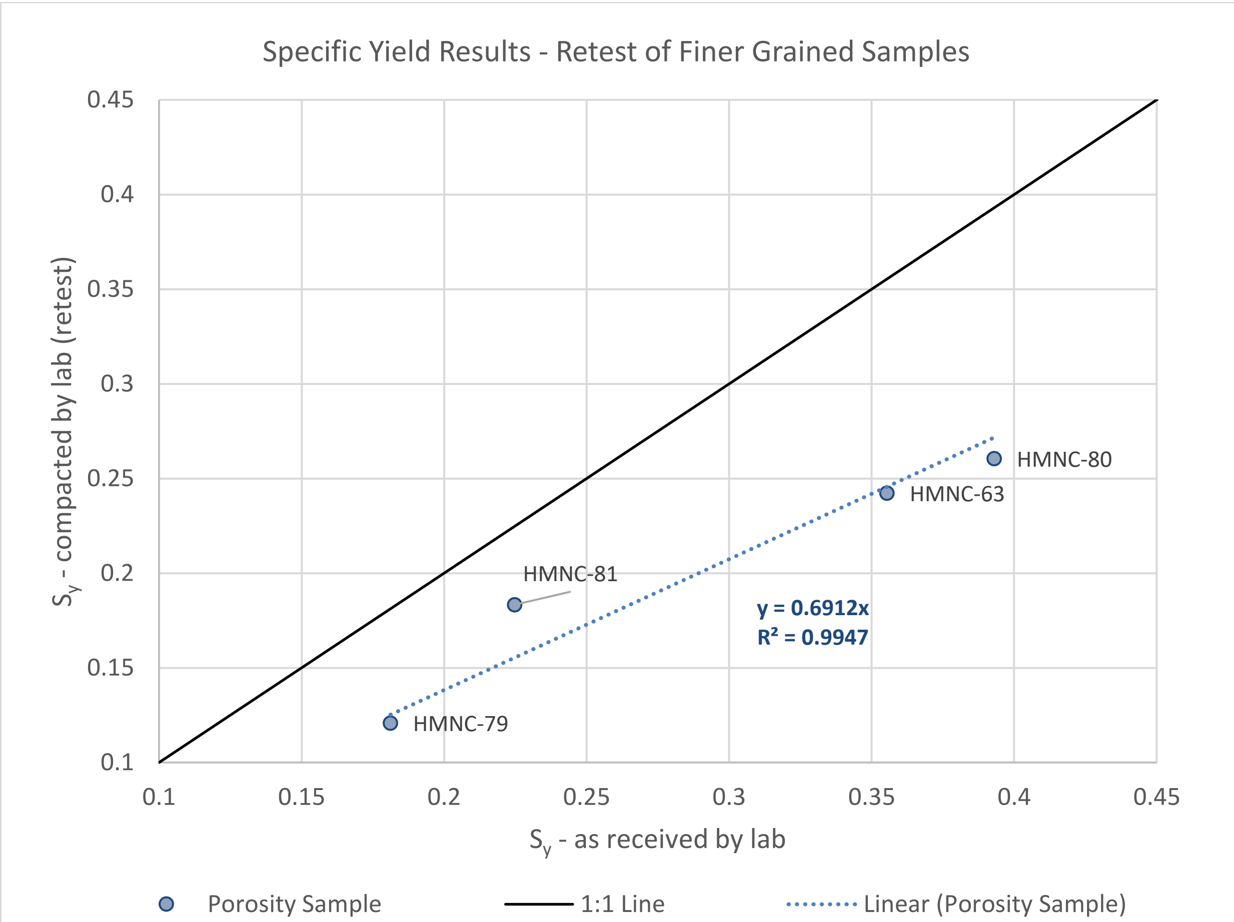
Table 11-2: GSA Laboratory Methods Used for Analysis of the HMN Project Core Samples

Test Type	2018 Samples	2022-2023 Samples	Test Method	Standard (ASTM, 2009; MOSA, 2002)
Physical	20	59	Bulk Density	ASMT D2937-17e3
Hydraulic			P_t – Estimated Total Porosity (RBR – Moisture Release Curve method)	MOSA Part 4 Ch. 2, 2.3.2.1
			Estimated Field Water Capacity	MOSA Part 4 Ch. 32, 3.3.3.2
			S_y – Rapid Brine Release (RBR)	Modified ASTM D6836-16 MOSA Part 4 Ch. 3, 3.3.3.5

Source: GWI (2023)

Six clastic sediment samples were selected for retesting. The samples were machine compacted to reflect the original depth of the sample and re-analyzed using the methods shown in Table 11-2. Results for two of the samples either did not change or increased slightly. Results for the four finer grained samples exhibited decreased porosity and Sy in response to the compaction, and Sy decreased according to the trend shown on Figure 11-2. This trend, or correction factor, was applied to 20 samples with similar lithologies, to reduce Sy and better reflect conditions at depth within the salar. The resulting averages and univariate statistics are presented in Section 10.6.

Figure 11-2: Relationship Between Specific Yield (Sy) Results for the Four Finer-Grained Samples as Received by GSA versus Machine-Compacted to Sample Depth. Graph Provided by GSA



Source: GWI (2023)

11.4 Field QA/QC Program

11.4.1 Summary

QA/QC samples collected at the HMN Project during the 2016-17, 2018, and 2022-2023 programs are listed in Table 11-3. Results of the 2016-17 and 2018 programs were originally provided by Montgomery (2017; 2018) and KPC (2019) and are summarized on Figure 11-3 through Figure 11-6.

Primary components of the 2022-2023 field QA/QC program for the HMN Project included the following:

- A reference sample was inserted into the sample stream at a frequency of approximately 1 in 10 samples. The bulk reference sample used for this purpose was collected from pumping well TWW18-01 in 2022;
- A Round Robin analysis of the reference sample collected from pumping well TWW18-01 was conducted at five laboratories;
- A low-range reference sample (essentially a field blank) was inserted at a frequency of approximately 1 in 10 samples. Bottled mineral water was used for this purpose;
- A field duplicate sample was inserted into the sample stream at a frequency of approximately 1 in 10 samples;
- A program of laboratory duplicate sampling was conducted by ASI; and
- Two sets of independent field duplicate samples were collected by Dr. Mark King (QP) during two field visits to the 2022-2023 field program (Section 12).

QA/QC results presented in the following subsections relate to all QA/QC samples collected at the HMN Project.

Table 11-3: Summary of QA/QC Samples Collected at the HMN Project

Field Program	Reference Samples	Field Duplicate Samples	Field Blank Samples	Total QA/QC Samples
2016-17	0	2	2	4
2018	0	13	7	20
2022-2023	9	9	8	26
Total	9	24	17	50

Source: GWI (2023)

11.4.2 Round Robin Analysis of the Bulk Reference Sample

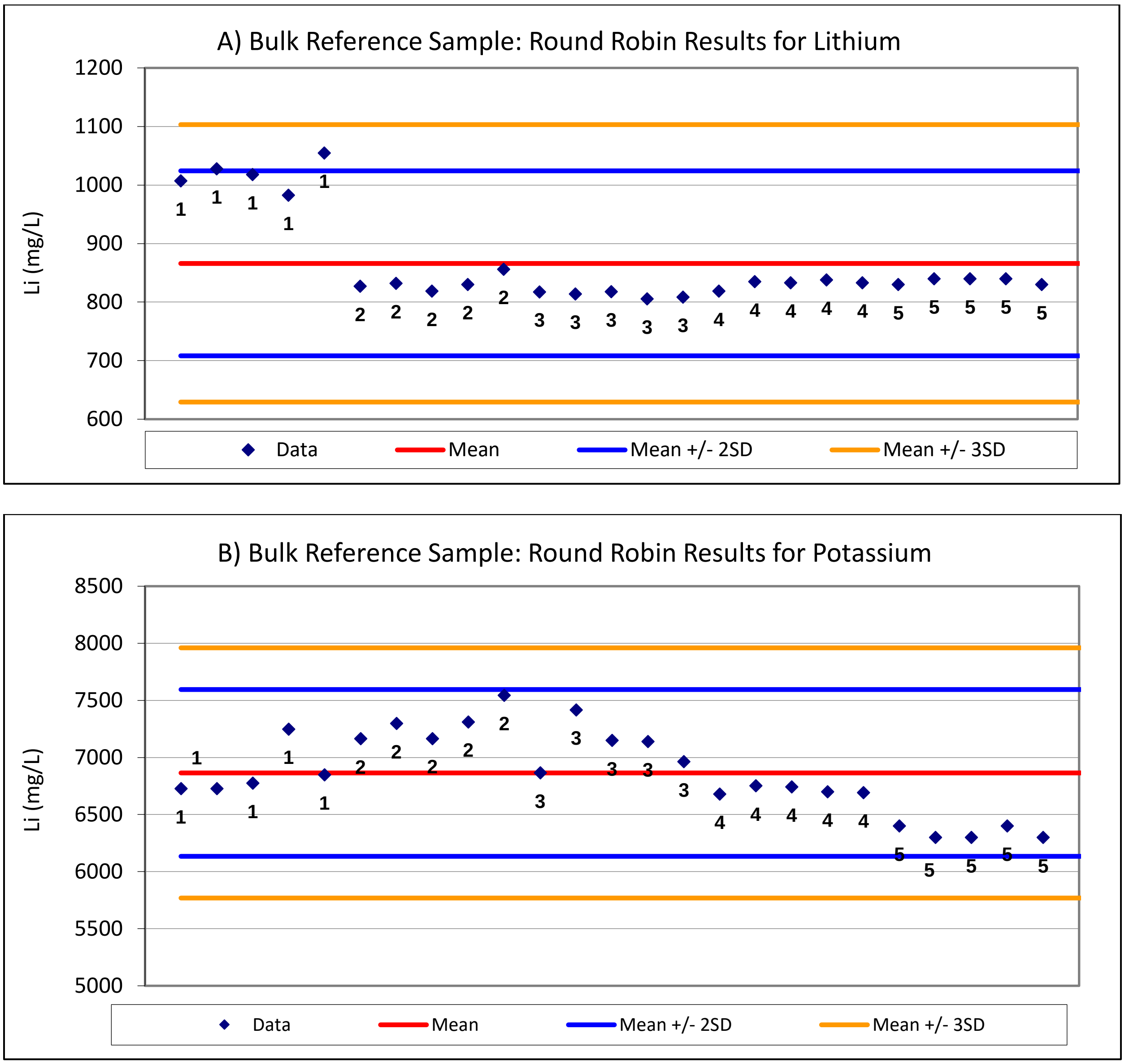
The bulk reference sample collected from pumping well TWW18-01 in 2022 was used as a means of evaluating analytical precision and potential drift, as the program proceeded. As a first step in using this bulk reference sample, a Round Robin analysis was conducted at the following five laboratories as part of the 2022-2023 Program:

- ASI, Mendoza, Argentina;

- ASI, Palpalá, Argentina;
- EON Minerals, Salta, Argentina;
- SGS, Salta, Argentina; and
- Instituto de Beneficio de Minerales (INBEMI), Facultad de Ingeniería, Salta, Argentina

The results of the analyses provide mean values and standard deviations for several tested analytes including lithium, calcium, magnesium, and potassium using ICP-OES analysis from certified laboratories. Statistics for lithium and potassium results of the Round Robin analysis are show on Figure 11-3.

Figure 11-3: Bulk Reference Sample Round Robin Analysis Results for A) lithium and B) Potassium



Notes:

Laboratory abbreviations: SGS-Salta (1), ASI-Mendoza (2), EON Minerals (3), ASI-Palpalá (4), INBEMI (5).

Source: GWI (2023)

11.4.3 Reference Sample Performance in the Sampling Program

As described above, a bulk reference sample was used as a benchmark for ongoing evaluation of analytical drift during the 2022-2023 Program. The 2022-2023 reference sample performance results for lithium and potassium are shown on Figure 11-4. The lithium results are skewed slightly low due to the generally elevated results from SGS (Figure 11-3). 2022-2023 Program results all fall within ± two standard deviations of the mean, which is considered the primary control limit for the project. Most of the reference sample potassium results fall within ± two standard deviations, and one sample falls within ± three standard deviations. Results from the field reference sample program are considered to be within acceptable ranges and show no evidence of unacceptable analytical drift over time.

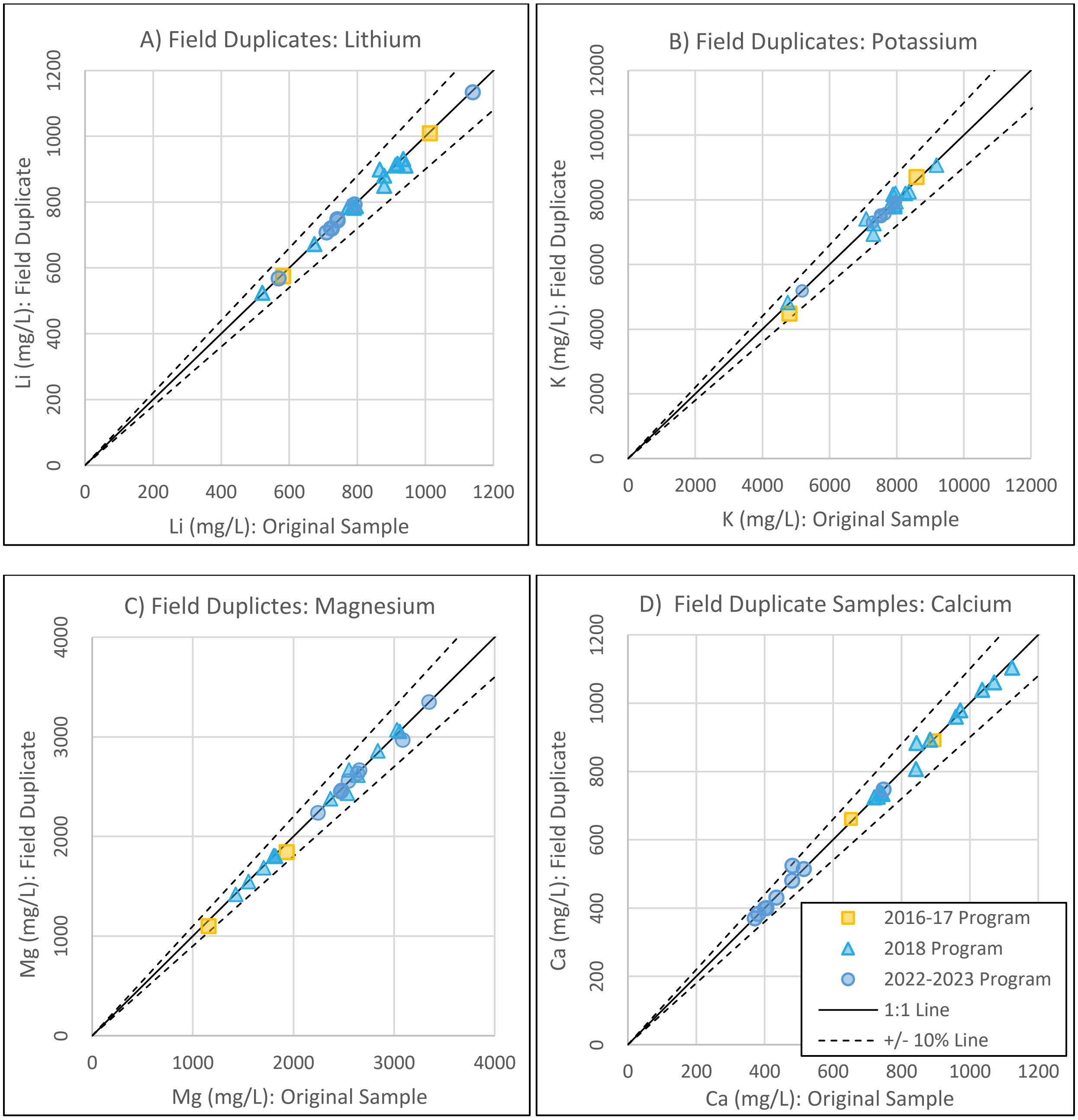
Figure 11-4: Reference Sample Results Compared with Round Robin Mean and Standard Deviation for A) Lithium and B) Potassium

Source: GWI (2023)

11.4.4 Field Duplicate Sample Results

Lithium, potassium, magnesium, and calcium results for 24 field duplicate samples are plotted on Figure 11-5 against their original counterparts. All sample datasets plot within the ±10% lines. The overall precision of the data is considered acceptable.

Figure 11-5: Original Sample versus Field Duplicate Results for A) Lithium, B) Potassium, C) Magnesium, and D) Calcium

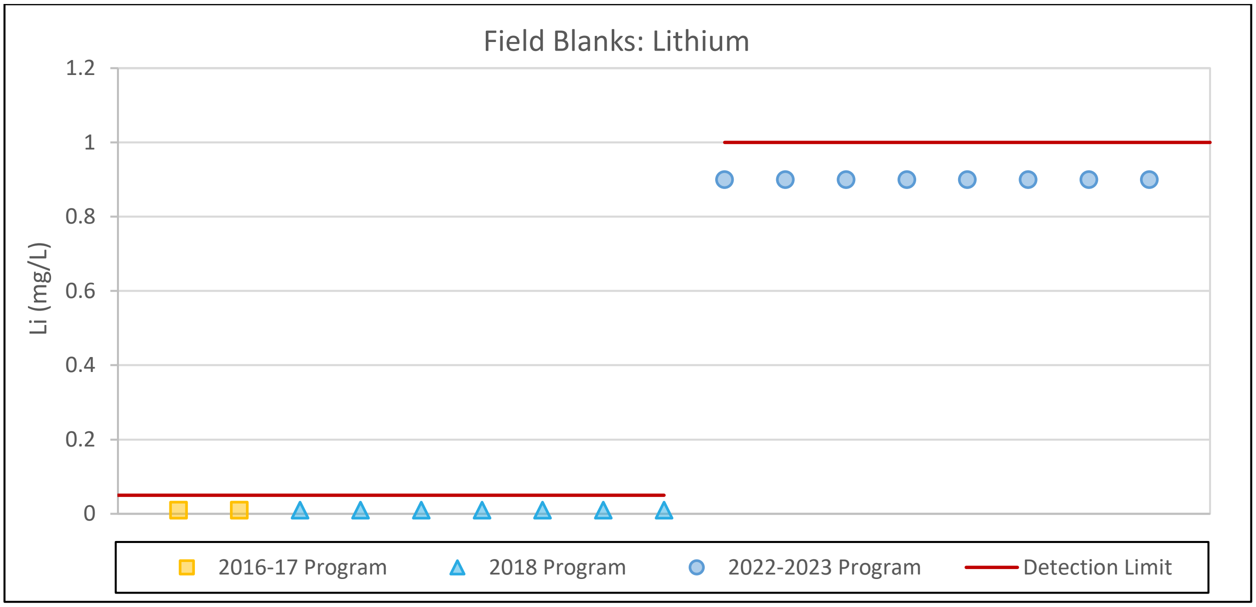


Source: GWI (2023)

11.4.5 Field Blank Results

Lithium results for 17 field blank samples (low-range reference samples) are shown on Figure 11-6. The results assess for cross-contamination in the laboratory and the field (for example, whether the instrumentation was cleaned sufficiently between analysis of samples). Lithium was not detected in any blank sample. Overall, field blank performance is considered acceptable.

Figure 11-6: Blank Sample Results for Lithium. Change In Laboratory Detection Limited Noted in Table 11-1



Source: GWI (2023)

11.5 Laboratory Duplicate Analysis

ASI conducts internal laboratory checks on overall analytical accuracy for selected primary parameters. Lithium, potassium, magnesium, and calcium results for the 18 laboratory duplicate analyses are shown on Figure 11-7. All sample results plot within the ± 10% lines. Dr. Mark King (QP) considers these results acceptable.

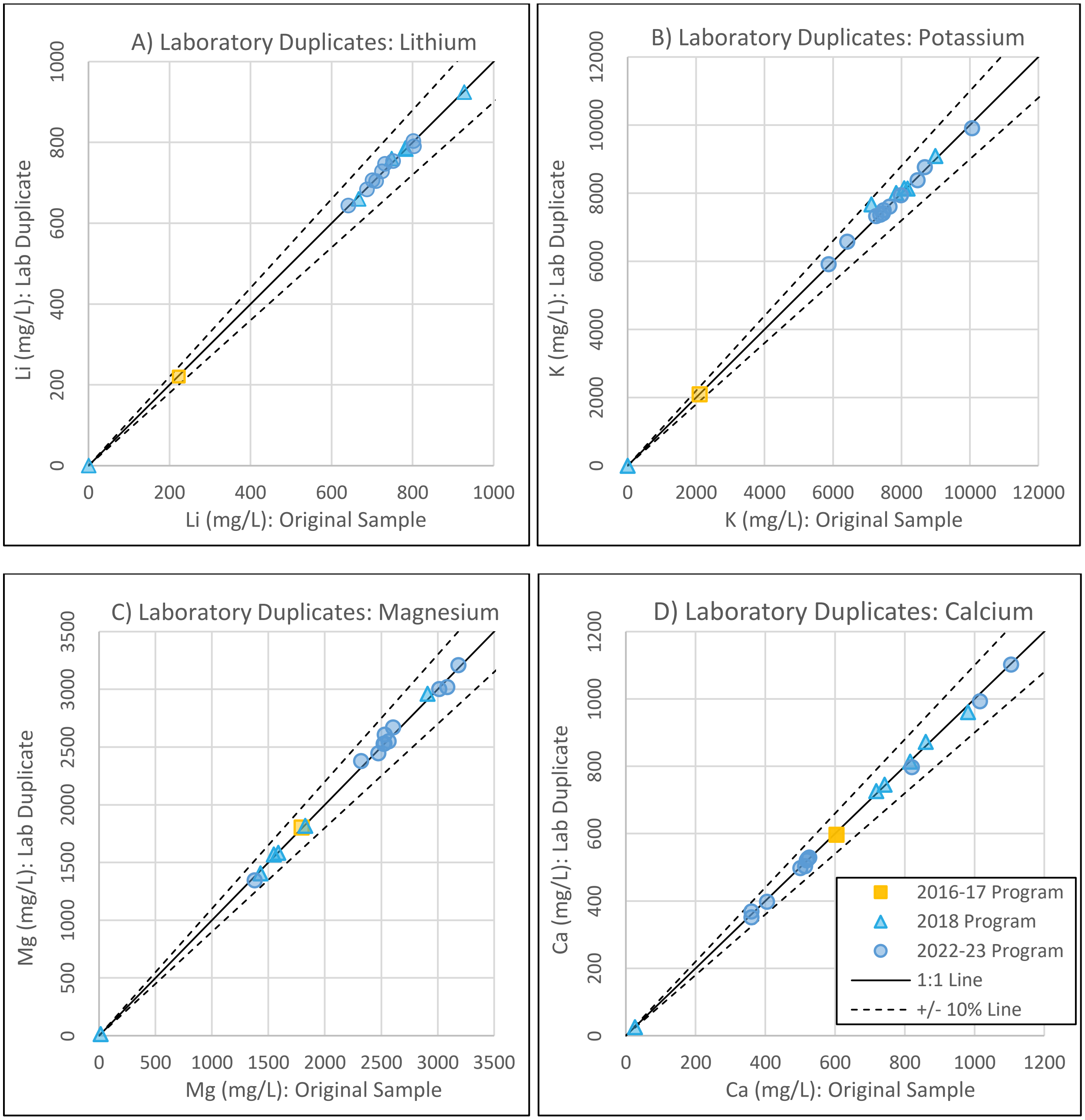
11.6 Sample Security

An established chain of custody procedure was used for HMN Project sampling, storage, and shipping. Samples were collected, handled, and stored onsite by geologists. Samples were under the control of qualified staff at all times, and chain of custody forms were used to document secure delivery to ASI in Mendoza, Argentina as described below:

- 2016-17 and 2018 Program: Brine samples were transported by vehicle directly from the Project to the lab by LIS (previously NRG) personnel; and
- 2022-2023 Program: Brine samples were periodically transported in Project vehicles to the Lithium South offices in Salta. In Salta, the samples were transported by bus to the lab.

Dr. Mark King (QP) considers that the sample security measures used for the Programs are acceptable.

Figure 11-7: ASI Internal Laboratory Duplicate Results for A) Lithium, B) Potassium, C) Magnesium, and D) Calcium



Source: GWI (2023)

12 DATA VERIFICATION

12.1 Project Review and Interaction

Dr. Mark King (QP) provided review and input to the design and execution of the HMN Project 2022-2023 field exploration Program. The QP and other GWI geologists maintained technical discourse with LIS throughout the exploration program and the QP visited the Project on two occasions:

- 2022: for two days (October 12 and 13) during drilling at the Alba Sabrina property, and
- 2023: for one day (March 22) during drilling at the Natalia Maria property.

During each site visit, the QP reviewed the details of the drilling and sampling components of the ongoing field program, monitored the diamond drilling and packer sampling operations, reviewed drill core and core logging methods, reviewed field QA/QC procedures and data recording, and collected independent duplicate samples. In October 2022, the QP also viewed all HMN Project properties, visited the 2018 Tramo boreholes, and drove a complete circuit of the SHM to view adjacent holdings and operations.

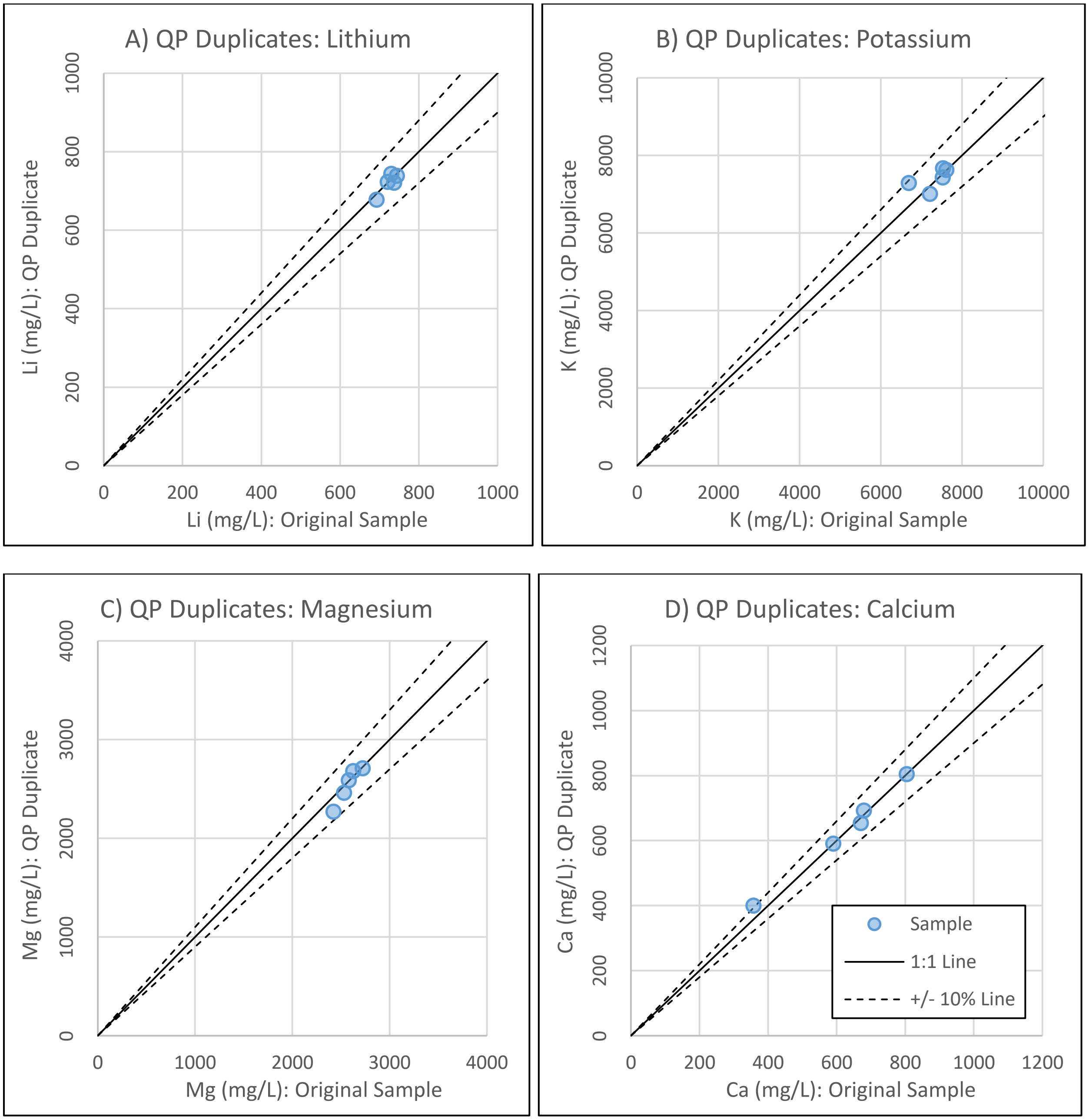
The QP supervised the compilation of the Project database and worked closely with Aqua Insight Inc. during geological modelling and brine model development related to the updated Resource estimation. Based on these activities, it is the opinion of the QP that an acceptably rigorous set of field and data interpretation methods were used in preparing the HMN Project Mineral Resource Estimate.

Claim and permitting information has not been verified by the QP. This information was received in the form of a Title Opinion document prepared by Jorge Vargas, legal counsel for LIS (Sections 4.2 and 4.3).

12.2 Independent Duplicate Sampling

Independent QA/QC duplicate sampling was conducted by Dr. Mark King (QP) during both visits during the 2022-2023 Program. During the first visit, samples were collected during packer sampling from boreholes at Alba Sabrina. During the second visit, a sample was collected by air lift methods, from the monitor well installed in Alba Sabrina borehole DDH-AS22-07A. The results for lithium, potassium, magnesium, and calcium in original and QP duplicate samples are shown on Figure 12-1, relative to a 1:1 line. Except for a single calcium result, all results plot within the ±10% lines. Overall, the QP duplicate data are in reasonable agreement with the original samples, and the results are considered acceptable.

Figure 12-1: 2022-2023 QP Duplicate Sample Results for A) Lithium, B) Potassium, C) Magnesium, and D) Calcium



Source: GWI (2023)

13 MINERAL PROCESSING AND METALLURGICAL TESTING

Lithium South has conducted a complete characterization study for the HMN Project brine to develop the necessary process for producing technical grade Lithium Carbonate (Li_2CO_3).

In addition, a sample of the technical grade product was sent to SGS Canada where it was subjected to purification testwork.

13.1 Brine Chemistry Analysis

The brines found at Salar Hombre Muerto Norte display chemical compositions comparable to other brines from the Salar Hombre Muerto Basin, such as Salar Olaroz and Salar Cauchari. The brines have a relatively low Mg/Li ratio, which makes them suitable for the removal of magnesium with slaked lime, according to the following reactions.

Equation 1: Slaking: $CaO + H_2O => Ca(OH)_2$

Equation 2: Magnesium Removal: $Mg^{++} + Ca(OH)_2 => Mg(OH)_2 + Ca^{++}$

Equation 3: Sulphate Removal: $Ca^{++} + SO_4 + 2H_2O => Ca(SO_4)*2H_2O$

When the magnesium to sulphate molar ratios is less than 1 (about 4 in weight ratio), calcium ions will be generated in the brine.

<u>Brines with a SO_4/Mg Ratio Over 4:</u>

If this brine is treated with lime to remove magnesium as magnesium hydroxide, then not all of the sulphate will be precipitated as calcium sulphate. As a result, the brine will saturate in lithium sulphate salts in the ponds with a concentration above 7,000 ppm depending on the sulphate concentration.

<u>Brines with a SO_4/Mg Ratio Below 4:</u>

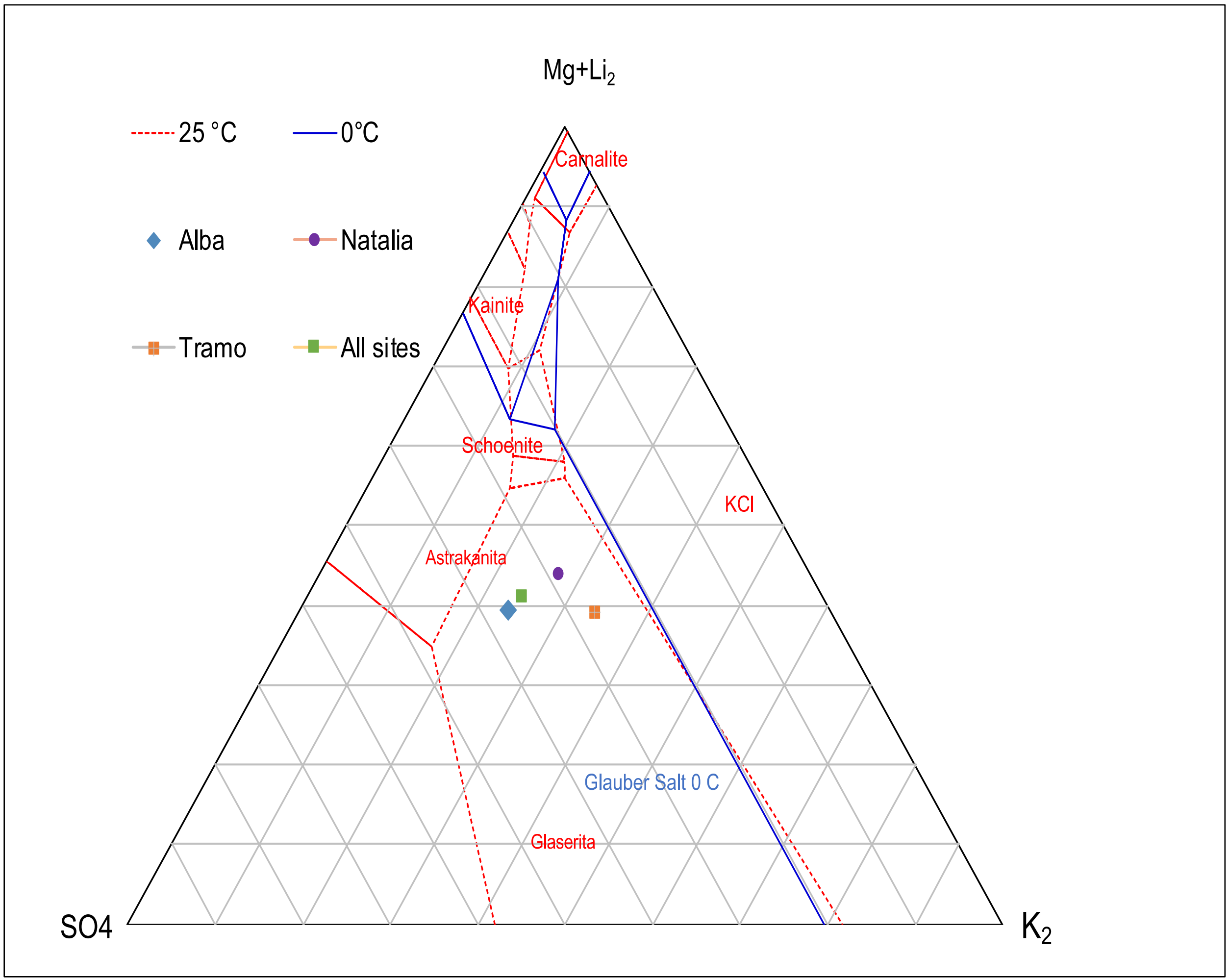
If this brine is treated with lime to remove magnesium as magnesium hydroxide, then all of the sulphate will be precipitated as calcium sulphate and the brine will not saturate in lithium sulphate salts in the ponds. In the table below is the chemical composition of the brine and projected in a Jänecke diagram in the figure below.

Table 13-1: Average Chemical Composition from HMN Well Brines

Parameter	Alba Sabrina			Natalia Maria	Tramo	All Sites
	Measured	Indicated	Total	Measured	Measured	Total
	Brine Volume (m^3 x 1000)					
	217,872	31,688	249,560	12,922	141,575	404,057
	Average Concentration (mg/l)					
Lithium (Li)	696	712	698	1,103	769	736
Boron (B)	474	479	475	490	377	441
Calcium (Ca)	536	593	543	538	944	684
Potassium (K)	7,118	7,226	7,132	9,991	7,080	7,205
Sodium (Na)	103,513	102,402	103,372	109,566	98,633	101,910
Magnesium (Mg)	2,454	2,534	2,464	3,030	2,256	2,409
Sulphate (SO_4)	13,507	13,755	13,538	12,868	9,866	12,230

Source: LIS (2024)

Figure 13-1: Jänecke Projection of Testwork Brines at HMN



Source: LIS (2021-2024)

13.2 Brine Evaporation Testing

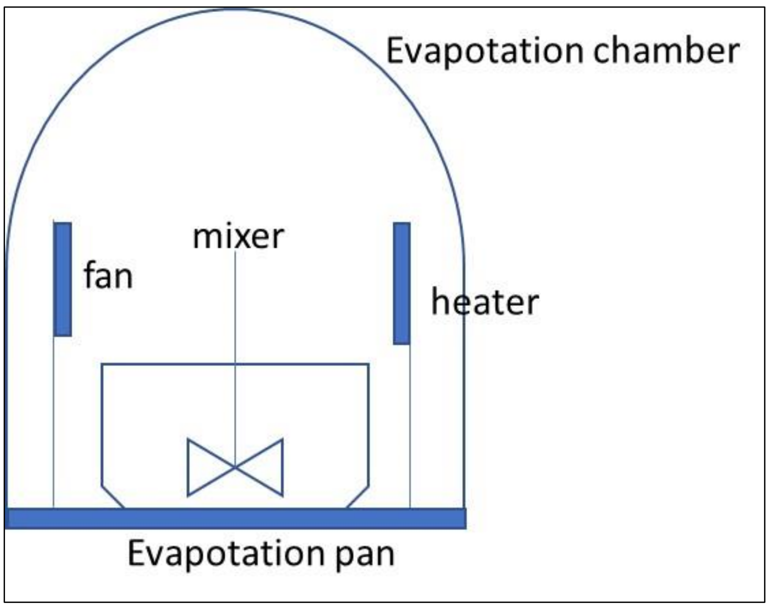
Lithium South executed in 2019, an explorative solar evaporation test program to generate a better understanding of the brine and the site conditions for conventional lithium brine processing. This chapter summarizes work to date.

13.2.1 Instituto de Beneficio de Minerales (INBEMI)

Base-line evaporation investigation was conducted at the Instituto de Beneficio de Minerales (INBEMI) at the University of Salta.

The aim of the work was to determine evaporation profiles in solution under conditions mimicking forced evaporation under controlled-temperature, while resembling site-ambient conditions (20-25°C). The tests were conducted according to a matrix, involving the investigation of "as retrieved (Test1)" and "limed (Tests 2 and 3)" samples collected from the Hombre Muerto Norte deposit. The test-procedure made provisions for interim-solid and liquid-sample retrievals at pre-determined evaporation levels. The precipitated salts were separated after each sample retrieval. The test results were plotted in Jänecke projection and graphs where lithium is plotted versus the other main ions in the brine.

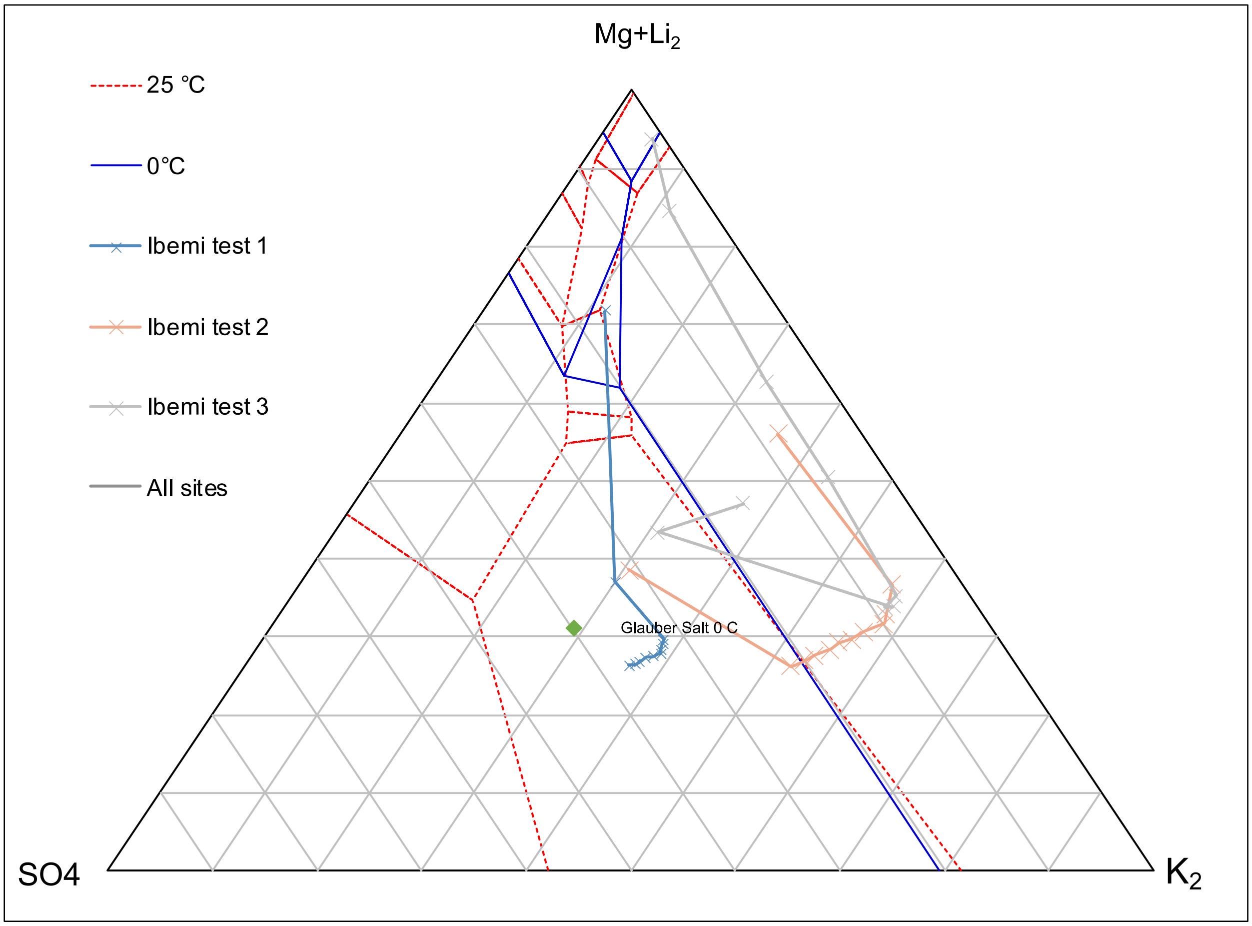
Figure 13-2: Start of the Raw Brine Evaporation Test



Source: LIS (2021-2024)

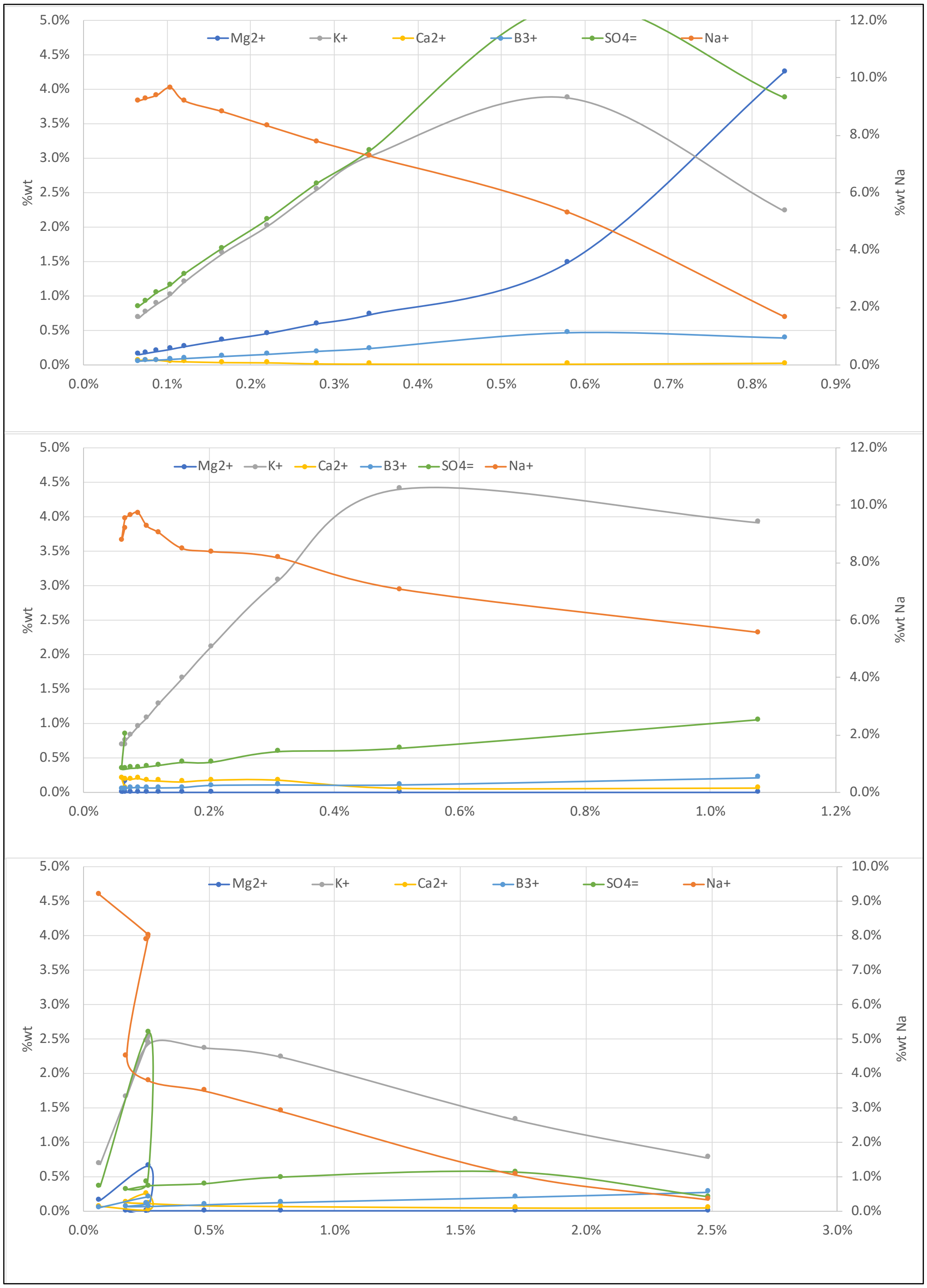
It was observed that in the brine without liming, lithium is lost as lithium sulphate salts. For the brine with the liming applied at the well brine, the sulphate is not completely removed. In Test 3, the brine is limed at the SO_4/Mg ratio molar of 1 and neither sulphate nor calcium is concentrated, which can be seen as the best scenario. In the Jänecke projection it can be observed that the resource data has more sulphate, higher SO_4/Mg, than the brine tested by IBEMI.

Figure 13-3: Jänecke Projection Testwork IBEMI



Source: LIS (2021-2024)

Figure 13-4: Brine Concentration Test 1(a), 2 (m), 3 (b)



Source: JDS (2019)

13.2.2 Evaporation Test at Hombre Muerte 2021-2022

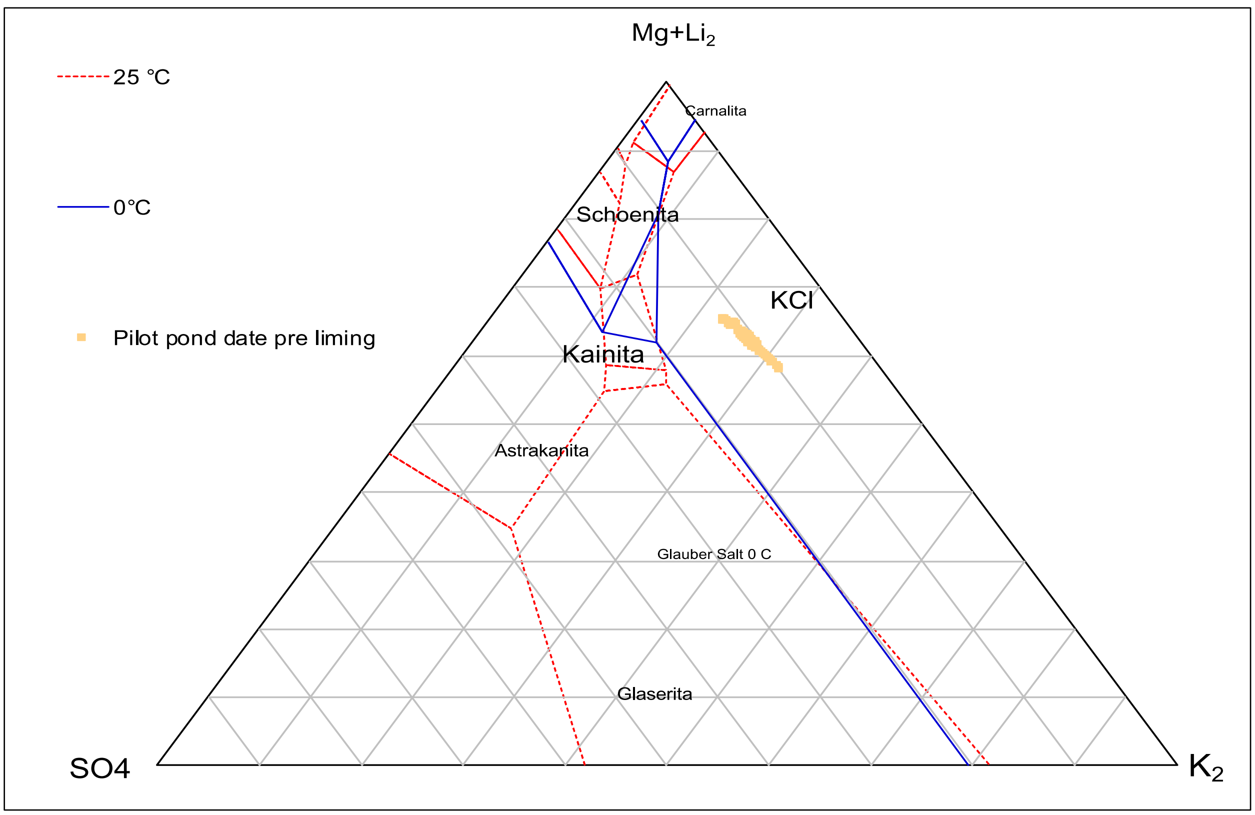
Since 2021, Lithium South started to concentrate brines in pilot ponds at the site. The brines were obtained from the top 40 m of a well at the Tramo claim block. This brine has an exceptionally low SO_4/Mg, as can be observed in the Jänecke projection below where the brine chemistry from the preconcentration ponds is plotted.

About 20,000 liters of representative Tramo well samples were subjected to evaporation and liming testwork on the client's Hombre Muerto Norte site.

The limed sample was further subjected to laboratory-scale testwork at Eon Minerals D2D Laboratory in Salta, Argentina. The chemical analyses were performed at Eon. Key product analyses and verification analyses were performed by SGS and Alex Stewart local laboratories.

A bulk Li_2CO_3 precipitate test-sample produced at Eon Minerals D2D Laboratory was sent to SGS Canada's Lakefield laboratory for purification testwork. The work at SGS was overseen by Alex Mezei, P.Eng., QP NI 43-101, an Independent Consulting Metallurgist to Lithium South.

Figure 13-5: Jänecke Projection Testwork at the Site



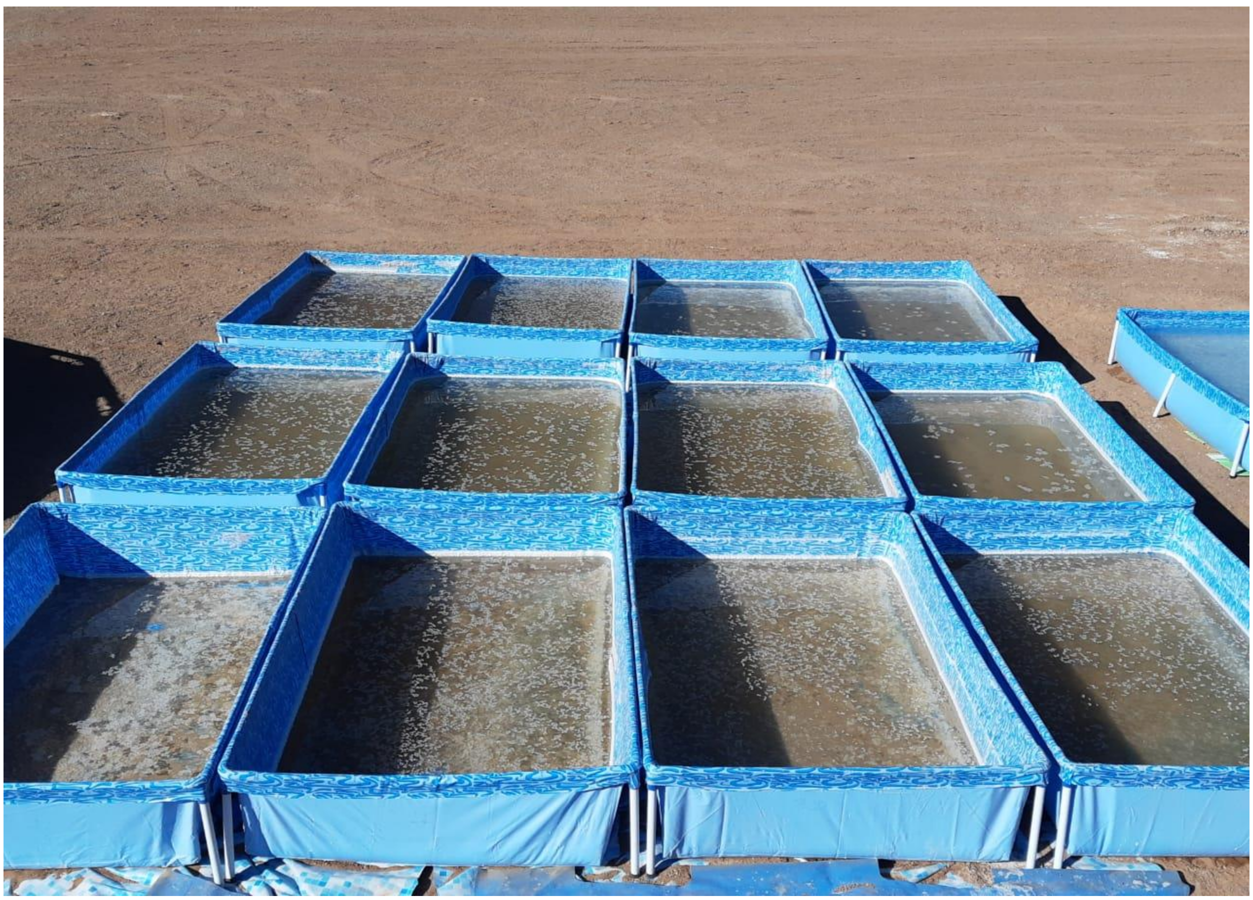
Source: LIS (2021-2024)

The evaporation testwork was conducted in two configurations:

- The first configuration testing aimed to demonstrate the possibility of producing Lithium Chloride as a super concentrated brine containing about 6% wt. lithium (Li); and
- The second configuration testing aimed to demonstrate the possibility of producing maximum purity Lithium Carbonate (LIC, Li_2CO_3) that could be produced from the sample tested.

The samples for testing were obtained by applying the initial evaporation area of 28.57 m^2 provided by 12 rectangular ponds of 2.38 m^2 surface area each. The number of ponds was reduced as the evaporation progressed. The average evaporation area throughout the entire pre-concentration was 19.89 m^2, approximately 70% of the total area.

Figure 13-6: HMN Preconcentration Stage



Source: LIS (2021-2024)

The concentrated samples were treated with slaked lime to remove the magnesium as magnesium hydroxide. It was observed, in confirmation to the reactions, that during the magnesium and sulphate removal process an excess of free calcium was generated, between 20 to 30 g/L.

Figure 13-7: Mechanical Separation after Liming

Source: LIS (2021-2024)

After liming treatment, the "free magnesium and sulphate brine" from the Super concentrated stream sample was concentrated to about 33 g/L Li and 88 g/L Ca. The Li_2CO_3 brine-stream sample was concentrated to about 14 g/L Liand 40 g/L Ca.

Other samples were generated using two 2 circular ponds of 7.07 m^2 area each were used along with 11 ponds of 2.38 m^2 area each. The average evaporation area throughout the entire pre-concentration was 36.15 m^2. The evaporation process was conducted under batch mode.

Super concentrated stream results additional details:

- The super concentrated brine stream preconcentration brine evaporation rate was 5.5 mm/day. The evaporated water amounted to about 70% of total mass;
- The lithium recoveries were 92% for the pre-concentration evaporation, 83% for liming and 93% for concentration evaporation; and
- The cumulative lithium recovery after these front-end stages was 71%.

High purity stream results additional details:

- The high purity brine stream preconcentration brine evaporation rate was 6.85 mm/day;
- The evaporated water amounted to about 72% of total mass. The lithium recoveries were 86% for the pre-concentration evaporation, 80% for liming and 97% for concentration evaporation; and
- The cumulative lithium recovery after these front-end stages was 67%.

The analytical summaries across the pre-concentration, liming and concentration stages are included in Table 11-2 and Table 11-3.

The resulting concentrated brine samples were sent to Eon Minerals' D2D lab for further testing.

Both samples were further concentrated at lab scale and followed up with a calcium removal step using soda ash to precipitate calcium carbonate, achieving low values of Ca, SO_4 and Mg in the brine. Some lithium carbonate co-precipitation was observed.

Solvent extraction for boron removal has been successful in removing the boron, as described in the next section.

Table 13-2: Super Concentrated LiCl Brine-Stream Evaporation Tests Analytical Summary

Streams / Elements	Li^+	Mg^{2+}	Ca^{2+}	Na^+	K^+	SO_4^{2-}	Cl^-	B-tot
Analyses, mg/L								
Pre-Concentration Evaporation Feed	874	3,019	1,226	99,674	7,405	7,117	171,385	374
Pre-Concentration Evaporation Discharge	6,758	26,131	87	56,913	35,541	28,911	204,547	3,228
Overdosed Liming Discharge	6,321	10	17,786	51,377	27,542	576	184,356	1,182
Concentration 1 (Puna) Discharge	32,696	91	82,639	2,400	15,451	99	314,767	427
Concentration 2 (Forced - Laboratory)	47,751	104	105,979	1,529	9,300	416	462,775	128

Streams / Elements	Li^+	Mg^{2+}	Ca^{2+}	Na^+	K^+	SO_4^{2-}	Cl^-	B-tot
Lowered Ca-Super Concentrated LiCl Brine	76,713	nd	4,700	nd	nd	nd	nd	nd

Source: LIS (2021-2024)

Table 13-3: Li_2CO_3 Brine-Stream Evaporation Tests Sequence Analytical Summary

Streams / Elements	Li^+	Mg^{2+}	Ca^{2+}	Na^+	K^+	SO_4^{2-}	Cl^-	B-tot
Analyses, mg/L								
Pre-Concentration Evaporation Feed	749	2,607	1,088	103,065	6,472	6,997	166,546	399
Pre-Concentration Evaporation Discharge	4,737	17,614	242	71,042	34,606	22,375	199,381	2,288
Overdosed Liming Discharge	4,373	<10	14,198	57,642	24,572	889	158,001	790
Concentration 1 Evaporation (Puna) Discharge	13,744	<10	40,202	36,593	30,584	210	224,465	869
Lowered Ca Concentrated SX Feed	11,528	<10	82	78,221	33,919	613	214,102	679

Source: LIS (2021-2024)

13.3 Lithium Carbonate Testing at Eon Minerals D2D Laboratory

The metallurgical testing at Eon Minerals D2D Laboratory was executed with brine from the high-purity stream concentrated brine. This brine originated from the Tramo wells, which has lower SO_4/Mg ratio than the predicted brine composition coming from the industrial wells. The aim of the testing was to make battery grade lithium carbonate. The testing program involved the following steps:

- Boron removal using solvent extraction. The brine is acidified with hydrochloric acid to convert the borates to boric acid. The boric acid selectively extracted by the solvent. The boric acid is striped from the organic phase with a sodium hydroxide or carbonate solution forming a sodium borate solution;

- Polishing of the boron-free raffinate is performed to remove impurities such as residual calcium and magnesium. It is conducted optimally using sodium carbonate (soda ash) solution, Na_2CO_3, at temperatures not exceeding 60°C to ensure proper balance between maximizing divalent ion precipitation while minimizing lithium co-precipitation (Equation 4). When necessary, minor amounts of sodium hydroxide can be added to ensure rapid stabilization of the pH; and

- Lithium carbonate (Li_2CO_3) precipitation ("carbonation") is conducted using sodium carbonate solution, Na_2CO^3, at about 90°C (Equation 5) to favor lithium precipitation, given its inverse-solubility curve. The precipitate is washed on a filter or peeler centrifuge to maximize the removal of soluble species such as sodium, potassium, chlorides, and sulphates.

Equation 4: Calcium Polishing: $CaCl_2(a) + Na_2CO_3(a) = CaCO_3 + 2NaCl(a)$

Equation 5: Lithium Carbonation: $2LiCl(a) + Na_2CO_3(a) = Li_2CO_3 + 2NaCl(a)$

13.3.1 Solvent Extraction Results

The boron solvent extraction batch sequence is shown in Figure 13-8.

A volume of 223 L concentrated feed brine was processed in three-stage counter-current sequences of 4.5 L feed per contact consisting of SX, Scrub and Strip. The organic phase consisted of a carefully selected blend of extractant and diluents.

A total of 48 contacts were performed, grouped as 4 per cycle, totaling 12 cycles. Each contact included a solvent extraction, a scrubbing and one stripping stage at predetermined volume ratios. The extractant was replenished to the pre-set volume after each contact.

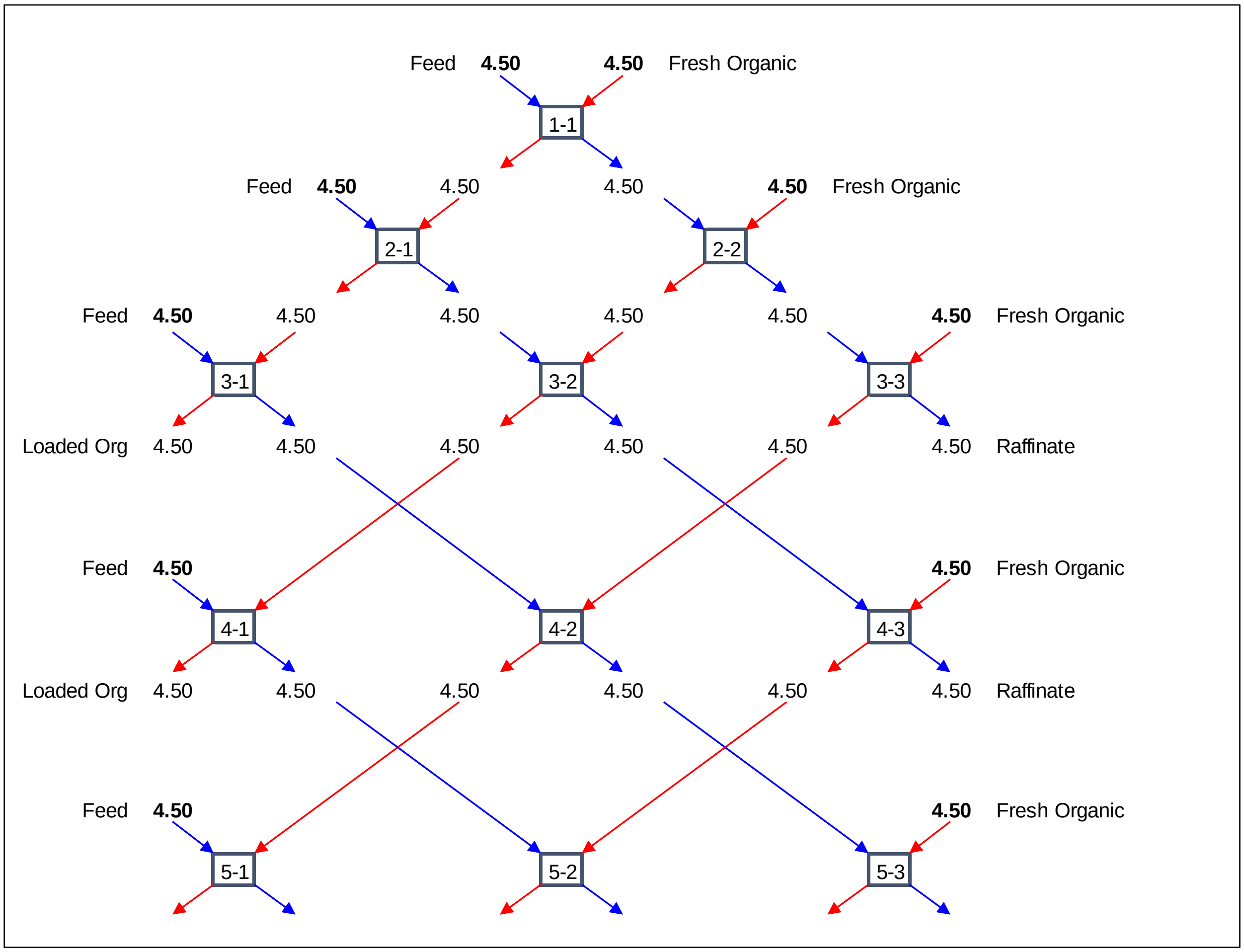
The combined test products, consisting of 211 L of raffinate and 72 L of strip solution were collected in 4 batches:

- The key analytical results are summarized in Table 13-4. The recoveries summary from the Distributions vs. Calculated heads is provided in Table 13-5;

- The solvent extraction test reduced the boron contained in the brine-feed, 679 mg/L B to 15 mg/L B in the raffinate. The lithium loss was 1% and its tenor in raffinate was 12,337 mg/L Li; and

- In terms of recoveries, boron solvent extraction rejected 98% of boron at 1% Li loss, producing a bulk lithium precipitation feed containing 12,337 mg/L Li and 15 mg/L B.

Figure 13-8: Boron Solvent Extraction Sequencing



Source: Ehren (2024)

Table 13-4: Key Analytical Results Summary

Samples ID	Analytes, mg/L							
	B	Li^+	Mg^{2+}	Ca^{2+}	SO_4^{2-}	Cl^-	K^+	Na^+
Initial SX Brine Solution	679	11,528	<10	82	613	214,102	33,919	78,221
Raff. cycles 1-4	<10	13,054	<10	84	370	203,935	34,270	72,541
Tank 1, Raffinate	<10	13,105	<10	88	490	203,758	34,293	73,306
Tank 2, Raffinate	11.0	11,575	<10	135	136	199,273	34,605	74,565
Tank 3, Raffinate	18.1	11,615	<10	164	424	202,681	35,771	78,164

Samples ID	Analytes, mg/L							
	B	Li^+	Mg^{2+}	Ca^{2+}	SO_4^{2-}	Cl^-	K^+	Na^+
Strip Discharge	2403	442	<10	<10	5,454	6,265	1,403	37,413

Source: LIS (2021-2024)

Table 13-5: Recoveries Summary

Recoveries	Distributions, % vs. Calculated head							
Stream / Species	B^{tot}	Li^+	Mg^{2+}	Ca^{2+}	SO_4^{2-}	Cl^-	K^+	Na^+
Total Raffinate Out	2	99	74.6	97.2	16	99	99	85
Total Strip Out	98	1	25.4	2.8	84	1	1	15
Calculated Head	100	100	100.0	100.0	100	100	100	100

Source: LIS (2021-2024)

13.3.2 Polishing and Lithium Carbonate Precipitation Results

The Precarbonation (also referred to as “Polishing”) and Precipitation (also referred to “Carbonation”) procedure was based by adding pre-determined amounts of sodium carbonate solution based on stoichiometry-excess requirement for the precipitation of calcium, and lithium, respectively. The sodium carbonate reagent was analyzed for purity and then used to make solutions of 25% wt. Na_2CO^3 that were used in both unit operations tested.

Typical bulk lithium carbonate product analyses, including the main impurities are summarized in Table 13-6.

- Pre-carbonation (“polishing”) calcium removal efficiency was about 43%. The lithium loss was minor, accounting to about 0.1%. Carbonation lithium recovery efficiency was 91%, at about 95% accountability;
- Boron content was below 0.001 ppm in all product samples; and
- The overall lithium extraction efficiency from brine to product for the above lithium carbonate produced by testing was about 60%.

The testwork results were used for the preparation of the upcoming validation-pilot exercise, with a view to expected feed variability.

Table 13-6: Bulk lithium Carbonate Product Analyses

Analytes ID/Units	[1]Li_2CO_3 % wt.	[2]Li_2CO_3	SO_4^{2-}	Cl^-	Ca	K	Mg	Na	Sr
HMN-1022	98.7	98.1	0.05	0.51	0.24	0.11	0.02	0.33	0.05
HMN-1023	98.0	97.5	0.06	0.79	0.25	0.18	0.02	0.59	0.04
HMN1025	99.3	98.8	0.04	0.06	0.21	0.07	0.02	0.24	0.04
HMN1026	98.5	98.0	0.03	0.14	0.20	0.22	0.02	0.84	0.04
HMN1028	98.7	98.2	0.03	0.13	0.22	0.19	0.02	0.65	0.04
HMN1029	98.4	97.9	0.03	0.16	0.22	0.20	0.02	0.91	0.04
HMN1033	97.4	96.8	0.02	1.19	0.06	0.30	0.02	1.00	0.03
HMN1036	98.6	98.1	0.02	0.57	0.06	0.15	0.02	0.47	0.03
HMN1040	99.5	99.0	0.05	0.06	0.16	0.04	0.02	0.09	0.04
HMN1041	99.8	99.2	0.04	0.04	0.01	0.03	0.00	0.08	0.00
HMN1043	99.6	99.1	0.05	0.04	0.14	0.04	0.02	0.06	0.04
Min	97.4	96.8	0.02	0.04	0.01	0.03	0.00	0.06	0.00
Max	99.8	99.2	0.06	1.19	0.25	0.30	0.02	1.00	0.05
Average	98.8	98.2	0.04	0.34	0.16	0.14	0.02	0.48	0.04
Dev, %	0.7	0.7	36.0	114.3	51.1	64.1	27.1	72.2	35.1

Notes:
[1]Li_2CO_3: Purity by Difference
[2]Li_2CO_3: Purity by Diff+LOI
Sample HMN 1043 was sent to purification testwork to SGS Canada.

Source: LIS (2021-2024)

13.4 Lithium Carbonate Purification Testing at SGS Lakefield

Sulphate, calcium, potassium and other impurities were trapped into the lithium carbonate matrix. For this reason, a purification stage was conducted by redissolution with carbon dioxide (CO_2) in deionized water ("adsorption") at ambient temperature to form lithium bicarbonate, $LiHCO_3$ (Equation 6).

The resulting pregnant solution was filtered and subjected to ion exchange to remove Ca and Mg, using a commercially available resin available in Argentina.

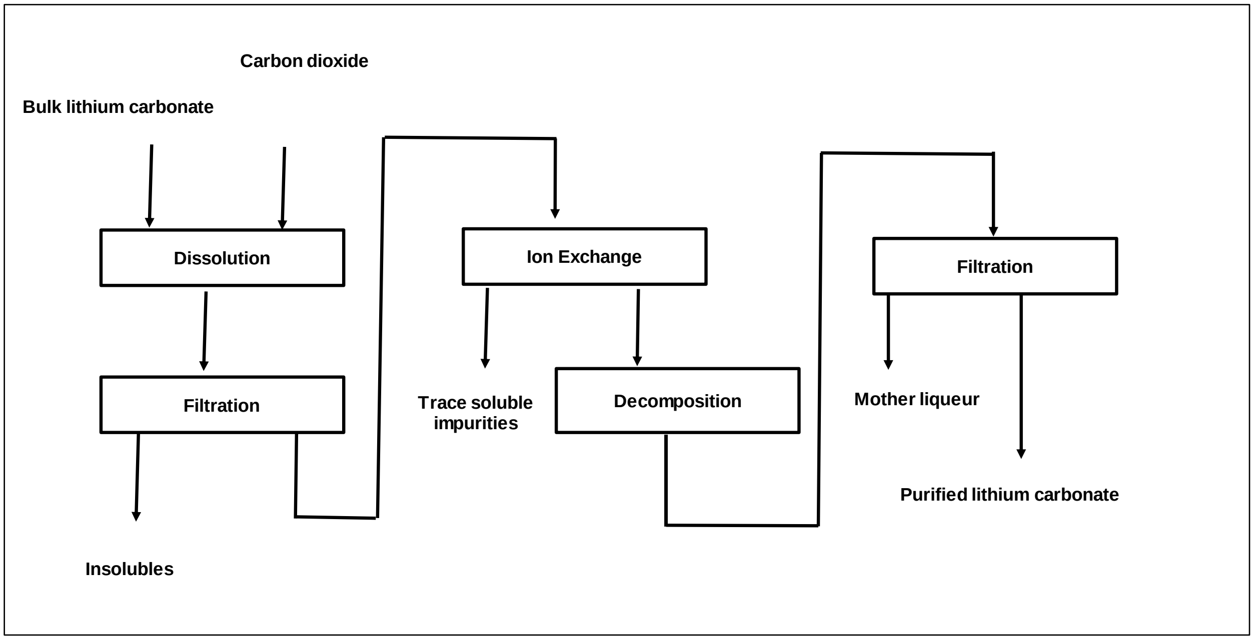
The eluate was heated to 95°C to decompose the $LiHCO_3$ causing it to re-crystallize as purified Li_2CO_3 (Equation7).

Equation 6: Lithium Carbonate Purification: $Li_2CO_3 + CO_2(g) + H_2O = 2LiHCO_3$

Equation 7: Lithium Carbonate Recrystallization: $2LiHCO_3 = Li_2CO_3 + CO_2(g) + H_2O$

The purification conceptual process schematic is shown in Figure 13-9.

Figure 13-9: Purification Conceptual Process Schematic



Source: Ehren (2024)

13.5 Redissolution (Bicarbonation) Testwork Results

Redissolution was performed as ambient temperature pressure bicarbonation tests using a 2L Parr Monel bench-top autoclave. The CO_2 overpressure was varied from 0 to 223 psig. The initial solids content varied from 4.2% wt. through 8.6%. Extractions were calculated based on metallurgical balances. The entire amount of feed was consumed in all tests except for tests BCB-04 performed with 8.6% wt. initial solids content.

The analytical summary of the decomposition solutions produced by testing is included in Table 13-7.

Table 13-7: Redissolution (Bicarbonation) Discharge Solution Analyses

PLS Tenors, mg/L						
Element	**BCB-01**	**BCB-02**	**BCB-03**	**BCB-04**	**BCB-05**	**BCB-06**
Al	0.4	0	<0.3	<0.2	<0.3	<0.3
Ba	0.055	0.1	0.06	0.01	0.14	0.08
Ca	11.6	14	8.3	16.2	9.9	13.8
Cu	4.3	<8	<0.1	5.3	<0.1	<1.0
Fe	2.4	2	2.5	2.4	0.4	1.3
K	5	5	5	11	7	6
Li	7,580	8090	7700	11000	9560	7890
Mg	8.01	8	7.18	14.8	8.65	7.86
Mn	0.12	0	0.09	0.04	0.04	0.15
Na	73	38	26	47	24	61
Ni	11.1	<10	12.4	7	0.6	1.9
Si	2.4	2	1.6	2.5	0.8	4.7
Sr	1.36	2	1.2	4.9	3.3	2.1
B	<0.4	<0	<0.4	0.6	0.5	0.4
S	10	<10	9	19	11	10
Cl	5	5	5	7	3	2

Source: LIS (2021-2024)

13.5.1 Ion Exchange Testwork Results

The resin selected for testing consisted of Purolite S940, currently available in Argentina. The tests were performed at ambient temperature.

Kinetic and isotherm tests were performed to determine the conditions for the breakthrough column tests.

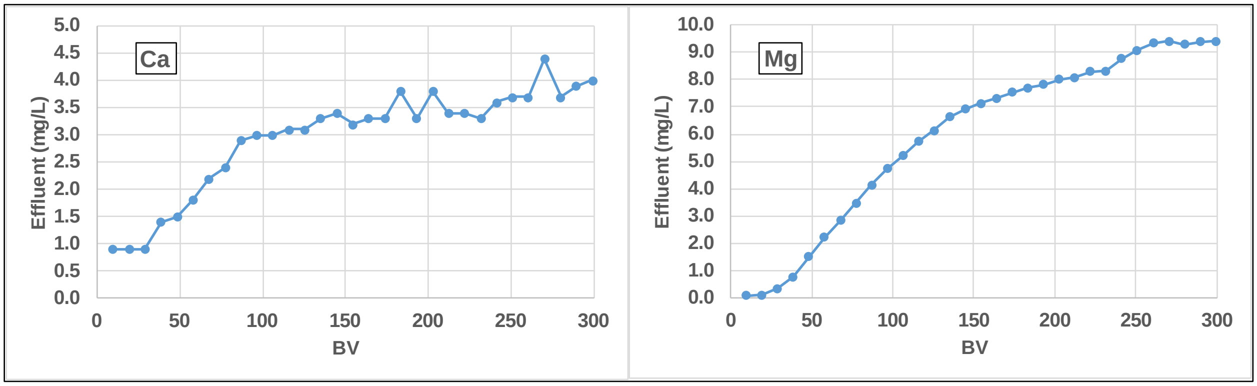
The results allowed developing the breakthrough curve for Ca and Mg removal with Purolite S940. Approximately 300 BV of solution were passed through the column, samples were taken every 10 BV.

Breakthrough, defined here as when the effluent concentration is 10% of the feed concentration, was achieved after just 40 BV.

Resin saturation, defined here as when the effluent concentration is 90% of the feed concentration, was reached at 135 BV.

Resin capacity, calculated based on the feed assay and effluent assays, was 0.08 equivalents per liter resin (Eq/L). Other resins might provide different performance with the same feed. Typical breakthrough curves are illustrated in Figure 13-10.

Figure 13-10: Breakthrough Curves Produced by Column Testing



Source: Ehren (2024)

13.5.2 Decomposition (Final Purification) Testwork Results

Combined effluent samples from the IX testwork were subjected to decomposition tests. The tests were conducted in a 4-L reactor with overhead mixer and heating mantle. The test duration was two hours, and the temperature was maintained at 95 °C. Combined effluent samples from the IX testwork were subjected to decomposition tests.

Two tests were performed, differentiated by eluate-feed compositions. The feed sample for test Li_2CO_3-01 contained higher insoluble tenors (Ca, Mg) compared to the feed sample for test Li_2CO_3-02, which in turn contained significantly higher sodium.

Metallurgical balances (Table 13-8 and Table 13-9) returned about 69% and 72% lithium recrystallization efficiency for tests Li_2CO_3-01 and Li_2CO_3-02, respectively. The balance of the lithium reported to the mother liquor, which will be returned to the process, as a bleed-stream. The main bleed-ratio determining factors will consist of the actual deportment of the impurities between the mother liquor and solids product. The bleed ratio is determined based on steady state balance.

Of note, analytical uncertainty at low concentrations generally requires many locked cycle tests to allow for an accurate assessment of these deportments.

Table 13-8: Metallurgical Balance Test Li_2CO_3P-01

Stream	Feed	Final	Comb'd	Final	Precipitation
-	IX	PLS	Wash	Solids	(by calc'd)
Amount	3598 mL	3369 mL	318 mL	97 g	head)
Elements	mg/L	mg/L	mg/L	% wt.	%
Li	6950	2260	1630	18.6	69
Mg	5.5	5.6	2	21.4	9
Ca	2.8	1.0	1.0	74	64
Na	124.0	146	35	<20	0
K	5.0	55	12	25	1
Sr	0.23	0.03	0.03	8	85

Source: LIS (2021-2024)

Table 13-9: Metallurgical Balance Test Li_2CO_3P-02

Stream	Feed	Feed	Final	Comb'd	Final	Precipitation
-	IX	IX	PLS	Wash	Solids	(by calc'd)
Amount	2354 mL	2410 mL	4172 mL	1149 mL	158 g	head)
Elements	mg/L	mg/L	mg/L	mg/L	% wt.	%
Li	5520	5960	2290	1530	18.7	72
Mg	<0.07	<0.07	0.2	<0.07	0.7	12
Ca	<0.9	<0.9	2.0	<0.9	9	12
Na	3110	139	1840	85	30	0
K	5.0	6.0	12	<1	53	12
Sr	0.02	0.10	0.05	0.02	1	36

Source: LIS (2021-2024)

13.5.3 Product Purity Results Summary

Comparative testwork feed and product purity related chemical analyses are summarized in Table 13-10. In summary:

- The purity of the bulk lithium carbonate test-sample produced by the Eon D2D laboratory sent to SGS was 99.1% by Alex Stewart analyses and 99.2% by SGS analyses, based on the difference of 100-(Sum of impurities and Loss of ignition at 550°C). Calculated based on the Sum of Impurities only it was 99.6% (Alex Stewart) and 99.7% (SGS);

- The lithium carbonate purity produced by test Li_2CO_3P-01 was 99.4 % based on the difference of 100-(Sum of impurities and Loss of ignition at 550°C), and, of 99.9% vs. the Sum of Impurities only; and
- The lithium carbonate purity produced by test Li_2CO_3P-02 was 99.5% based on the difference of 100-(Sum of impurities and Loss of ignition at 550°C), and 99.9% vs. the Sum of Impurities only.

Table 13-10: Product Purity Chemical Analyses

Analyte	Unit	As Received 1	As Received 2	Li_2CO_3P-01	Li_2CO_3P-02
Ba	g/t	5.7	5	0.8	<0.21
Ca	g/t	1200	1355	74	<9.00
Fe	g/t	17	9	<2	<2
K	g/t	162	382	25	53
Li	g/t	183,443	178,221	186,371	186,991
Mg	g/t	232	191	21	<1
Mn	g/t	0.5	0.6	0.4	0.4
Na	g/t	463	566	<20	30
Si	g/t	23	54	<7	<8
Sr	g/t	373	374	8	<1
B	g/t	<7.00	2	<4	<4
Cl	g/t	76	356	15	<10
SO_4	g/t	<300.00	502	<300	<300
LOI @ 550°C	%	0.53	0.53	0.50	0.47
CO_3	%	80.3	80.3	80.8	80.8
Li_2CO_3	%	98.7	98.1	99.4	99.5
Sum Imp	%	0.31	0.40	0.08	0.07
Purity by Difference	%	99.7	99.6	99.9	99.9
Purity by Diff+LOI	**%**	**99.2**	**99.1**	**99.4**	**99.5**

Notes:
As received 1: analyses by SGS Canada. As received 2: analyses by Alex Stewart Argentina

Source: LIS (2021-2024)

13.6 Ongoing Evaporation Test at Hombre Muerte 2023-2024

The average composition of the Tramo well feed brine samples is illustrated in Table 13-11 (first two rows). Comparatively, the updated analytical results (2023/2024) for the same sample are summarized, along with the newly commissioned wells (2024) Natalia Maria and Alba Sabrina.

- The samples' variability with regards to the sulphate to magnesium ratio increases from Tramo through Natalia Maria and Alba Sabrina from 2.4 through 4.2 to 5.4, respectively; and
- At the same time, the samples' variability with regards to the magnesium to lithium ration decreases from Tramo through Natalia Maria and Alba Sabrina from 3.5 through 2.6 to 3.4, respectively.

Table 13-11: Hombre Muerto Norte Testwork Samples Chemical Composition

Tenors, % wt.	Li^+	Mg^{2+}	Ca^{2+}	Na^+	K^+	SO_4^{2-}	Cl^-	B-tot
Tramo'22/23 Supercon	0.072	0.25	0.10	8.26	0.61	0.59	14.21	0.03
Tramo'22/23 High purity	0.063	0.22	0.09	8.66	0.54	0.59	14.00	0.03
Tramo'23/24	0.063	0.22	0.09	8.66	0.54	0.59	14.00	0.03
Natalia Maria'24	0.098	0.26	0.04	9.18	0.84	1.09	15.46	0.04
Alba Sabrina'24	0.062	0.21	0.05	8.80	0.62	1.14	13.81	0.04

Source: LIS (2021-2024)

13.7 Future Mineral Processing Testwork

As a result of the drilling program at the HMN Project, the brine tested to date was only sourced from the Tramo claim block so far. Hence it is not representative of the updated resource which contains brine from the Alba Sabrina and Natalia Maria claim blocks. Therefore, it is not sufficiently representative for commercial operation. Since several months, a brine adjustment program has been initiated to provide a mixture of the complete resource.

The implication of the above is that the SO_4/Mg molar ratio will be more than 1, and therefore after liming free sulphate will still be present in the brine. In the industrial process, lithium will be concentrated until lithium sulphate saturation before being directed to the lithium carbonate plant. The adjusted process conditions will reduce the losses of lithium as brine entrainments in harvested salts, and in the magnesium hydroxide and calcium sulphate solids.

This in turn will allow targeting lithium recoveries approximately 70%. Basically, it will follow a similar processing scheme as industrial proven operations such as at Salar de Olaroz, the Cauchari basin and Silver Peak. The final product will be of technical grade lithium carbonate.

Through simulations, evaporation tests and laboratory tests, the best sequence for brine processing has been developed with the aim of increasing lithium recovery and lower reagent consumption, and this flowsheet will be used in the planned feasibility study.

Based on the test results it is additionally elected to apply a simpler, straight forward process to produce lithium carbonate technical grade with industry proven evaporative technology and brine purification steps.

14 MINERAL RESOURCE ESTIMATE

14.1 Method Overview

An updated Mineral Resource Estimate was developed for the HMN Project using the three-dimensional (3D) modelling software FEFLOW (DHI-WASY, 2021). The software implementation was managed by Aqua Insight Inc., specialists in FEFLOW applications. Dr. Mark King (QP) provided technical oversight of the modelling and considers the results to be valid and appropriate for Measured, Indicated, and Inferred Mineral Resource Estimates, as defined by the CIM and referenced by NI 43-101. The modelling methods are summarized as follows:

1. New drilling data at Alba Sabrina and Natalia Maria and previous drilling data at Tramo were interpreted to define geological units within Project areas;

2. Geological units from the previous Resource Estimate (Montgomery, 2018) were considered in defining the geological units;

3. Geological units were interpreted along a series of two dimensional (2D) sections. This effort was supported by the new drilling and TEM results as well as pre-existing drilling and CSAMT results;

4. Publicly available information collected by others, from within the SHM but outside of the HMN Project area, was used to further inform the geological interpretations. This information included: 2D sections and gravity data from previous work on the Sal de Vida Project (Houston & Jaacks, 2010; Jordan et al., 1999; Montgomery & GAI, 2012; Montgomery et al., 2021); information about the Western Subbasin in Godfrey et al. (2013), Montgomery & GAI (2012), Jordan et al. (1999), and WMC (1994); and regional structures mapped by Hongn and Seggiaro (2001);

5. Interpolation between the 2D sections was conducted within the Project GIS. Final updated surfaces were transferred to FEFLOW to form a fully 3D Geological Model. This model is more detailed within the HMN Project footprint, and less detailed in the outlying areas. In this way, the model is designed to provide reliable resource estimates for the HMN Project, and a reasonable starting point for future hydraulic (Reserve) modeling;

6. The geological units were transferred from the 3D Geological Model into a Resource Model;

7. Resource Zone footprints were defined for each project area based on the intersection of the property boundaries with the salar surface;

8. Drainable porosity (Specific Yield) was assigned to each geological unit within the Resource Zone, based on RBR testing;

9. Resource Zones were evaluated using variogram analysis and a borehole density method. Based on this evaluation, the entire Resource was defined as either Measured or Indicated, with no Inferred category;

10. Brine sample results were used to interpolate 3D concentration distributions throughout the Resource Model, for six dissolved constituents (Li, B, Ca, K, Na, Mg, and SO_4). The interpolation was supported by variogram analysis;

11. Geological volume, drainable (or brine) volume, and the interpolated brine grade were integrated into the Resource Model, which was used to estimate the mass of brine constituents in each geological unit contained within Resource Zones; and

12. Measured and Indicated lithium Resources were estimated relative to a 500 mg/L grade cut-off. This lithium-based cut-off was also applied to boron, calcium, potassium, sodium, magnesium, and sulphate.

Dr. Mark King (QP) considers the Resource Estimation methods and results to be reasonable and appropriate. Additional details on each modelling step are provided in the following subsections.

14.2 Geological Model Development

14.2.1 Geological Model Overview

The 3D Geological Model represents the interpreted configuration of primary geological units throughout the SHM. The model in and around the HMN Project properties is more detailed because it is based on field data collected during the exploration programs described in Sections 9 and 10. The outlying areas are represented in a simplified manner.

14.2.2 Geological Model Footprint

The surface footprint of the Geological Model includes the full salar and was defined based on satellite imagery. The model footprint includes the salar surface, alluvial fans north of Alba Sabrina and Tramo, Tincalayu Peninsula, Farallón Catal, and the northern part of the Río Trapiche alluvial fan. Most of the Río de los Patos alluvial fan is outside the model.

The upper boundary of the Geological Model was initially defined by the Digital Elevation Model (DEM) (IGN, 2022), and then refined in the HMN Project areas based on drone-sourced high-resolution elevation data and elevation surveys at each of the wells. The lower boundary of the Geological Model was defined by the top of the hydrogeological basement, interpreted from borehole logs, geophysical surveys, and data from outside the HMN Project areas as described in Sections 14.2.3 and 14.2.4.

14.2.3 Geological Units

The 14 primary geological units incorporated into the Geological Model are summarized in Table 14-1, and the distribution of these units within the Geological Model is presented in Section 14.2.4. The geological units were identified using different data sets, as follows:

- Alba Sabrina, Natalia Maria, and Tramo: Geological units within these property areas are based on borehole logs, downhole geophysics, and geological units from the previous Resource Estimate (Montgomery, 2018);
- Gaston Enrique, Norma Edith, and Viamonte: The units in these property areas are inferred from the other HMN Project properties and information available from surrounding areas in the Eastern and Western Subbasins. These properties are not included in the updated Resource Estimate;
- Eastern Subbasin: Conceptual cross-sections by Montgomery and GAI (2012) and Montgomery et al. (2021) were simplified to define the geological units modelled in the Eastern Subbasin, outside of the HMN Project area; and
- Western Subbasin: Conceptualization of the Western Subbasin was simplified based on concepts presented in Godfrey et al. (2013), Montgomery and GAI (2012), Jordan et al. (1999), and WMC (1994). Data presented by Integral (2023) will be used to update future iterations of the model in the Western Subbasin.

Tincalayu Peninsula and Farallón Catal were modelled as individual units and are not included in the 14 primary geological units described below. For this stage of Resource Estimation, they were categorized as basement-type, or "no-flow" areas. These units can be redefined for subsequent Reserve Estimation modelling, should hydraulic testing (e.g., at DDH-AS-08) indicate potential for flow across either of these physiological features.

Table 14-1: Primary Geological Units included in the SHM Geological Model

Geological Unit	Resource [1]			2018 Tramo Equivalent [2]	Eastern Subbasin Equivalent (Sal de Vida) [3]	Western Subbasin[4]
	AS	NM	T			
Interlayered Fine and Coarse Sediments (IFCS)	Y	Y	Y	Sand, silty sand, and sandstone	Interbedded Coarse and Fine-grained Alluvium	Y
Interbedded Halite and Sediments (IHS)	-	Y	Y	Halite or other evaporite	Halite-dominated Evaporites	Y
Basalt	Y	Y	-	-	-	-
Halite	-	Y	-	-	Halite-dominated Evaporites	Y
Upper Middle Sediments (UMS)	Y	-	-	-	• Interbedded Coarse and Fine-grained Alluvium • Silt and Clay (>80% fine-grained)	-

Geological Unit	Resource [1]			2018 Tramo Equivalent [2]	Eastern Subbasin Equivalent (Sal de Vida) [3]	Western Subbasin[4]
	AS	NM	T			
Conglomerate	-	-	Y	Conglomerate, sand, and gravel	-	-
Compact Halite (CH)	-	-	-	-	Halite-dominated Evaporites	Y
Travertine and Gypsum	-	-	-	-	• Travertine, Tuff and Dacitic Gravel • Travertine and Gypsum	-
Lower Middle Sediments	-	-	-	-	Sand and Gravel (>80% coarse-grained)	-
Volcanics and Volcano-sediments	-	-	-	-	• Volcanic Sand and Gravel (>80% coarse grained) • Volcanics, Volcanic Tuff	-
Lower Sediments	-	-	-	-	Interbedded Coarse and Fine-grained Alluvium	-
Tertiary Sediments	-	-	-	-	Tertiary Bedrock	-
Brecciated Quartzite (BQTZ)	Y	-	-	-	-	-
Basement	-	-	-	-	Precambrian Basement	-

Notes:

1. Geological units included in the updated Resource Estimate for the Alba Sabrina (AS), Natalia Maria (NM), or Tramo (T) property.
2. Montgomery (2018)
3. Montgomery & GAI (2012); Montgomery et al. (2021)
4. Modelled in the Western Subbasin based on information from Godfrey et al. (2013), Montgomery and GAI (2012), Jordan et al. (1999), and WMC (1994).

Source: GWI (2023)

Detailed lithological descriptions of each unit intersected within the HMN Project properties are provided in Section 7.3. The CH and Basement units were excluded from the Resource Estimate based on indications of negligible drainable porosity. Primary geological units included in the Resource Estimate are briefly described as follows, from shallowest to deepest:

- Interlayered Fine and Coarse Sediments (IFCS): compact to unconsolidated clay, silt, and sand, including the recent alluvial fans that occur along the western margin of Alba Sabrina and the eastern margin of Tramo;
- Interbedded Halite and Sediments (IHS): interbedded crystalline to sandy halite, compact to poorly consolidated sand, and compact clay;
- Basalt: dark grey basalt flows that range from highly vesicular, to amygdaloidal, to massive, with minor to pervasive fracturing;
- Halite: halite-dominated sequences with interbeds of clastic sediments;
- Upper Middle Sediments (UMS): poorly consolidated to unconsolidated sand;

- Conglomerate: matrix supported polymictic conglomerate with subangular to subrounded clasts ranging from 0.2-15 cm in a silt to medium-grained sand matrix; and

- Brecciated Quartzite (BQTZ): brecciated to pervasively fractured quartzite with clay-rich fracture fill and variable iron staining.

14.2.4 Distribution of Geological Units

A series of transverse and longitudinal 2D sections were developed across the SHM for the 14 primary geological units. Distribution of the geological units across these sections and the depth to basement were interpreted from the following:

- New drilling, pre-existing drilling data (Section 10), and geophysical data (TEM and CSAMT; Section 9) were used to generate 2D cross-sections within the HMN Project properties;

- For the Eastern Subbasin, gravity sections (Houston and Jaacks, 2010) were used to estimate basement depth, and previous geological interpretations (Montgomery and GAI, 2012; Montgomery, 2018; Montgomery et al., 2021) were incorporated into simplified conceptual cross-sections;

- The Western Subbasin was modeled as a simplified, halite-dominated sequence based on published information regarding its depth and composition (Godfrey et al., 2013; Montgomery and GAI, 2012; Jordan et al., 1999; and WMC, 1994). This modeled sequence consists of horizontally layered IFCS (10 m thick), IHS (40 m thick), Halite (50 m thick), and CH (unconfined at depth). Here, the top of the CH unit is interpreted to represent the geological basement, or a no-flow boundary. Conceptualization of the Western Subbasin will be updated in future iterations of the model based on the data presented by Integral (2023). It has no effect on the current Resource Estimate, but may have some relevance to future hydraulic modelling; and

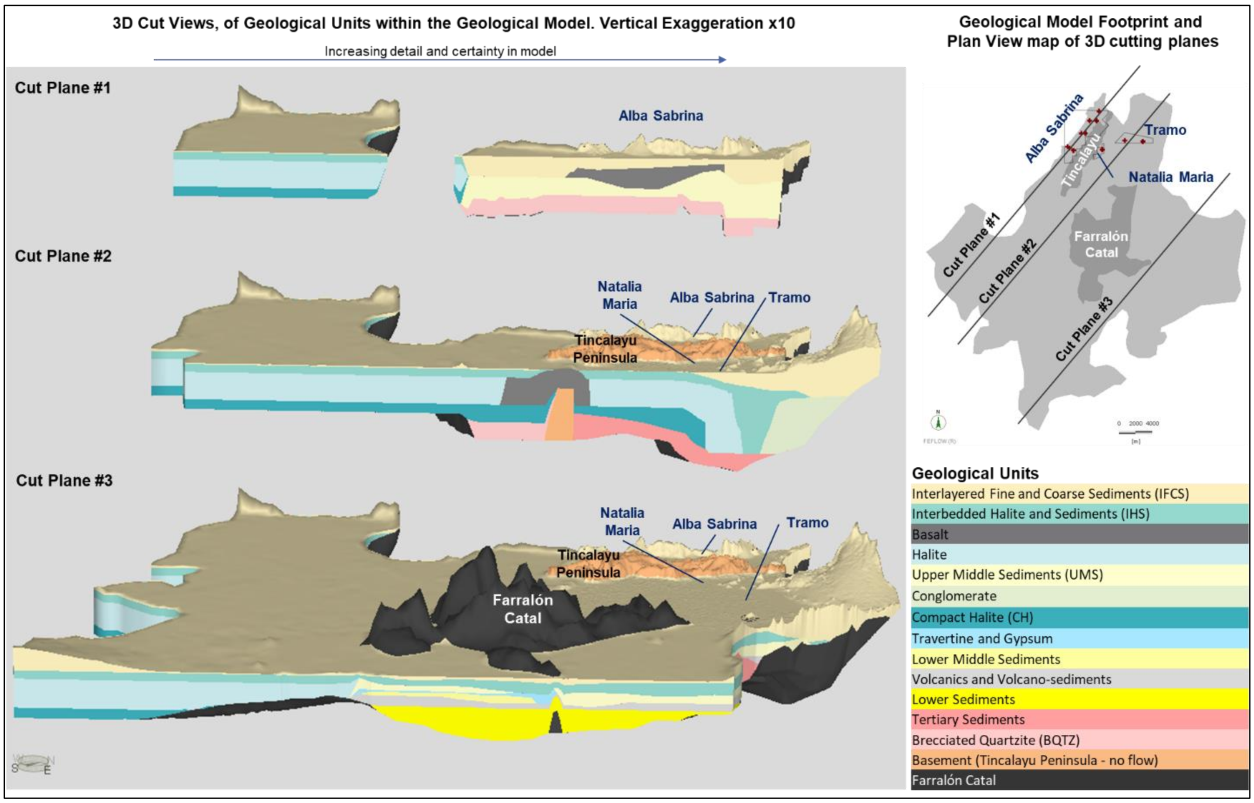
- Geological and structural mapping were used to infer contacts within and along the margins of the basin (Hongn & Seggiaro, 2001; Jordan et al., 1999; Vinante & Alonso, 2006).

Regional structures were used to estimate the transitions between halite- and clastic-dominated parts of the salar, and to constrain the Basalt unit outside of Alba Sabrina. In the southern part of the salar, the transition between the clastic-dominated Eastern Subbasin and the halite-dominated Western Subbasin occurs along the fault that extends from Farallón Catal to the Hombre Muerto Peninsula (Figure 7-2). In the northern part of the salar, this transition extends into the northern sector of the Eastern Subbasin, based on drilling data from Natalia Maria.

The contact between the halite-dominated Western Subbasin and clastic-dominated Alba Sabrina channel appears near the NE-SW trending strike-slip fault between Cordon del Gallego and Tincalayu Peninsula. In this area, the Basalt unit extends around the southern margin of Tincalayu Peninsula and over the shallow saddle inferred from TEM surveys between the peninsula and Farallón Catal. The southwestern extent of the Basalt is demarcated by the N-S trending strike-slip fault that runs along the edge of the Norma Edith property, while the northern terminus is based on borehole logs.

The 2D sections were imported into the Project GIS and interpolated to generate upper surfaces for each geological unit. The surfaces were transferred to FEFLOW, and a full 3D Geological Model was constructed. The final distribution of the geological units within the Geological Model is shown on Figure 14-1. These units were then transferred from the Geological Model into the Resource Model.

Figure 14-1: Geological Units in 3D Cut Views through the 3D SHM Geological Model



Source: GWI (2023)

14.3 Resource Model Development

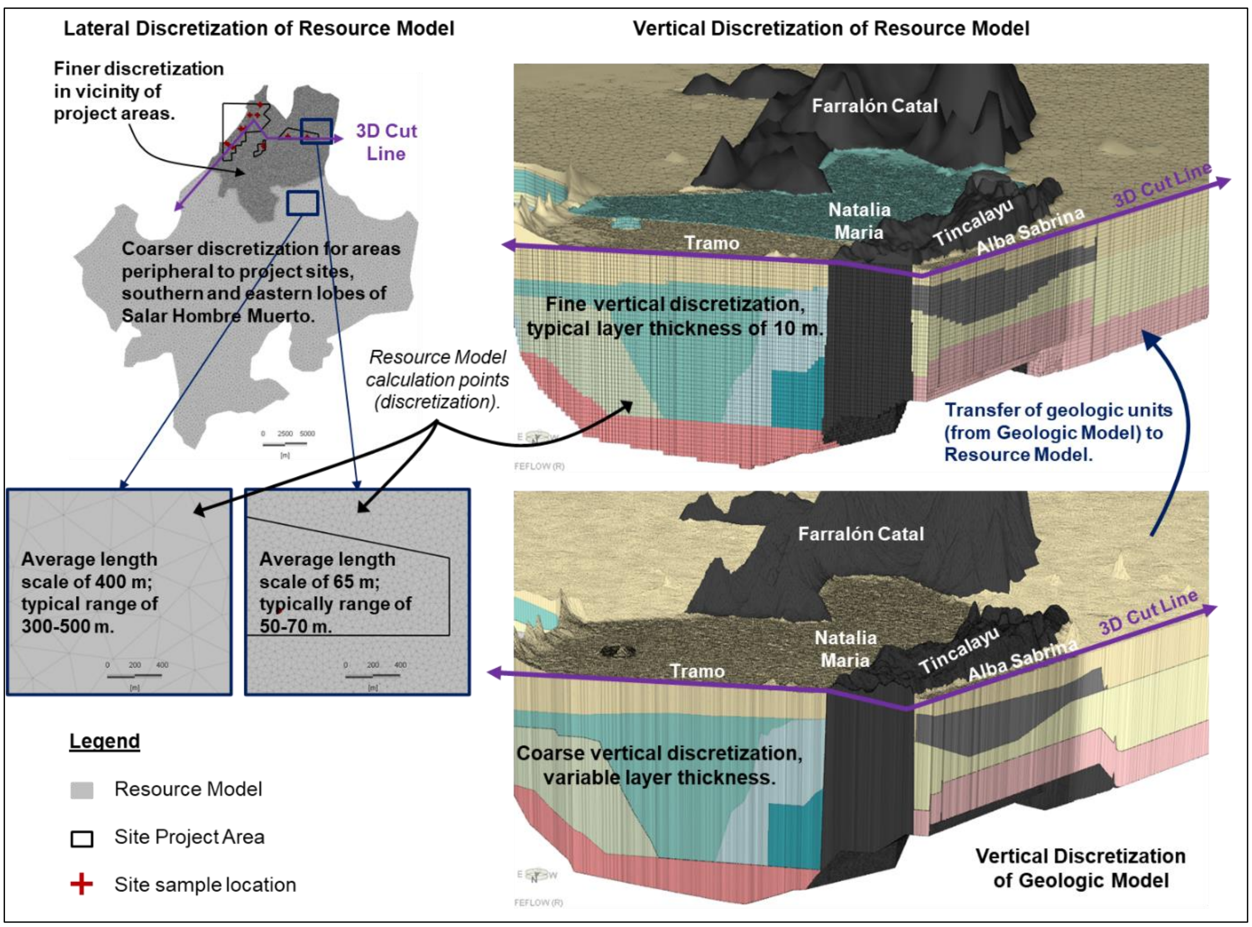
A Resource Model was developed to facilitate calculation of Mineral Resource Estimate. The model encompasses the same domain as the Geologic Model (Section 14.2) but has more finely discretized elements, to enable a more accurate estimation of lithium resources (Figure 14-2). Meanwhile, the Geologic Model has the capability for future development as a dynamic Reserve Estimation tool.

Laterally, the footprint of the Resource Model was discretized into triangles with typical length scales of 65 m in the vicinity of project areas and 400 m for the broader SHM (i.e., southern and eastern lobes). Layers in the mineral resource areas have a thickness of 10 m. As illustrated on Figure 14-3, each Resource Model element (i.e., calculation point) was attributed with:

- A geologic unit (Section 14.2) and associated hydraulic properties (Section 14.5);
- A mineral resource zone classification (Sections 14.4 and 14.6); and
- A lithium (and other mineral) concentration (Section 14.7).

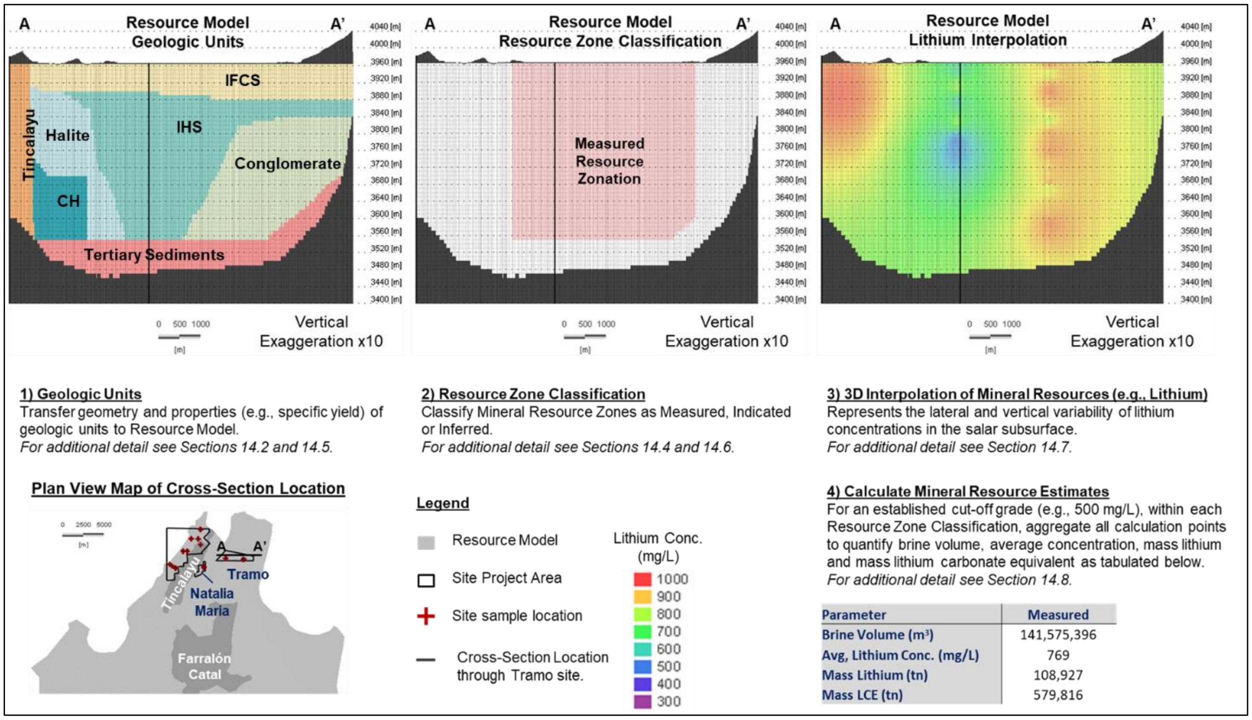
The Mineral Resource Estimate (Section 14.8) was quantified by selecting all elements having a lithium concentration above the cut-off grade (i.e., 500 mg/L) and calculating brine volume, average concentration, and mass for lithium and other constituents (Table 14-5).

Figure 14-2: Discretization of the HMN Project Resource Model



Source: GWI (2023)

Figure 14-3: Visualization of the Process Used to Quantify the Updated Mineral Resource Estimate for the HMN Project



Source: GWI (2023)

14.4 Resource Zone Development

For each Project property, the Resource Zone footprints were based on the intersection of the property boundaries with the salar surface. The Resource footprint for each property is shown on Figure 14-4, and is described as follows:

- Alba Sabrina:
  - The northern boundary of the Resource Zone footprint was delineated by the property boundary, and does not include the bedrock outcrop (annotated on Figure 14-4);
  - The eastern boundary was defined by the intersection of the salar surface and Tincalayu, and does not include lithologies belonging to Tincalayu (annotated on Figure 14-4);
  - The southern boundary was delineated by the property boundary;

  - The western boundary was delineated using the 3980 masl contour, where the salar surface meets alluvial upslope sediments (i.e., approximately 200 m W of borehole DDH-ASS-07; Figure 14-4); and
  - The total resource footprint is approximately 10.64 km^2.
- Natalia Maria:
  - The northern, eastern, and southern boundaries of the Resource Zone footprint were delineated by the property boundary;
  - The western boundary was defined by the intersection of the salar surface and Tincalayu, and does not include lithologies belonging to Tincalayu (annotated on Figure 14-4); and
  - The total resource footprint is approximately 0.95 km^2.
- Tramo:
  - The boundary of the Resource Zone footprint was defined by the property boundary, which is completely underlain by the salar deposits; and
  - The total resource footprint is approximately 3.83 km^2.
- The total current Resource Zone footprint for the HMN Project is approximately 15.42 km^2.

The top of the Resource Zone was defined as 1.5 m below the surface of the Geological Model, consistent with the evaporation extinction depth (Section 7.6.3). At Alba Sabrina, the top of the Resource Zone was truncated at 3975 masl in the upslope areas. By doing so, aquifers diluted by freshwater input within the modern alluvial fans along the western margin of Alba Sabrina were excluded from the Resource Estimate.

The bottom of the Resource Zone at each property is defined as follows:

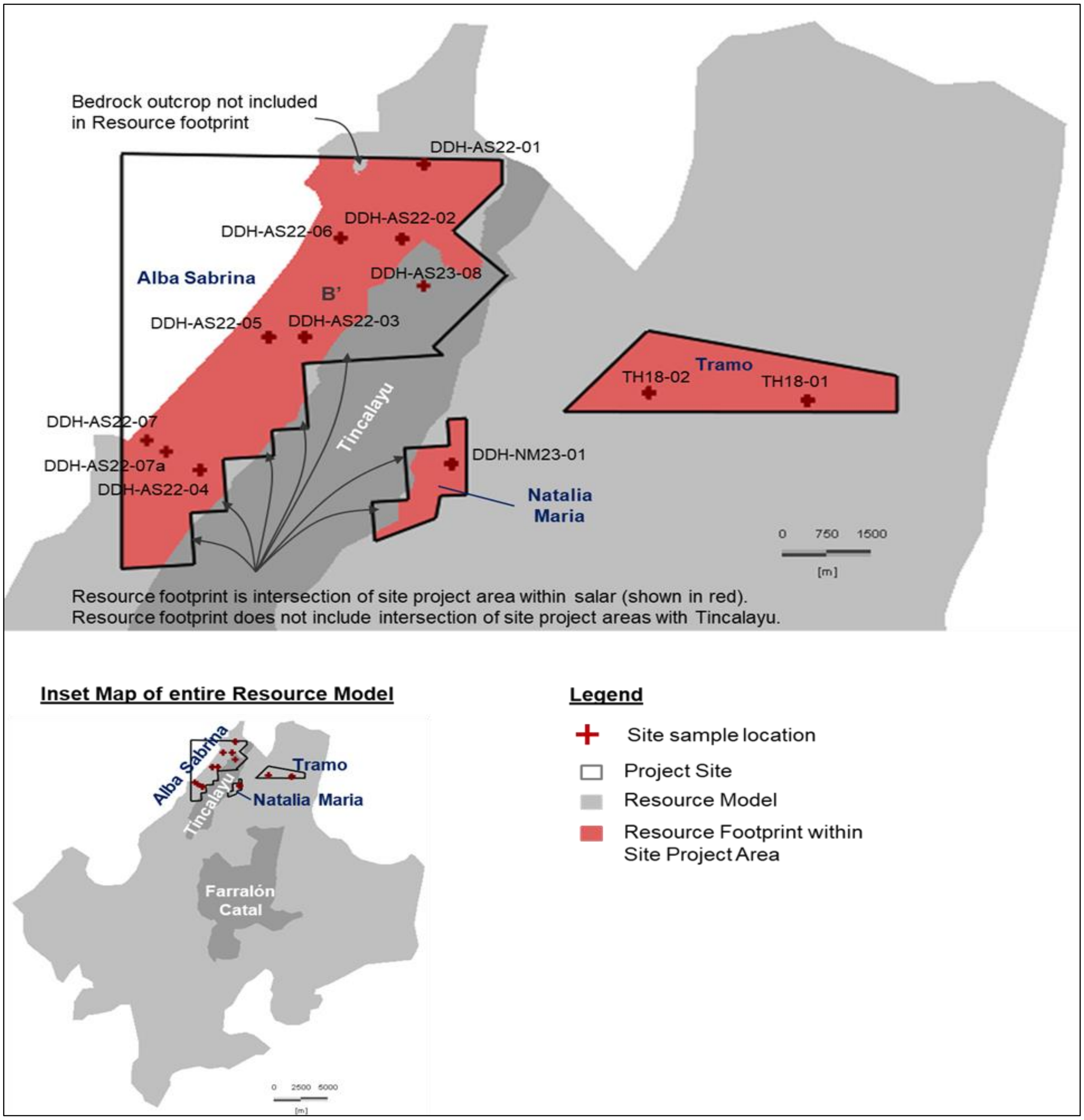
- Alba Sabrina: bottom of the Geological Model (i.e., top of the Basement unit);
- Natalia Maria: top of the CH unit, approximately 190 mbgs; and
- Tramo: just below the bottom of the 2018 boreholes, at approximately 405 mbgs (3565 masl).

The geological units are shown in the context of the broader Resource Model domain (that encompasses the majority of the SHM) on Figure 14-5. The geologic units within each Project property are shown on Figure 14-6, and their volume and contribution to the lithium resource are summarized in Table 14-2.

14.5 Hydraulic Properties

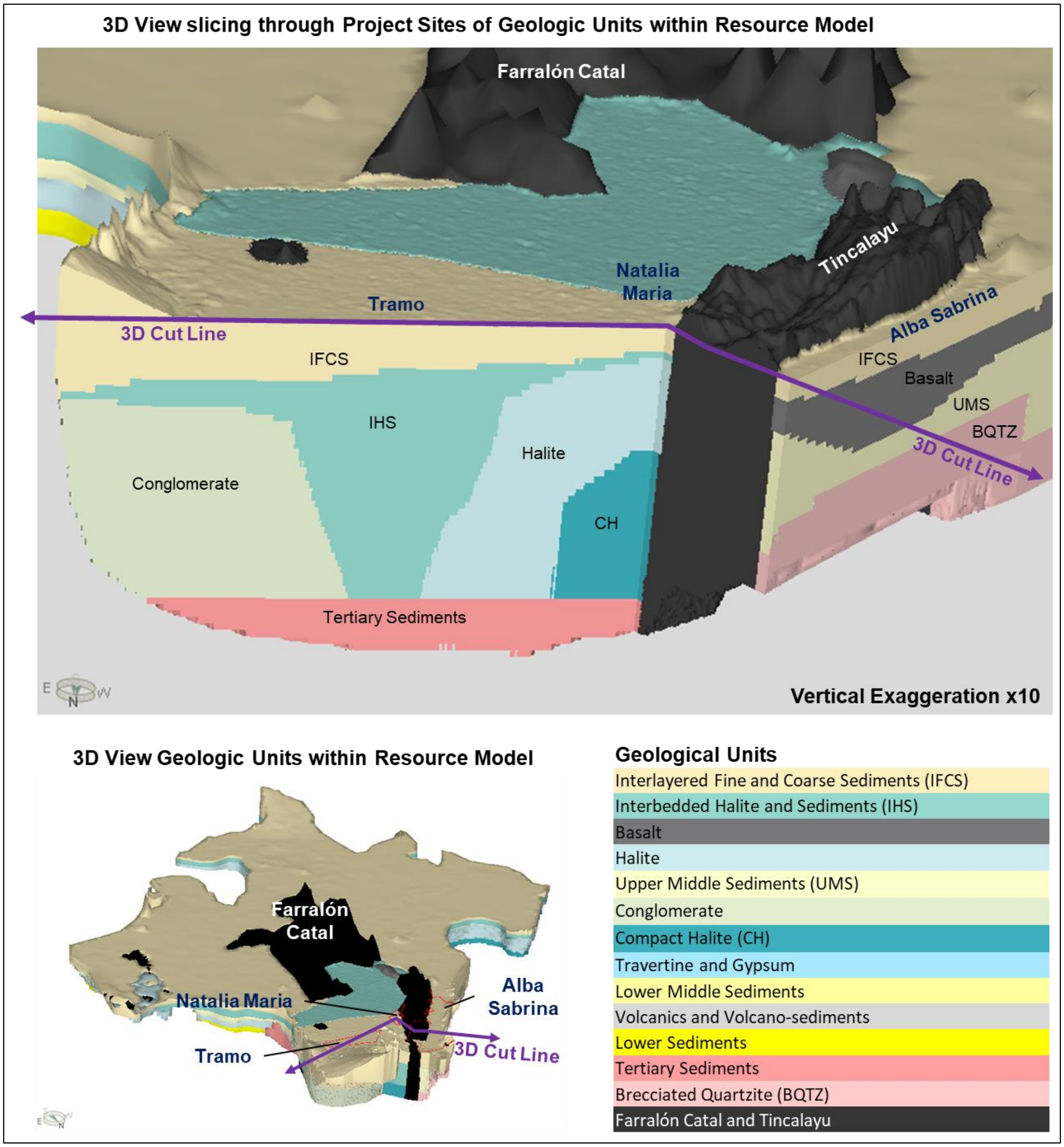
Specific Yield (Sy) is the only hydraulic property explicitly used in the Resource Estimate. Sy for each HMN Project geological unit was estimated based on results from a laboratory test known as the Rapid Brine Release (RBR) method (Section 11.3). The Sy applied to each unit within the Resource Zones is summarized in Table 14-2.

Figure 14-4: Resource Footprint for Alba Sabrina, Natalia Maria, and Tramo properties, HMN Project



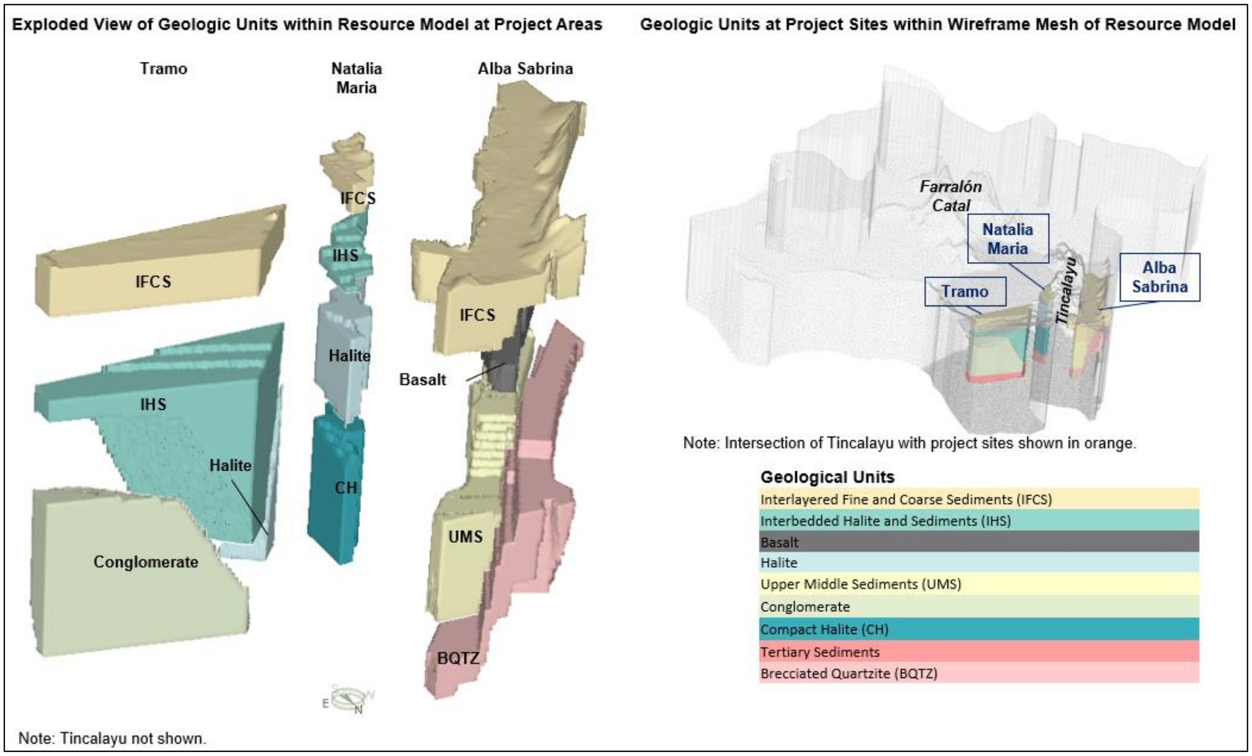
Source: GWI (2023)

Figure 14-5: Geologic Units of the SHM Incorporated into the Resource Model Domain



Source: GWI (2023)

Figure 14-6: Geological Units within the Resource Model for the Alba Sabrina, Natalia Maria, and Tramo Properties



Source: GWI (2023)

Table 14-2: Summary of Primary Geological Units within the Resource Model by Property

Geological Unit	Volume (x10^6 m^3) [1]	Average Specific Yield [2]	Brine Volume (x10^6 m^3)	Brine Volume (% of Site Total)	Resource (% of Site Total) [3]	Resource (% of All Sites Total) [3]
Alba Sabrina						
Interlayered Fine and Coarse Sediments (IFCS)	612.4	0.111	68.0	27.2	25.8	15.1
Basalt	280.3	0.053	14.9	5.9	6.2	3.6
Upper Middle Sediments (UMS)	580.7	0.131	76.1	30.5	31.6	18.5
Brecciated Quartzite (BQTZ)	1055.2	0.086	90.7	36.3	36.5	21.4
Natalia Maria						
Interlayered Fine and Coarse Sediments (IFCS)	19.3	0.089	1.7	13.3	13.6	0.7
Interbedded Halite and Sediments (IHS)	24.0	0.096	2.3	17.9	17.7	0.8
Halite	130.8	0.068	8.9	68.8	68.7	3.3
Tramo						
Interlayered Fine and Coarse Sediments (IFCS)	302.7	0.089	26.9	19.0	19.6	7.2
Interbedded Halite and Sediments (IHS)	743.2	0.096	71.3	50.4	46.8	17.1
Halite	26.6	0.068	1.8	1.3	1.2	0.4
Conglomerate	476.7	0.087	41.5	29.3	32.4	11.9

Notes:

1. Volume values are from the Resource Model developed in FEFLOW and refer to the bulk volume of the unit (i.e., not reflective of porosity).
2. Drainable porosity (Specific Yield) was estimated as the average of all RBR results collected from the unit. Additional information on RBR results is provided in Section 10.6.
3. Lithium resource based on 500 mg/L lithium cut-off.

Source: GWI (2023)

14.6 Mineral Resource Classification

The mineral resource was classified based on borehole spacing, which is one of the most widely used methods of resource classification (e.g., GWI & Worley, 2021; Silva & Boisvert, 2014; Houston et al., 2011). Variogram analysis of the Project lithium grades indicated a correlation length of 3.5 – 7.0 km for the data (Section 14.7), which equates to a borehole density of 12.25 – 49.00 km^2/BH. This is considered a reasonable site-specific range for Measured resources.

In comparison, general brine deposit guidelines suggested by Houston et al. (2011) for immature (i.e., clastic dominated) salars, considered applicable for the HMN Project, are as follows:

- Measured – 6.25 km^2/borehole;
- Indicated – 25 km^2/borehole; and
- Inferred – 49-100 km^2/borehole.

Comparison of the site-specific analysis and the Houston et al. (2011) guidelines indicate that the latter are more conservative. Consequently, the Houston et al. (2011) guidelines were used to classify the HMN Project mineral resources. Resource Zone configurations are summarized in Table 14-3, shown on Figure 14-7, and described as follows:

- Alba Sabrina:
  - Measured Zone: The full salar footprint within the claim area, from surface to 250 mbgs; and
  - Indicated Zone: Underlies the Measured zone, from 250 mbgs to the bottom of the modelled basin (400 mbgs; top of hydrogeological basement).
- Natalia Maria:
  - Measured Zone: Surface to 190 mbgs (top of the CH unit).
- Tramo:
  - Measured Zone: The full claim area, from surface to the top of the Tertiary Sediments unit, approximately 405 mbgs. At Tramo, the Tertiary Sediment unit represents the bottom of the Geological Model as this unit is currently characterized as containing no recoverable brine.

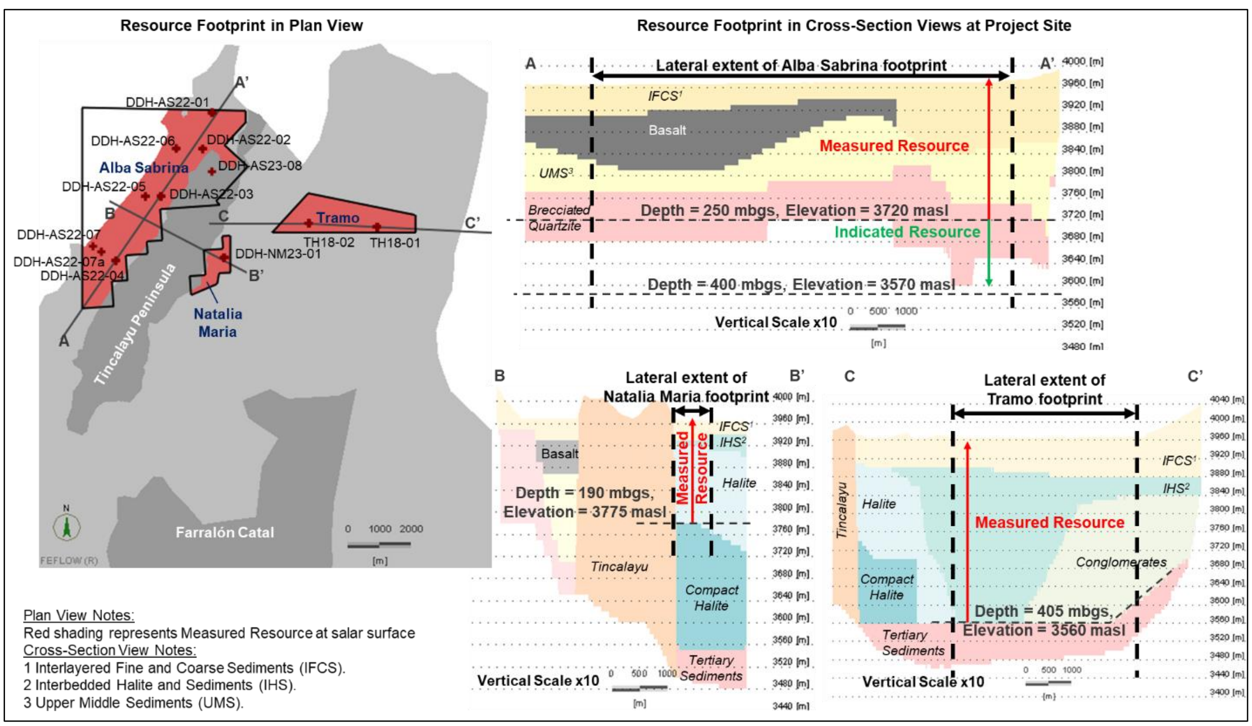
While the sampling results from other nearby projects have minimal quantitative effect on the Resource, they provide confidence of an extensive body of lithium-bearing brine in this area of the salar.

Table 14-3: Mineral Resource Zone Categorization for the HMN Project, Based on Borehole Spacing

		Resource Surface Area (km^2)	Measured	Indicated
Houston et al. (2011) Borehole Density (km^2/BH)			6.25	25
Depth			**Surface – 250 mbgs**	**250 mbgs – bottom of modelled basin**
Alba Sabrina	Borehole Density (km^2/BH)	10.64	2.67	10.64
Depth			**Surface – 190 mbgs**	
Natalia Maria	Borehole Density (km^2/BH)	0.95	0.95	
Depth			**Surface – 405 mbgs**	
Tramo	Borehole Density (km^2/BH)	3.83	1.92	

Source: GWI (2023)

Figure 14-7: Plan and Cross-Section Views of Resource Classification Zones at the HMN Project Properties



Source: GWI (2023)

14.7 Brine Characterization within the Resource Model

14.7.1 Sample Data

Lithium brine samples used to characterize brine grades within the Resource Model include:

- Quantitative data from Alba Sabrina, Natalia Maria, and Tramo:
  - Depth-discrete samples collected at DDHs, with packer assembly; and
  - Samples collected from the observation well installed on Tincalayu (DDH-AS23-08).
- Qualitative off-site data from:
  - Sal de Vida (Montgomery and GAI, 2012) project areas situated east of Natalia Maria and south of Tramo.

Sample data are summarized in Table 14-4, and locations are shown on Figure 14-8. For property data, concentrations are plotted in profile for Alba Sabrina on Figure 14-9, and for Natalia Maria and Tramo on Figure 14-10. At Alba Sabrina, packer sample HMN-135 was excluded from the characterization (Section 10.5; annotated on Figure 14-9). Off-site data from the adjacent Sal de Vida sites (Montgomery and GAI, 2012) were incorporated in the dataset to characterize the area peripheral to the Project properties (Figure 14-8). These off-site data were used for broad interpolation of brine chemistry. They were located at distance from the Project properties, and their quantitative sample values had minimal effect on the chemistry field interpolated for the properties.

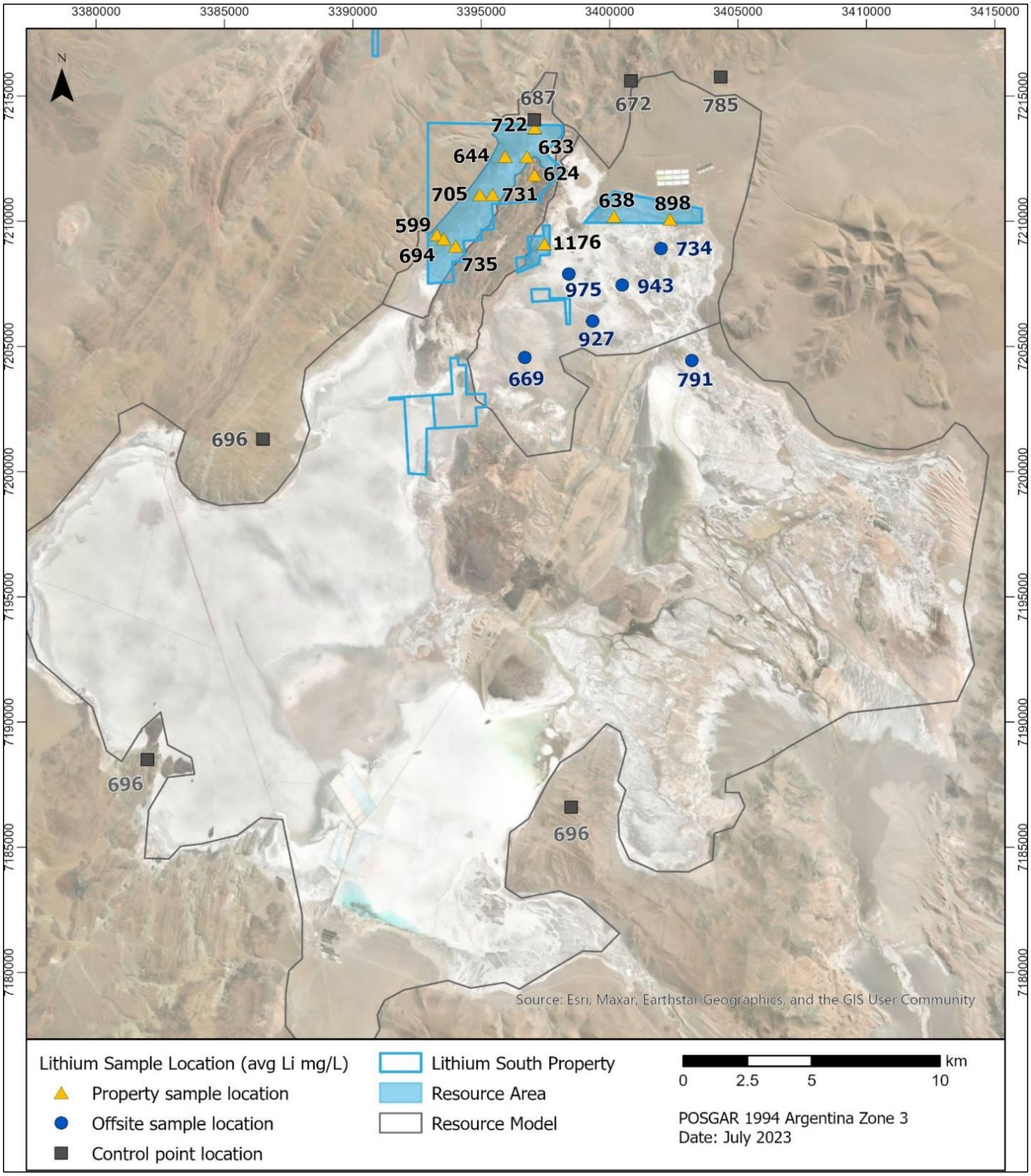
Table 14-4: Lithium Grade Sample Data

Project Property	Locations	Sample Statistics				
		Count	Typical and Average Packer Interval Length (m)[1]	Concentration (mg/L)[2]		
				Min	Average	Max
Alba Sabrina	8	42 [3]	1 (3.3)	434	699	792
Natalia Maria	1	9	1 (1.0)	1071	1176	1246
Tramo	2	35	1 (1.2)	507	839	962
Sal de Vida [4]	6	117	Not available	208	873	1601

Notes:
1. Average packer length shown in parentheses.
2. Concentrations rounded to the nearest whole number.
3. Excludes sample HMN-135 at location DDH-AS22-03.
4. Off-site locations and sample elevation mid-points from Sal de Vida (Montgomery and GAI, 2012), shown in *italicized* font.

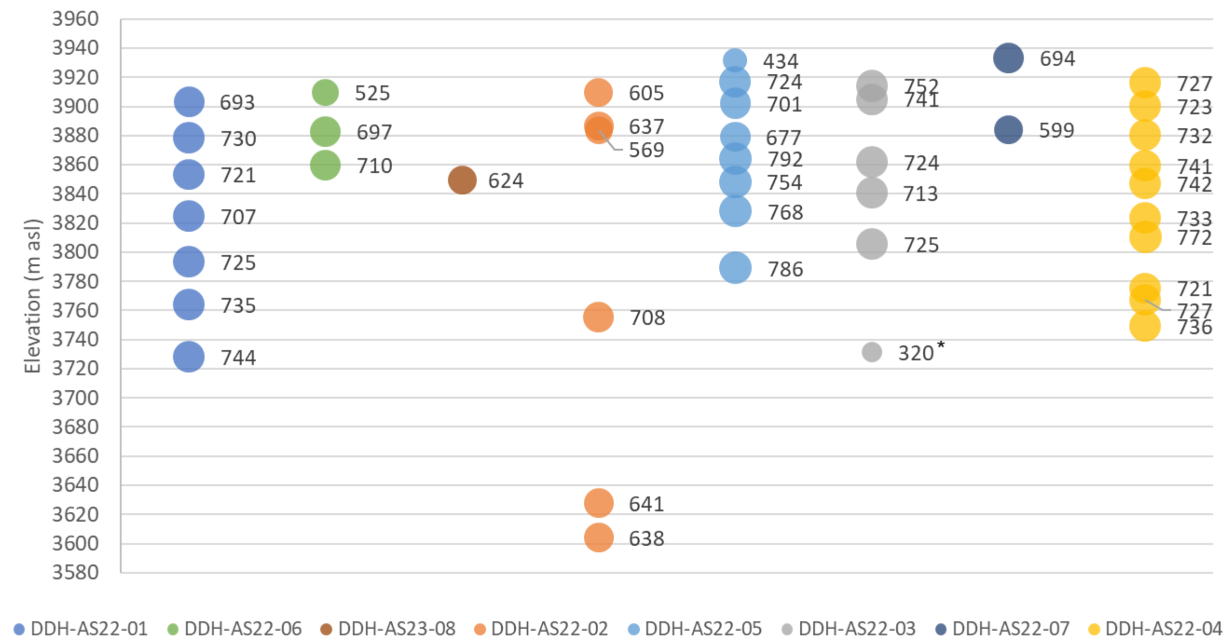
Source: GWI (2023)

Figure 14-8: Plan View Map of Sample Locations Used to Characterize the Brine Grades within the Resource Model



Source: GWI (2023)

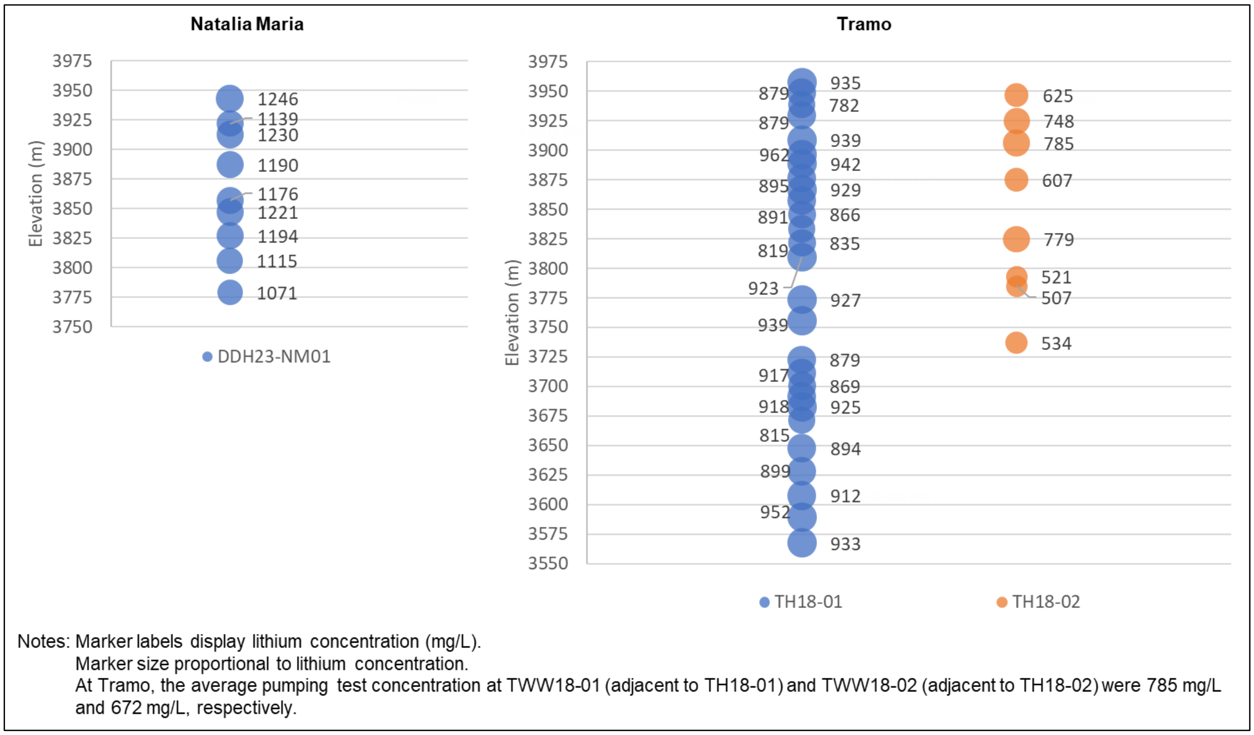
Figure 14-9: Lithium Sample Data from the Alba Sabrina Property, Plotted in Profile



Notes: Locations are ordered from northeast (left; DDH-AS22-01) to southwest (right ; DDH-AS22-04).
Marker labels display lithium concentration (mg/L).
Marker size proportional to lithium concentration.
Locations DDH-AS22-07 shows samples at DDH-AS22-07 and DDH-AS22-07a.
*Lithium concentration for sample HMN-135 at location DDH-AS22-03 had a suspiciously low value (potentially due to long packer interval of 40 m) that was inconsistent with neighboring (lateral and vertical) samples; this sample was excluded from the dataset but shown for completeness.

Source: GWI (2023)

Figure 14-10: Lithium Sample Data from the Natalia Maria and Tramo Properties Plotted in Profile



Source: GWI (2023)

Variogram analysis was performed to estimate the range of correlation lengths that were consistent with the sample data. The experimental variogram for lithium, shown on Figure 14-11, was calculated using:

- Assumption of stationarity for lithium samples (i.e., mean and variance of lithium concentrations do not vary over time);
- Omni-directional search direction; and
- 40 lag bins (lag bins of 10 to 50 were tested).

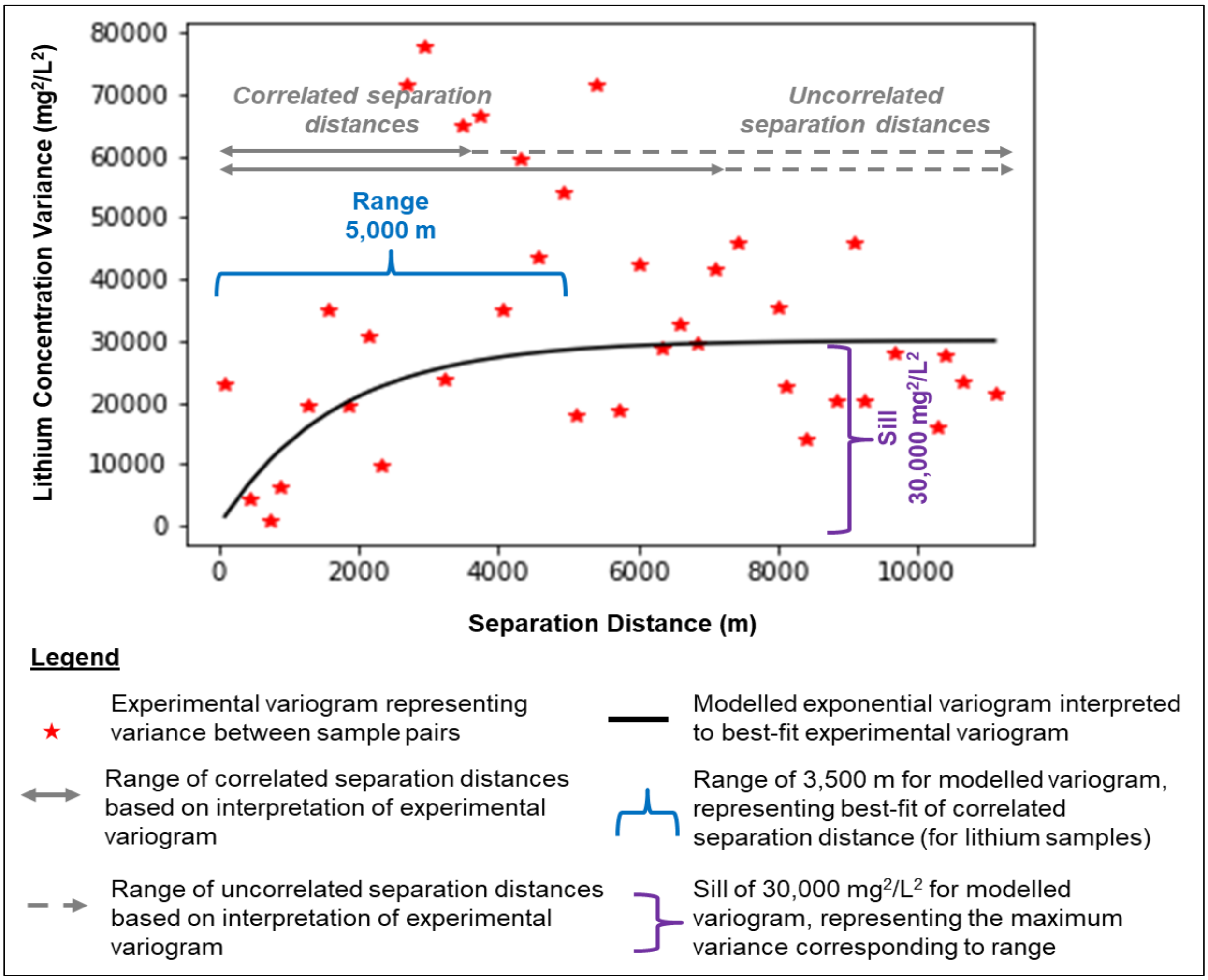
Modelled variograms considered:

- Spherical, Gaussian, and exponential model types;
- Correlations lengths (or ranges) between 3500 m and 7000 m; and
- Sill (or maximum modelled variance) between 20,000 mg^2/L^2 and 40,000 mg^2/L^2.

The modelled variogram that was interpreted to be the best fit to the experimental variogram applied an exponential model type, with a range (or correlation length) of 5000 m, and a variance 30,000 mg^2/L^2 (Figure 14-11). Modelled variograms for boron, calcium potassium, sodium, magnesium, and sulphate constituents have similar correlation lengths, and a range of 5000 m was considered suitable for all constituents.

It is noted that this correlation length (5000 m) was larger than the borehole spacing length (< 1 km to 3 km; Table 14-3) used to classify resource zones. In other words, the borehole spacing method was more conservative than the variogram correlation length, which was considered appropriate from a resource estimate quantification perspective.

Figure 14-11: Variogram for the Lithium Sample Data



Source: GWI (2023)

14.7.2 3D Interpolation of Grade Data

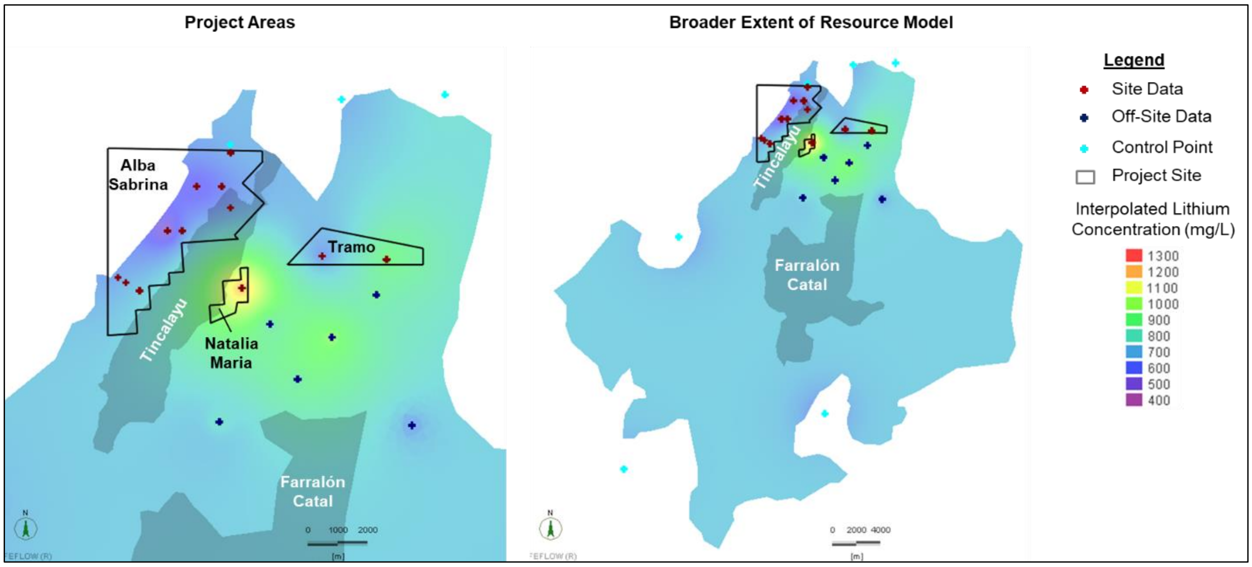
The 3D lithium distribution was interpolated to the Resource Model calculation points using the Ordinary Kriging method, together with the variogram shown on Figure 14-11. Data input into the interpolation consisted of lithium samples (Table 14-4) as well as control points (Figure 14-12).

Control points were judiciously applied to peripheral areas of the Alba Sabrina and Tramo Project properties (Figure 14-12) as follows:

- At Alba Sabrina:
  - Northeast of the site, control points were applied upgradient of site (i.e., brine flowing towards site). These control points were assigned a grade of 687 mg/L, based on the results of a sample collected by Dr. Mark King (QP) from a well at the Providencia Project during the HMN Project site visit in October 2023; and
  - South of site, control points were applied outside the margins of the Western Subbasin based on published production data from the Livent property (Integral, 2023). Control points were applied at three locations (Livent1, Livent2, Livent3) using the midpoint of vertical intervals (to a maximum depth of 200 mbgs) and corresponding average production concentrations (ranging from 414 mg/L to 786 mg/L; Integral, 2023).
- At Tramo:
  - Two control points were applied upgradient of site, Tramo 18-01 and Tramo 18-02, situated at the periphery of the alluvial fan that is north of the site, using coincident vertical sample intervals (depths) with TH18-01 and TH18-02, respectively; and
  - Control points Tramo 18-01 and Tramo 18-02 applied the average 72-hour pumping test concentrations for TWW18-01 (785 mg/L) and TWW18-02 (672 mg/L), respectively.

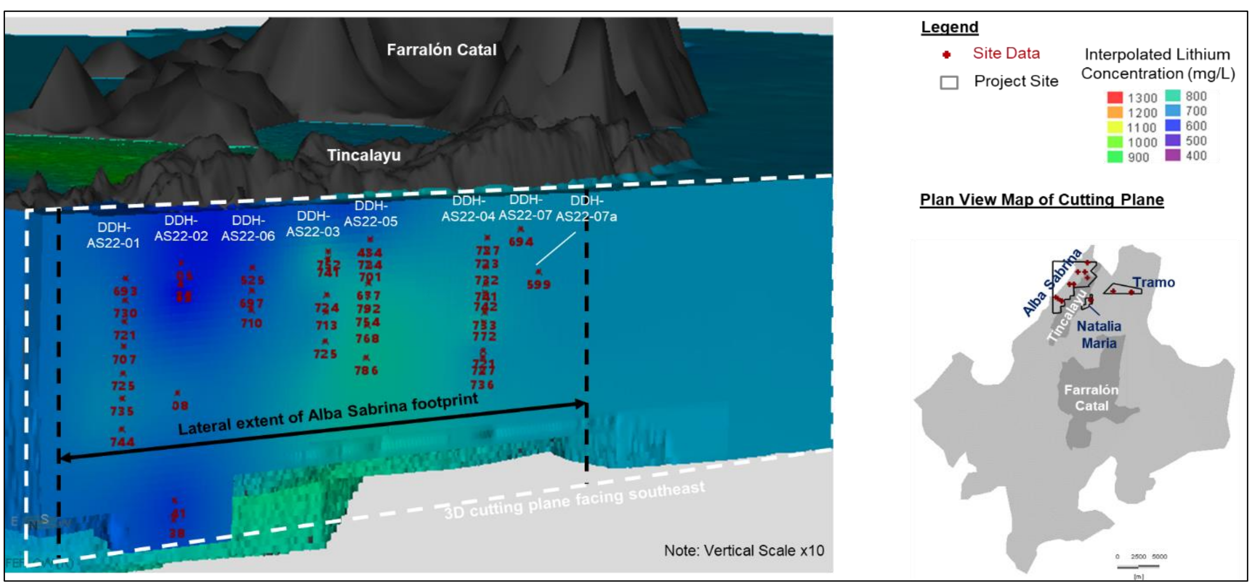
The 3D interpolated distribution of lithium concentrations is shown in plan view at the salar surface for the entire Resource Model domain on Figure 14-12, and is shown for Alba Sabrina, Natalia Maria, and Tramo Project sites using 3D cutting planes on Figure 14-13 through Figure 14-15, respectively.

Figure 14-12: Plan View Map of the Interpolated Lithium Concentrations at Salar Surface (approx. 3965 masl)



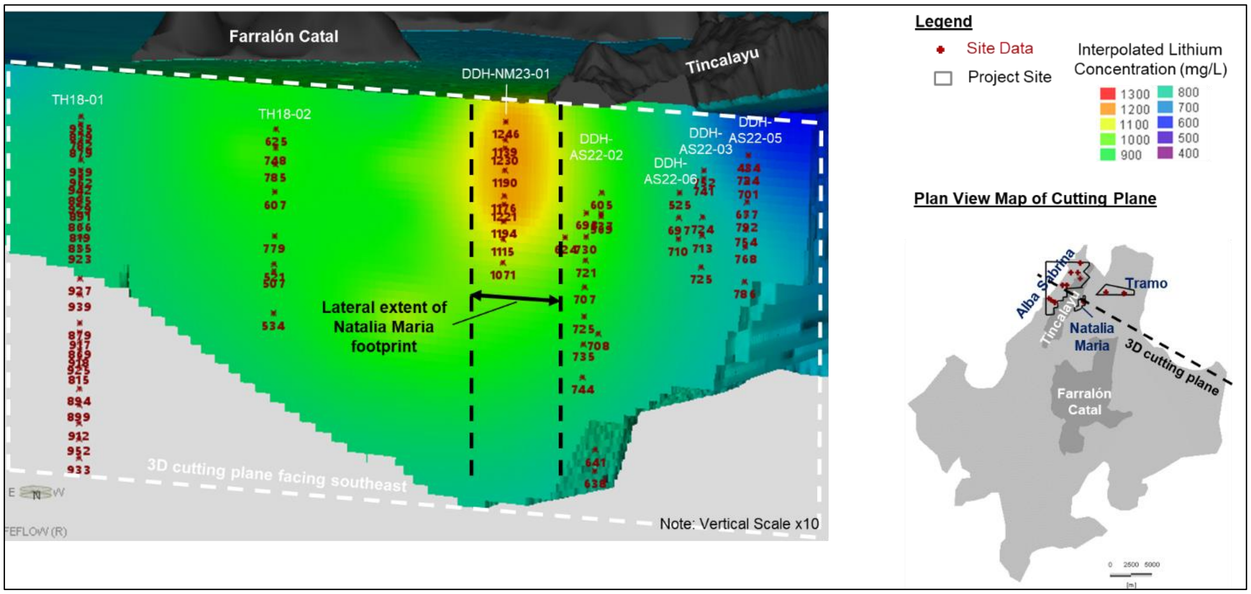
Source: GWI (2023)

Figure 14-13: Interpolated Lithium Concentrations at Alba Sabrina, along a 3D Cutting Plane



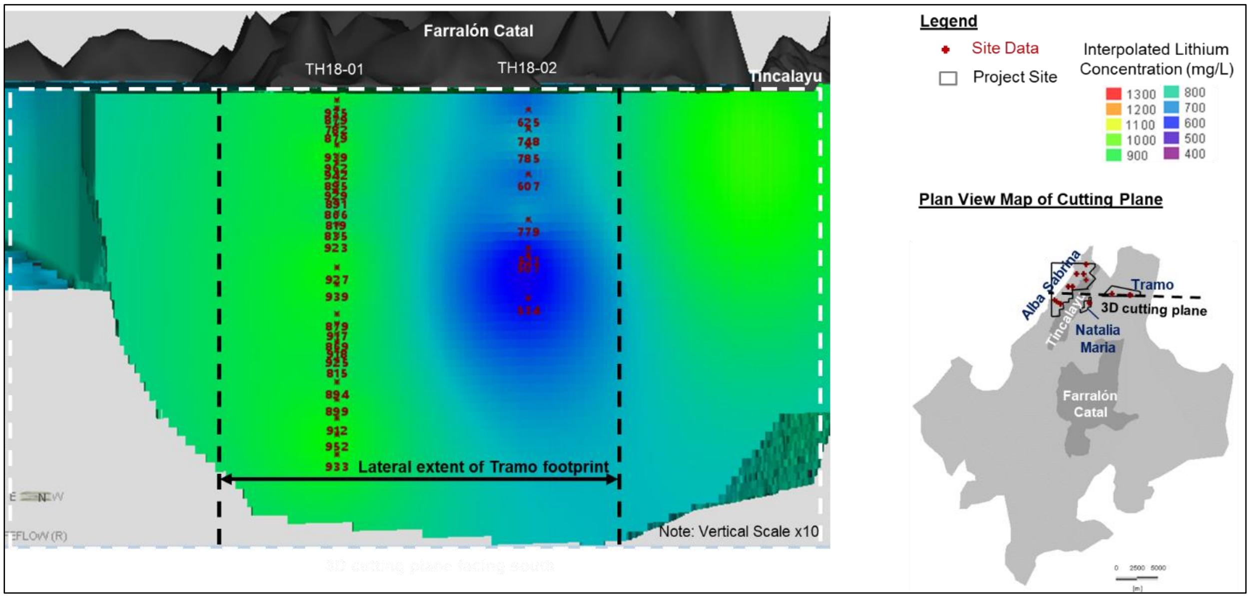
Source: GWI (2023)

Figure 14-14: Interpolated Lithium Concentrations at Natalia Maria, along a 3D Cutting Plane



Source: GWI (2023)

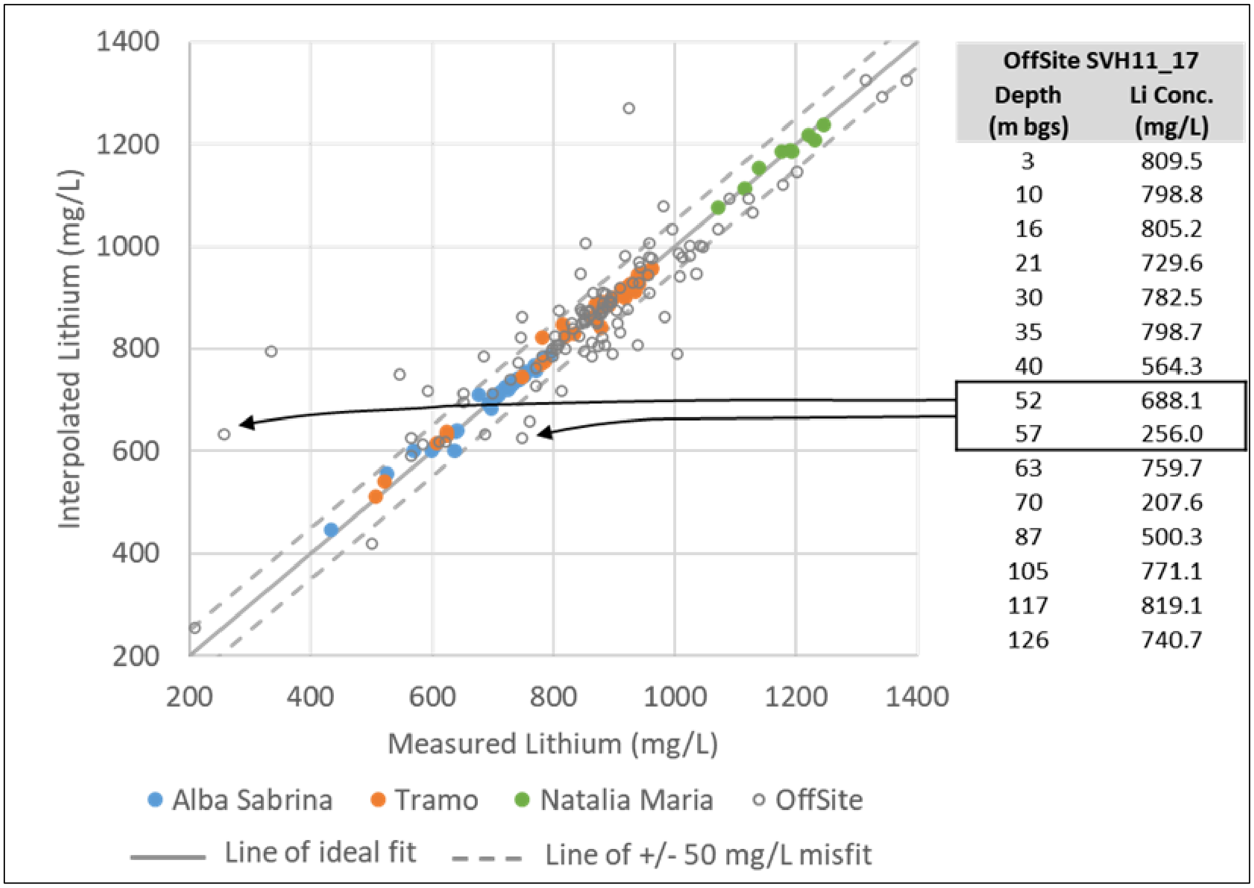
Figure 14-15: Interpolated Lithium Concentrations at Tramo, along a 3D Cutting Plane



Source: GWI (2023)

Measured and interpolated lithium concentrations were compared at each sample location. The plot shown on Figure 14-16 indicates the best fit was achieved at the Project sites and that there was greater variability for the off-site data (consistent with a higher Root Mean Squared error [RMS]). This was considered reasonable, as the focus of the Resource Model was to quantitatively estimate lithium resources at the Project sites. Boron, calcium, potassium, sodium, magnesium, and sulphate constituents had a similar degree of fit as lithium.

Figure 14-16: Fit Between Measured and 3D Interpolated Lithium Concentrations at Sample Locations



Source: GWI (2023)

14.8 Mineral Resource Estimate

The Lithium Resource Estimate was calculated using a grade cut-off of 500 mg/L lithium and is presented in Table 14-5. Overall, the total estimate of the lithium resources across all three Project sites was characterized as follows (Table 14-5):

- A total brine volume of 404,100 x 103 m^3 with an average concentration of 736 mg/L; and
- A total lithium and LCE mass of 297,400 tonnes and 1,583,200 tonnes, respectively.

The mass ratios of potassium, calcium, magnesium, and sulphate relative to the lithium resource were as follows (Table 14-5):

- Calcium to lithium ratio of 0.93;
- Potassium to lithium ratio of 9.79;
- Magnesium to lithium ratio of 3.27; and
- Sulphate to lithium ratio of 16.62;

The presentation of Mineral Resources in this Report conforms with NI 43-101 and CIM Standards. As defined under these standards, Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Further, all conceptual models (including the FEFLOW models used herein to estimate resources) have a degree of risk and uncertainty that should be considered when evaluating the Project. Additional associated risks for evaluating the transition from Resources to Reserves at this Project include:

- Potential for brine capture from adjacent project sites;
- Potential for brine losses to adjacent project sites; and
- Potential for dilution of brine by freshwater inputs along the lateral and upper boundaries of the salar during recovery pumping.

Dr. Mark King (QP) considers that these will be important criteria for any future production design.

Table 14-5: Summary of the Mineral Resource Estimate Relative to a Grade Cut-Off of 500 mg/L Lithium (Effective Date: September 5, 2023)

Parameter	Alba Sabrina			Natalia Maria	Tramo	All Sites
	Measured	Indicated	Total	Measured	Measured	Total
Brine Volume (x10³ m³) [1, 2]						
	217,900	31,700	249,600	12,900	141,600	404,100
Average Concentration (mg/L) [3]						
Lithium (Li)	696	712	698	1103	769	736
Boron (B)	474	479	475	490	377	441
Calcium (Ca)	536	593	543	538	944	684
Potassium (K)	7118	7226	7132	9991	7080	7205
Sodium (Na)	103,513	102,402	103,372	109,566	98,633	101,910
Magnesium (Mg)	2454	2534	2464	3030	2256	2409
Sulphate (SO_4)	13,507	13,755	13,538	12,868	9866	12,230
Tonnage [2]						
Lithium	151,700	22,600	174,200	14,200	108,900	297,400
Lithium Carbonate [4]	807,400	120,200	927,500	75,800	579,800	1,583,200
Boron	103,300	15,200	118,400	6300	53,400	178,200
Boric Acid [5]	590,600	86,800	677,400	36,200	305,500	1,019,100
Calcium	116,800	18,800	135,600	7000	133,700	276,200
Calcium Chloride [6]	323,400	52,000	375,400	19,300	370,200	764,800
Potassium	1,550,800	229,000	1,779,800	129,100	1,002,300	2,911,200
Potash [7]	2,740,200	404,600	3,144,800	228,100	1,771,100	5,144,000
Sodium	22,552,700	3,244,900	25,797,600	1,415,800	13,964,100	41,177,400
Sodium Chloride [8]	57,328,800	8,248,600	65,577,400	3,598,900	35,496,700	104,672,900
Magnesium	534,600	80,300	614,900	39,200	319,400	973,500
Sulphate	2,942,800	435,900	3,378,700	166,300	1,396,800	4,941,800
Tonnage Ratios						
Ca/Li	0.77	0.83	0.78	0.49	1.23	0.93
K/Li	10.22	10.14	10.21	9.06	9.20	9.79
Na/Li	148.69	143.75	148.05	99.36	128.20	138.45
Mg/Li	3.52	3.56	3.53	2.75	2.93	3.27
SO_4/Li	19.40	19.31	19.39	11.67	12.82	16.62
SO_4/Mg	5.50	5.43	5.49	4.24	4.37	5.08

Notes:
1. Grade cut-off of 500 mg/L lithium.
2. Quantities rounded to the nearest 100; product and sums may not be exact due to rounding.
3. Average concentration quantities rounded to the nearest whole number.
4. Lithium carbonate mass calculated as lithium mass multiplied by the equivalency factor (5.323).

5. Boric acid mass calculated as boron mass multiplied by the equivalency factor (5.719).
6. Calcium chloride mass calculated as calcium mass multiplied by the equivalency factor (2.769).
7. Potash mass calculated as potassium mass multiplied by the equivalency factor (1.767).
8. Sodium chloride mass calculated as sodium mass multiplied by the equivalency factor (2.542).

Source: GWI (2023)

The Tramo property was the only HMN property for which a Resource was previously estimated. When comparing the current Tramo lithium Resource Estimate to the previous Estimate presented by Montgomery (2018), it is noted that the previous method involved a spreadsheet polygon approach while the current method is based on development of a 3D geological model, in preparation for future hydraulic (Reserves) modelling. It is also noted that no additional sampling or drilling was conducted at Tramo, and the same borehole and lithium sample data was used for both estimates. In comparing results from these two methods, it was determined that:

- The total brine volume was consistent to within <0.1%, previously 141,800 x103 m^3 (Montgomery, 2018) and herein 141,600 x103 m^3 (Table 14-5);
- The average lithium concentration increased by approximately 2%, previously 756 mg/L (Montgomery, 2018) and herein 769 mg/L (Table 14-5). The 2% increase was attributed to the 3D interpolation of lithium concentrations (compared to previous volumes or zones of piece-wise constancy); and
- The mass for lithium and LCE increased by approximately 1.5%, previously 107,300 tonnes for lithium (Montgomery, 2018) compared to 108,900 tonnes herein, and 571,000 tonnes for LCE (Montgomery, 2018) compared to 579,800 tonnes herein. This relatively minor increase is attributed to the incorporation of more detailed geology and brine models.

The consistency in quantitative outcomes (i.e., differences of 2% or less) provides confidence that the estimate herein is appropriate.

14.9 Potential Opportunities for Further Resource Expansion

Additional exploration zones with potential to further increase the Resource within the HMN Project properties include:

- Natalia Maria: Fractures and clastic interlayers observed in the CH unit, and within potential clastic infill material at depth below the CH unit have potential to contain recoverable brine. For the present Estimate, brine is assumed to be unrecoverable below the upper surface of the CH;
- Tramo: Salar infill materials below 400 mbgs may potentially contain recoverable brine; and
- Norma Edith and Viamonte have not yet been explored, and are not included in the current Resource Estimate.

Recommended work to evaluate resource potential in these areas is presented in Section 26.

15 MINERAL RESERVE ESTIMATE

This section is not relevant to this report as reserves have not been declared for the property.

16 MINING METHODS

16.1 Overview

This section summarizes the activities and facilities associated with collecting brine from the production well field and transferring it to the concentration ponds near the processing plant.

16.2 Target Wellhead Recovery Rate and Provisional Grade Forecast

Derivation of the initial total target recovery of brine from the production well field is based on information from the Processing QP, and is as follows:

- The target production rate from the process (i.e., product shipped from the Project) is 15,600 t/a LCE;
- Lithium recovery from the pumped brine is predicted to be 70.7%. This equates to losses of 29.3 %, between brine recovery from the well field and finished product from the Process. The primary lithium abstractions are predicted to be as follows:
  - Entrained within precipitated salts 14%
  - Waste solids at the Li_2CO_3 plant 6%
  - Leakage from ponds and piping 5%
  - Waste solids from the liming process 4%
- Consequently, the total target recovery of LCE at the wellhead is (15,600 t/a / 70.7%) = 22,065 t/a;
- Given the average lithium grade of the resource (736 mg/L) and the lithium to LCE conversion factor (5.323), an average pumping rate of 179 L/s is required initially, to meet the target annual production;
- Processing analysis indicates that pumping should increase to as much as 250 L/s in the summer, to account for higher rates of evaporation. Lower rates would be applied during winter;
- The target production period is 25 years, which indicates a target total wellhead recovery of 551,000 t LCE over this period; and
- The target total wellhead recovery of LCE equates to approximately 35% of the current LCE Resource.

The above derivation relates to initial pumping rates required, meet the LCE production target. Based on experience on other projects, the QP expects that grade may decrease by as much as 20% over the 25-year production period. Consequently, average pumping rates would need to increase to 223 L/s, over the production period, to maintain consistent LCE wellhead recovery and Project production. This expectation is applied on a provisional basis, and the QP recognizes that grade decline is ultimately site-specific.

A dynamic numerical model is under development for the site and will be calibrated with pumping tests that are planned for the next stage of exploration. The calibrated numerical model will be used to improve the prediction of produced brine grade decrease over the production period.

The QP considers that the required brine pumping rates are generally feasible for the Project. However, detailed pumping tests, followed by careful hydraulic characterization and numerical model calibration are required to design an effective well field, and to achieve the target rates. As mentioned, these exploration components are planned for the next stage of the Project.

16.2.1 Well Construction

Production wells with dedicated submersible pumps will be used to extract brine from the salar and transfer it to pre-concentration ponds located near the processing plant. The current estimate of production wells to be operated on the three active Project concessions is as follows:

- Tramo 4 production wells
- Natalia Maria 4 production wells
- Alba Sabrina 6 production wells

It is assumed that each well will have an operating life of approximately 10 years, at which time replacement would be required.

Two potential production wells (TWW18-01 and TWW18-02) have been installed on the Tramo concession. Specifications are shown in Table 16-1 and pictures of the wells and associated core holes are shown in Figure 16-1. It is expected that one or both of these existing wells will be used for production.

Table 16-1: Specifications of the Pumping Wells Installed on the Tramo Concession

Well ID	Depth (m)	Hole Diametre (mm)	GK Zone 3 m East	GK Zone 3 m North	Casing		Pumping Test
					254 mm PVC (m)	203 mm PVC (m)	
TWW18-01	401	432-356	3402347	7210098	0-144	144-398	Yes
TWW18-02	400	432-356	3400173	7210223	0-126	126-378	Yes

Source: GWI (2023)

Figure 16-1: Potential Production Wells, Pumping Wells TWW18-01 (left) and TWW18-02 (right), Installed on the Tramo Concessions

Source: GWI (2023)

Well construction specifications will be further evaluated through dynamic numerical modelling, including:

- Number of wells;
- Placement on each concession;
- Well depth;
- Screen placement within each well;
- Pump placement;
- Individualized pumping rates; and
- Expected drawdown.

These modelled features will also support estimation of mineral Reserves.

16.2.2 Well Access and Piping

Details and conceptual figures of the well access and piping are provided in Section 18.1. Access to the production wells will be via a road system. Wellfield piping will be installed along the roads to transfer pumped brine from each well to a transfer tank or pond, and then transfer the brine to concentration ponds (Section 18.2).

17 RECOVERY METHODS

17.1 General Overview

The brines from Salar de Hombre Muerte Norte are solutions nearly saturated in sodium chloride.

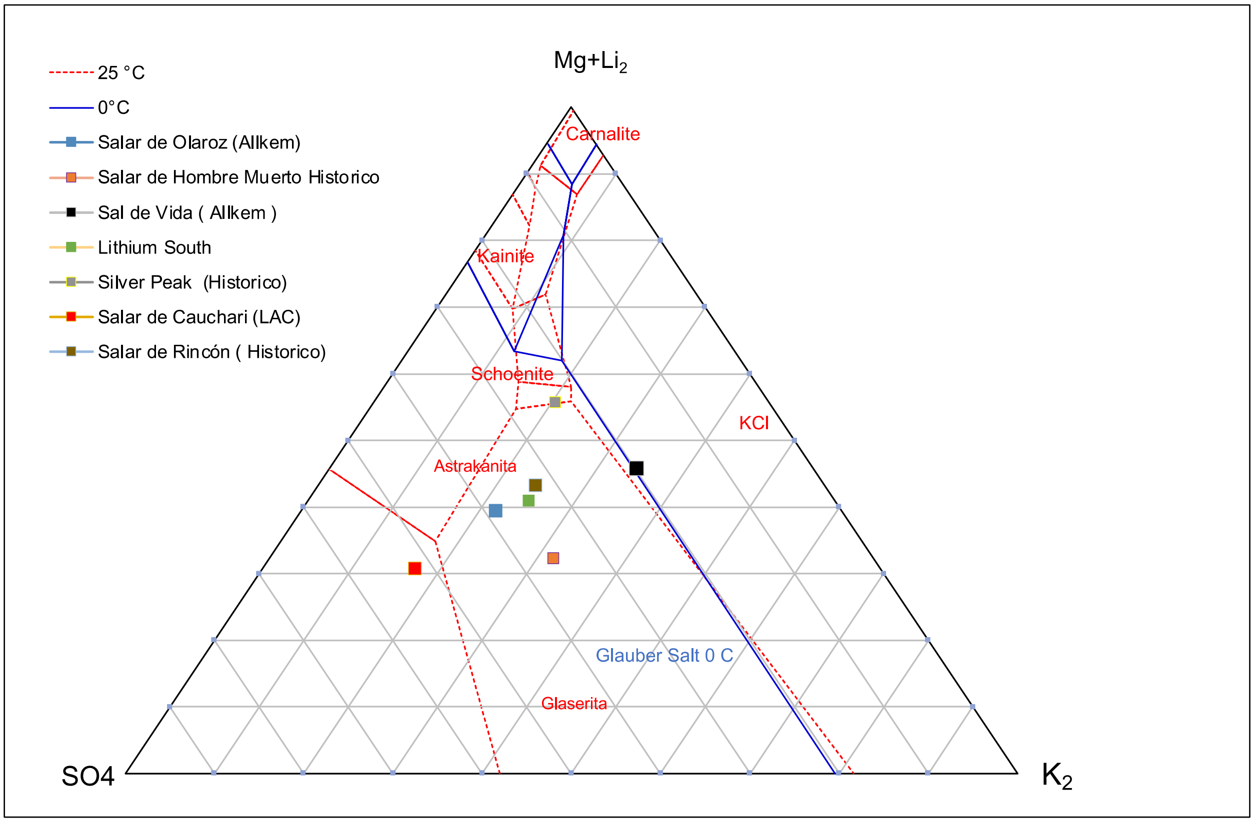
The brine chemistry is similar to other brines at Hombre Muerte as both coming from the same basin. The table below and in the Jänecke projection shows the brine composition for different salars including average composition for brines coming from Cauchari and Olaroz project. The variance on Mg/Li and Li/SO_4 ratios for both brines are low enough to state that the brine at Hombre Muerte could be processed using similar processing technology to that applied at the Olaroz production facility.

Table 17-1: Brine Composition of Similar Deposits

	Hombre Muerte Norte (Lithium South)	Sal de Vida (Allkem)	Salar de Hombre Muerto (Historic)	Salar de Olaroz (Allkem)	Silver Peak (Historic)	Salar de Cauchari (LAC)	Pastos Grandes (LAC)	Salar de Rincón (Historic)
Li	684	841	744	796	245	618	413	397
K	7204	9323	7,404	6,600	5,655	5,127	4,290	7,513
Mg	2409	2363	1,020	2,289	352	1,770	2,472	3,419
Ca	684	1108	636	416	213	401		494
SO_4	12230	6576	10,236	14,328	7,576	19,110	8,014	12,209
B	635	559	420	822	85	1,360		331
Mg/Li	3.5	2.8	1.4	2.9	1.4	2.9	6.0	8.6
SO_4/Li	17.9	7.8	13.8	18.0	30.9	30.9	19.4	30.7
K/Mg	3.0	3.9	7.3	2.9	16.1	2.9	1.7	2.2
SO_4/K	1.7	0.7	1.4	2.2	1.3	3.7	1.9	1.6
SO_4/Mg	5.1	2.8	10.0	6.3	21.5	10.8	3.2	3.6

Source: Ehren (2024)

Figure 17-1: Jänecke Projection for Similar Deposits



Source: Ehren (2024)

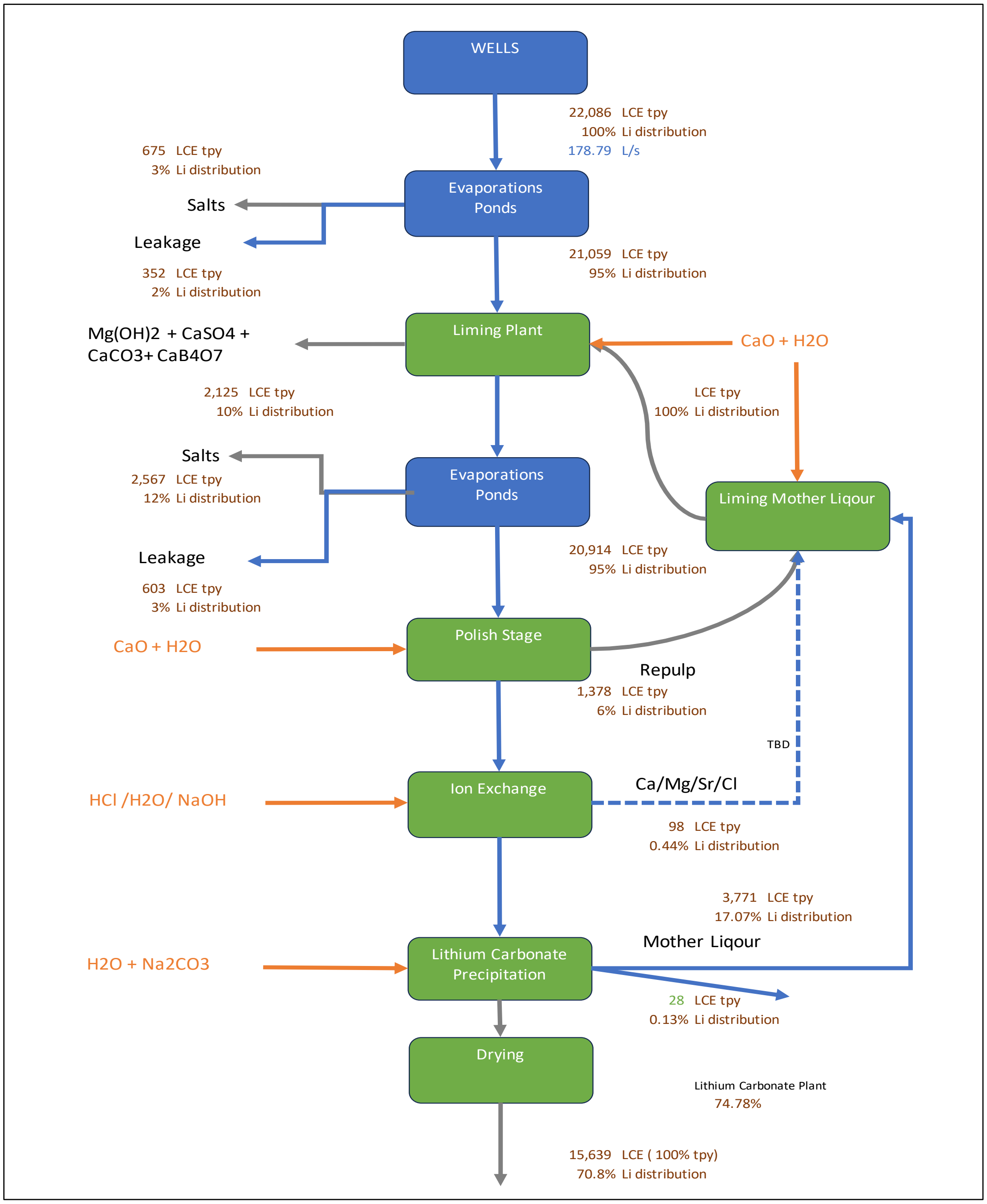
17.2 Process Description

The process eco-system covers the following units:

- Well field;
- Solar evaporation ponds;
- Liming plant;
- Lithium carbonate plant;
- Soda ash plant; and
- Utilities.

A general block diagram of the process is shown in the figure below.

Figure 17-2: General Block Diagram for the Process



Source: Ehren (2024)

17.3 Well Field and Evaporation Ponds

A first approach has been made for brine pumping from the different mining concession by Mark King et al. The results show that for a realistic scenario 253 l/s of brine can be pumped from the well field. For the process simulation the resource statement composition has been used, which only has slight difference with the realistic pumping scenario. The nominal extraction rate of the design is 176 l/s. In the summer peak extraction rates can be expected around 250 l/s. The peak extraction rates can be diminished by generating higher brine inventories in the pond during winter.

Table 17-2: Initial Well Brine Extraction Capacity

Property	Number of Wells	Flow per Well (l/s)	Total Flow (l/s)	Average Concentration (mg/l)	Availability (d/a)	Total Li Extracted (t/a)	Process Recovery (%)	Total Li_2C0_3 (t/a)	Initial Pumping (%)	Resource Statement (%)
Tramo	4	25	100	700	300	1,814	70	6,757	40	35
Alba Sabrina	6	22.5	135	680	300	2,379	70	8,861	53	62
Natalia Maria	4	4.5	18	1,100	300	513	70	1,911	7	3
Total	**14**		**253**					**17,529**		

Source: Ehren (2024)

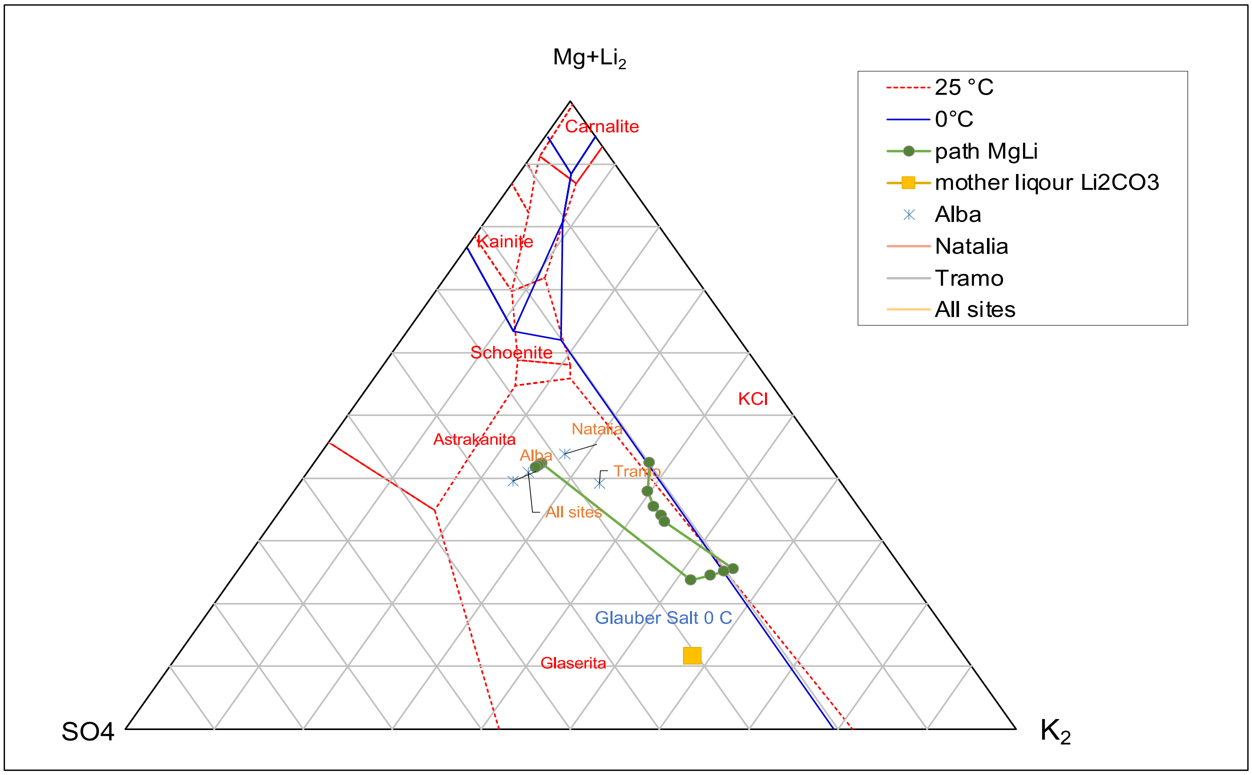
Figure 17-3 shows the evaporation path for the LiS brine in a Janecke diagram along with the expected behavior: it can be said that the precipitation is dependent on seasonal temperature and therefore there is Glauber salt ($Na_2S0_4.10H_2O$) precipitating with cold temperatures (winter season) and glaserite salts ($Na_2SO_4.3K_2SO_4$) precipitating along with gypsum salts during hot months (summer season). At about 0.3-0.4% of lithium, the brine will saturate in silvite (KCl). When the brine is cooked up to about 0.7% lithium, it is suitable for the lithium carbonate plant. For design purpose 0.75% is elected. Higher lithium concentration could result in the crystallization of lithium schoenite ($Li_2SO_4*K_2SO_4$), implying lithium losses in the ponds. This will depend on the sulphate concentrations. If sulphate concentrations are low, higher lithium concentration can be achieved without lithium losses.

The area required for the evaporation ponds is calculated based on the evaporation rate and rainfall impact defined for the site conditions. The solar evaporation ponds are designed with a large area and low depth absorbing solar energy, creating natural evaporation rate of the water contained in the brine. The brines are saturated in salts and during the process they concentrate crystalizing in the ponds. These salts are kept inside the pond until they reach a defined height, after which they are harvested and transported to specific stockpiles located outside of the ponds and inside the properties for the project.

The construction of the evaporation ponds will incorporate the topography survey of the area to minimize material handling. If needed, there will be a surplus area for construction purposes. Both the floor and dyke insides of the ponds are then covered with geomembranes, which is a plastic impermeable membrane, to avoid leakage of the brine from inside the ponds.

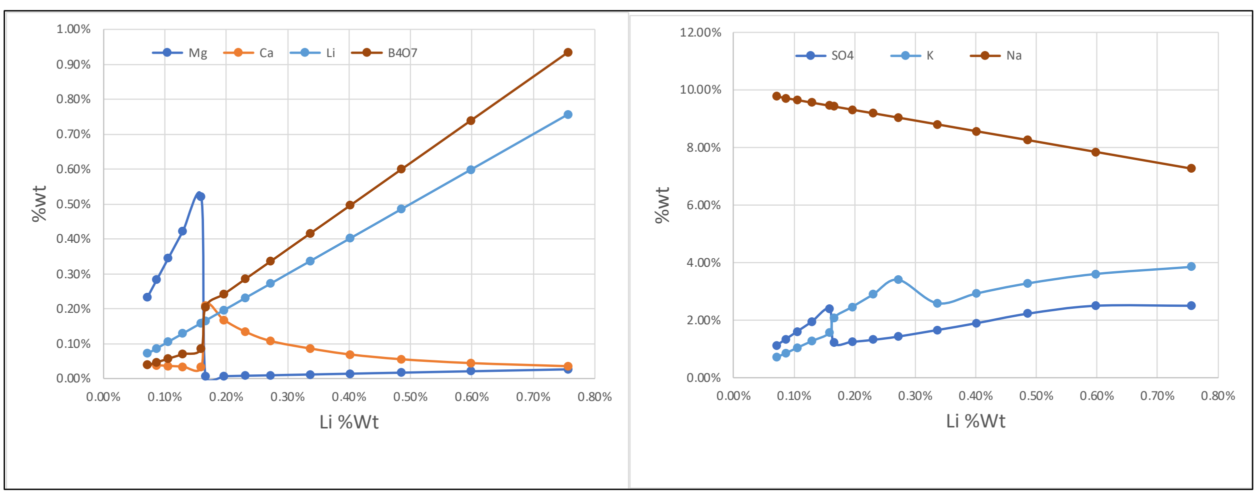
Once the ponds are filled with brine, the brine transfer between ponds will be executed with pumps, which will allow precise control of the flow between ponds.

Figure 17-3: Jänecke Projection for Evaporation Path



Source: Ehren (2024)

Figure 17-4: Simulation of the Main Ion Concentrations in The Ponds



Source: Ehren (2024)

The brine is pumped to the evaporation ponds, designed to crystallize mainly halite, some glauber salt, glaserite, silvite and borate salts.

17.4 Liming Plant

After an initial preconcentration till about 0.15 % lithium, lime is added to the brine, which removes a large part of magnesium (Mg) as magnesium hydroxide and the sulphate as gypsum, according to the reaction described in Section 13. About the indicated lithium concentration, reagents consumptions are lower and overall lithium recovery is higher.

In the liming plant the mother liquor of the lithium carbonate is treated with lime, so that the carbonate forms calcium carbonate solids and a solution with lithium hydroxide. The resulting sludge is added to the liming reactor of the brine. The mother liquor also heats up the water used for the slaker.

17.5 Lithium Carbonate Plant

The lithium carbonate plant is a chemical facility that receives the brine obtained from the evaporation ponds and, through a series of chemical processes, generates lithium carbonate technical grade in a solid form. All noxious impurities that are still left in the brine after the evaporation ponds are removed in the lithium carbonate plant, through specific stages described below.

The first stage of the lithium carbonate plant is the calcium and magnesium removal stage, where, through the addition of a solution of soda ash and slaked lime to the concentrated brine from the evaporation ponds in an agitated reactor, magnesium and calcium will precipitate as magnesium hydroxide ($Mg(OH)_2$) and calcium carbonate ($CaCO_3$). The solution is then filtered, and the magnesium and calcium free brine is pumped to the next stage, while the solids obtained from the filtering stage are re-pulped and sent directly to the liming reactor of the mother liquor for the recovery of entrainments that contain high lithium values. This benefit is not taken in count in the mass balance.

To avoid lithium carbonate co-precipitation, batch reactors are selected for this process step, so reagent addition are very well controlled and calcium carbonate and lithium hydroxide sludge seeds are present.

The lithium rich brine is fed to an ionic exchange stage to remove any remaining calcium, magnesium and di/tri valent metals left in the brine. The impurity free brine is then sent to special designed carbonation reactors/precipitators. To produce technical-grade lithium carbonate, a soda ash solution is added at high temperatures, leading to the precipitation of solid lithium carbonate. This solid is then subjected to a series of processes: it is filtered in a centrifuge, washed, repulped, centrifuged once more, and finally washed again.

The lithium carbonate is dried in an indirect dryer and packaged in maxi bags, to be finally transported to the final client.

17.6 Reagents for the Process

The main consumption of reagents in the process is shown in a table below.

Table 17-3: Reagents Required for the Process

	tonne/tonne LC
Lime	2.6
Soda Ash	2.45
Water	29.0

Source: Ehren (2024)

Additionally, it is expected that about 800 t of HCl (33%) is required for IX (ion exchange) and acid washing and about 800 t of NaOH (50%) is required for ion exchange. The streams from ion exchange are used for pond pump washing. The water required is about 14 l/s. The outcome of mass balance is a production of about 15,600 with a product quality above 99.2 %, this includes a 0.5% of LOI (water).

17.7 Preparation of Slaked Lime

The main reagent used in the process is lime, The lime is slaked with water. This process is executed in a liming plant, which is conventional applied equipment in the industry, and it will be installed near the evaporation ponds and lithium carbonate plant.

For the lithium carbonate plant, slaked lime from the liming plant is considered for the process. This hydrated lime will be received directly from the vendors and dissolved in agitated tanks to reach the required solution for the process.

17.8 Preparation of the Soda Ash Solution

The second main reagent used in the process is soda ash (Na_2CO_3), which is used both in the Ca/Mg removal stage and the carbonation stage. In this plant the soda ash is dissolved from a solid state to the solution required for the precipitation, which has a concentration of 27% w/w.

The process water, which is recycled from the initial centrifuge is used for the preparation of the soda ash solution. Both the process water and the solid soda ash are fed to a preparation tank in the soda ash plant, temperature is controlled for an efficient dilution. After a defined agitation time, the solution is filtered and pumped to a storage tank, from which it is fed to the process according to the defined consumption. The soda ash solution is filtered removing insoluble matter and guaranty product quality. The soda ash plant is located indoors and connected to the lithium carbonate plant. It has a stand-by heat exchanger to maintain temperature.

17.9 Water Purification

Although the lithium carbonate considers the re-utilization of water within the process in various stages, the injection of fresh water is necessary in some specific steps, including for the final product washing, among others. The fresh water for the process will come from a specific industrial water well and it will be treated in a water treatment plant to remove all impurities before being injected into the lithium carbonate plant. The water treatment plant will consider a reverse osmosis process.

17.10 Equipment Cleaning

Due to the brine characteristics, there is the generation of salt deposits and scaling inside the equipment of the lithium carbonate plant. These must be periodically cleaned using a diluted hydrochloric acid solution with a concentration of 5-10% with a periodicity defined by the operations area. The solution obtained after the equipment cleaning is sent directly to the ponds.

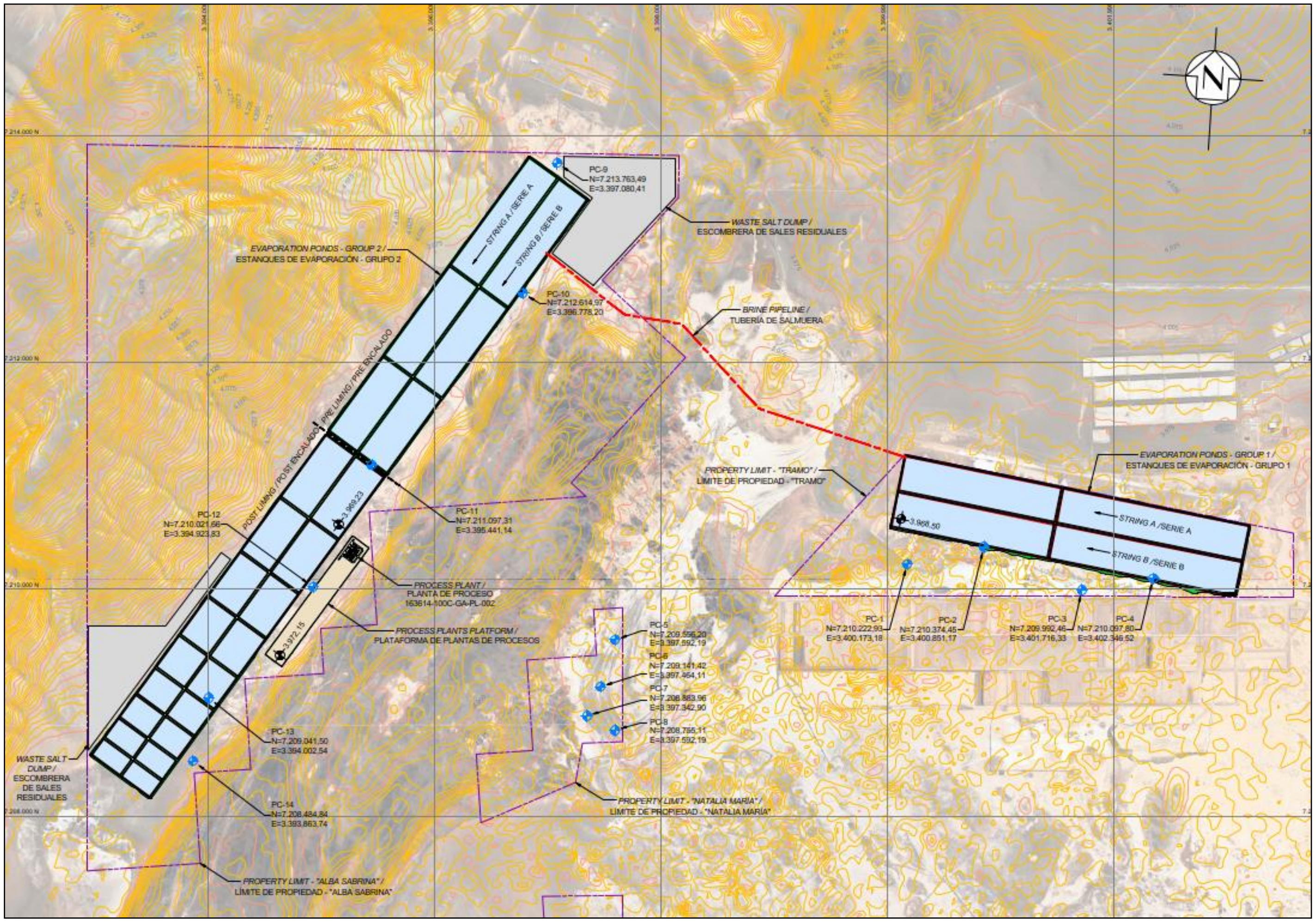
18 PROJECT INFRASTRUCTURE AND SERVICES

The project infrastructure consists of the following main components:

- Salar brine extraction wells;
- Concentration and evaporation ponds;
- Lithium carbonate process plant;
- Combined heat and power unit;
- Fresh and potable water supply;
- Mobile equipment; and
- Camp facility.

The general layout of the project is shown on Figure 18-1.

Figure 18-1: General Layout



Source: KPC (2024)

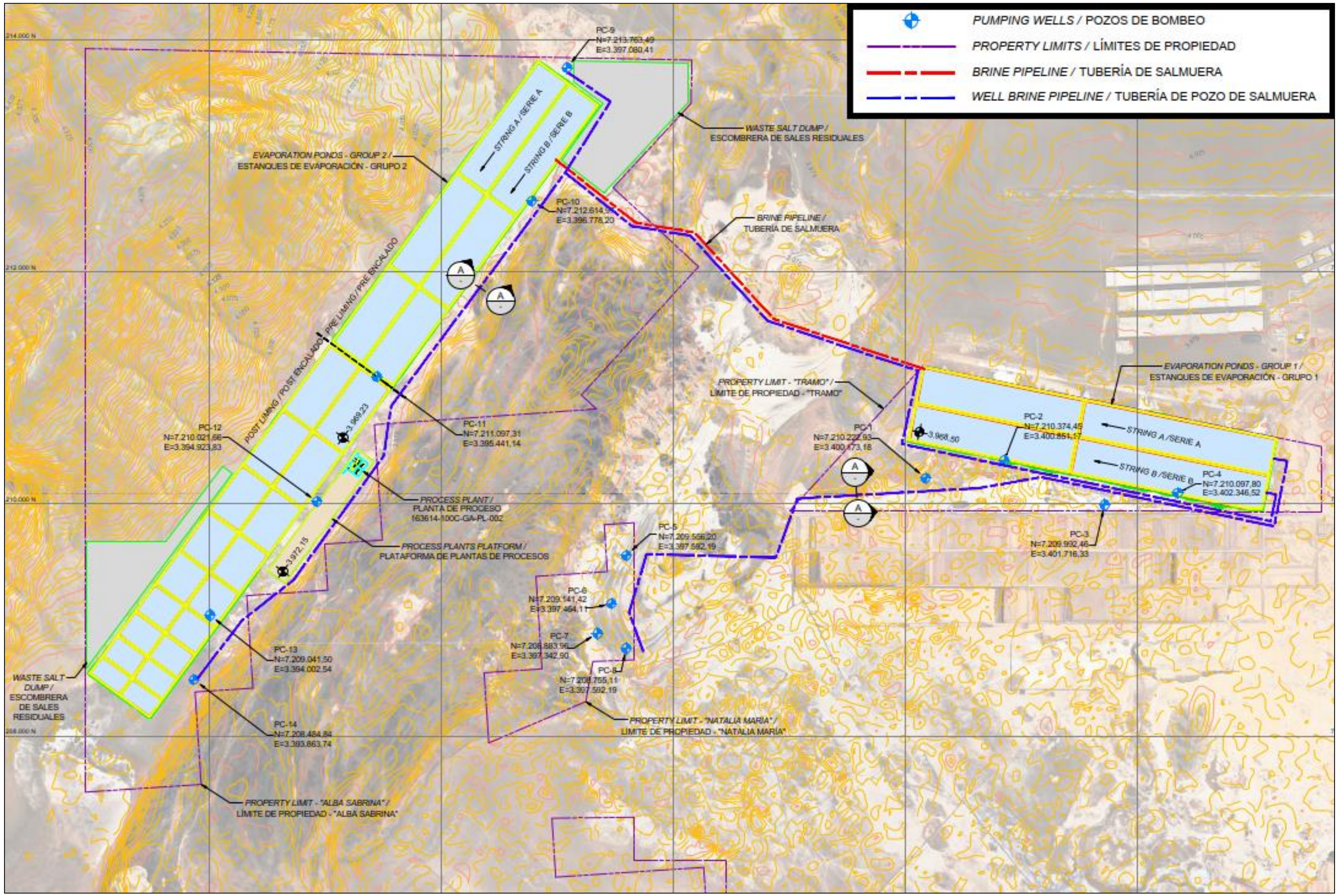
18.1 Salar Brine Extraction Wells

A total of 14 brine extraction wells will be installed, each equipped with 90 kW submersible pumps:

- Four (4) wells will be in the "Tramo" area;
- Four (4) wells will be in the "Natalia María" area; and
- Six (6) wells will be in the "Alba Sabrina" area.

Brine will be extracted from these wells and transported to the first series (Group 1) A and B ponds. Brine conduction pipes were designed to connect the wells with the evaporation ponds. The pipes will be made of PEX (cross-linked high-density polyethylene) of 110 mm diameter. A total of 110 km of piping is included. The locations of the wells, pipe roads, and ponds are shown on Figure 18-2.

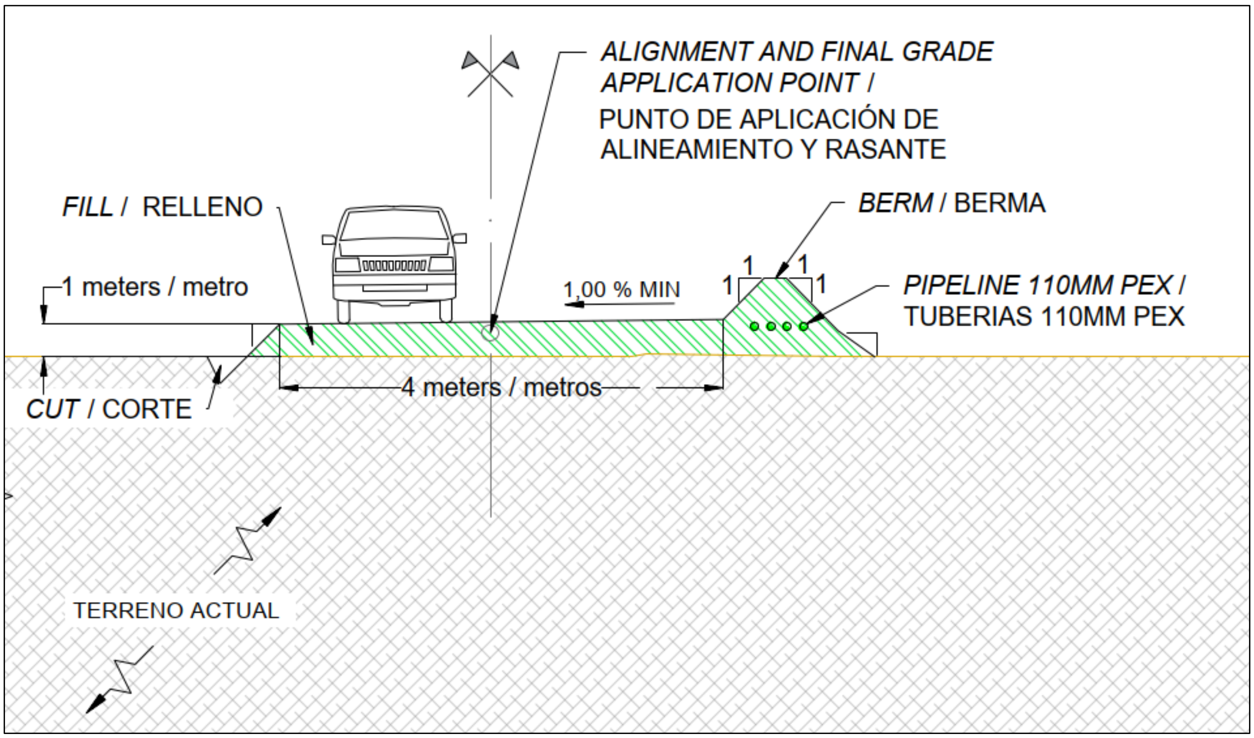
Figure 18-2: Wells, Pipe Roads and Ponds



Source: KPC (2024)

The pipelines will be installed on a total of 22 km of service roads in parallel to the pipeline route, allowing light vehicle access for inspection and maintenance of the pipelines and pumps. The pipes and roads are shown in cross-section on Figure 18-3.

Figure 18-3: Pipe Roads - Details



Source: KPC (2024)

18.2 Concentration and Evaporation Ponds

The project requires concentration and evaporation ponds, where the chemical processes related to lithium carbonate extraction will take place. In general, these ponds will be constructed by various earthworks, and lined with geotextile and LLDPE geomembrane. There are two groups of ponds (Group 1 and Group 2) and two strings within each group (String A and String B). The ponds in each string are interconnected by dual 110 mm diameter PEX (cross-linked high-density polyethylene) pipes, with redundancy for reliability.

The ponds have been sized based on the site's climate conditions. An approximate area of 2,100,000 m^2 is estimated for the evaporation ponds in Group 1 (located in the "Tramo" zone and including the “Natalia Maria” zone). An area of 4,350,000 m^2 is estimated for the evaporation ponds in Group 2 (located in the "Alba Sabrina" zone).

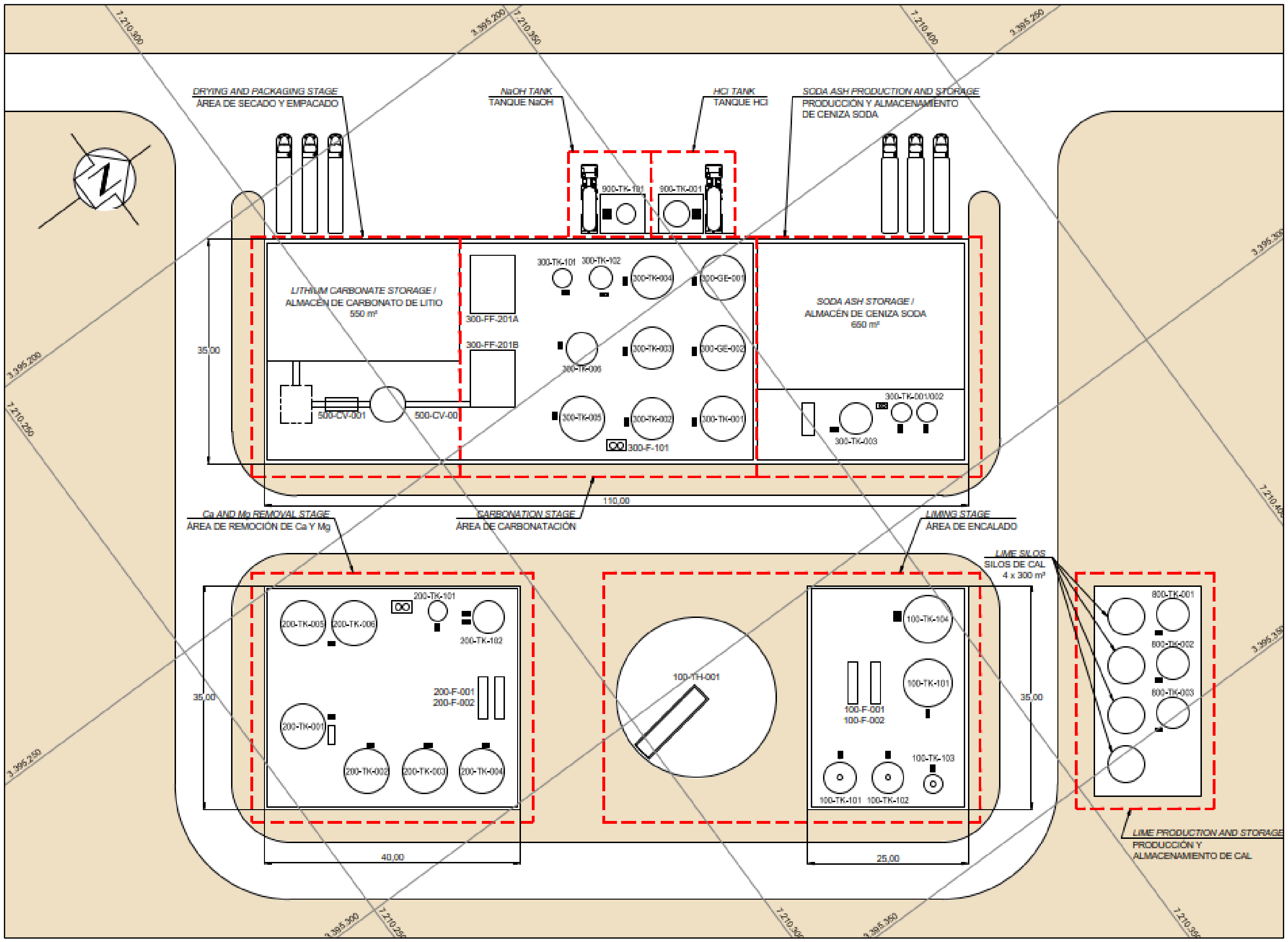
18.3 Lithium Carbonate Process Plant

The Lithium Carbonate (Li_2CO_3) process plant will be located adjacent to the Group 2 Concentration and Evaporation Ponds, on a leveled ground platform, and will include the following items:

- Production and storage of lime (silos);
- Liming area;
- Concentration tanks;
- Plate press filters;
- Hydrochloric acid tank;
- Sodium hydroxide tank;
- Ca and Mg removal sector;
- Carbonation sector;
- Production and storage area for soda ash; and
- Drying and packaging sector (including the lithium carbonate warehouse).

These items will be housed within an industrial building to provide protection of equipment and personnel from the weather. The industrial building will be constructed with concrete foundations, reinforced concrete floors, metal structure with straps, belts, and sheet metal enclosures with insulation. The dimensions of the process plant building ensure sufficient space for reagent storage, mobile equipment, and the aforementioned process components. The process plant layout is shown on Figure 18-4.

Figure 18-4: Process Plant Layout



Source: KPC (2024)

18.4 Combined Heat and Power Unit

The equipment for combined heat and power (CHP) production will operate with diesel based stand-alone electric generators. A maximum of 5 MW is required for the following installations:

- Brine extraction well pumps;
- Transfer pumps – concentration and evaporation ponds;
- Lithium carbonate process plant; and
- Camp and auxiliary services.

18.5 Fresh and Potable Water Supply

Fresh water to supply the process plant and camp will be drawn from a well located approximately 12 km from the site. The water well system includes piping, fittings, a submersible pump, and a parallel service road. Additionally, there will be a reverse osmosis plant included in the auxiliary facilities of the process plant.

Regarding potable water, bottles will be provided for consumption at the camp.

18.6 Mobile Equipment

A minimum fleet of mobile equipment is necessary for the maintenance and normal operation of the mine. The mobile equipment fleet includes:

- Motor graders;
- Front-end loader;
- Dump trucks;
- Bulldozer;
- Wheel loader; and
- Soil compactor.

18.7 Camp Facility

A camp for approximately 210 people will be built in the proximity of the process plant. The camp will include the following items:

- Medical clinic and first aid;
- Recreation room;
- Bathrooms;
- Changing rooms;
- Double bedrooms;
- Single bedrooms;
- Offices;
- Laundry room; and
- Kitchen.

19 MARKET STUDIES AND CONTRACTS

19.1 Pricing

The world lithium price has been extremely volatile over the past year, with a downward market trend since November 2023, when it reached its peak of $597,500 Chinese Yuan (CNY) per tonne (approximately US$85,000/t). For the balance of 2024, prices have stabilized at approximately US$13,000/t, as shown on Figure 19-1.

Lithium is not an open market commodity trading on large exchanges such as gold or base metals but is instead a specialty metal that relies on a specific contract between producer and manufacturer for sales, and as such makes price projections difficult to ascertain.

Lithium is primarily used in the manufacturing of lithium-ion batteries, and in particular, those used in battery electric vehicles (BEVs) and plugin-in hybrid vehicles (PHEVs). Accordingly, the price of lithium is closely linked to the demand of electric vehicles, whose sales cooled in 2023 resulting in oversupply and price reductions.

This lithium price volatility significantly influences investment decisions in the mining and production sectors. During price growth periods, lithium mining investment typically increases as producers seek to capitalize on higher prices. Conversely, when prices experience corrections, investment in lithium production development tends to decrease, impacting new exploration and development initiatives and, to some extent, current production. For instance, Core Lithium, an Australian spodumene producer, recently suspended production at its Finniss Project due to "weak market conditions." Additionally, lithium miners and processors in Yichun, eastern Jiangxi Province, China, have halted production as lithium carbonate prices have fallen below the break-even point.

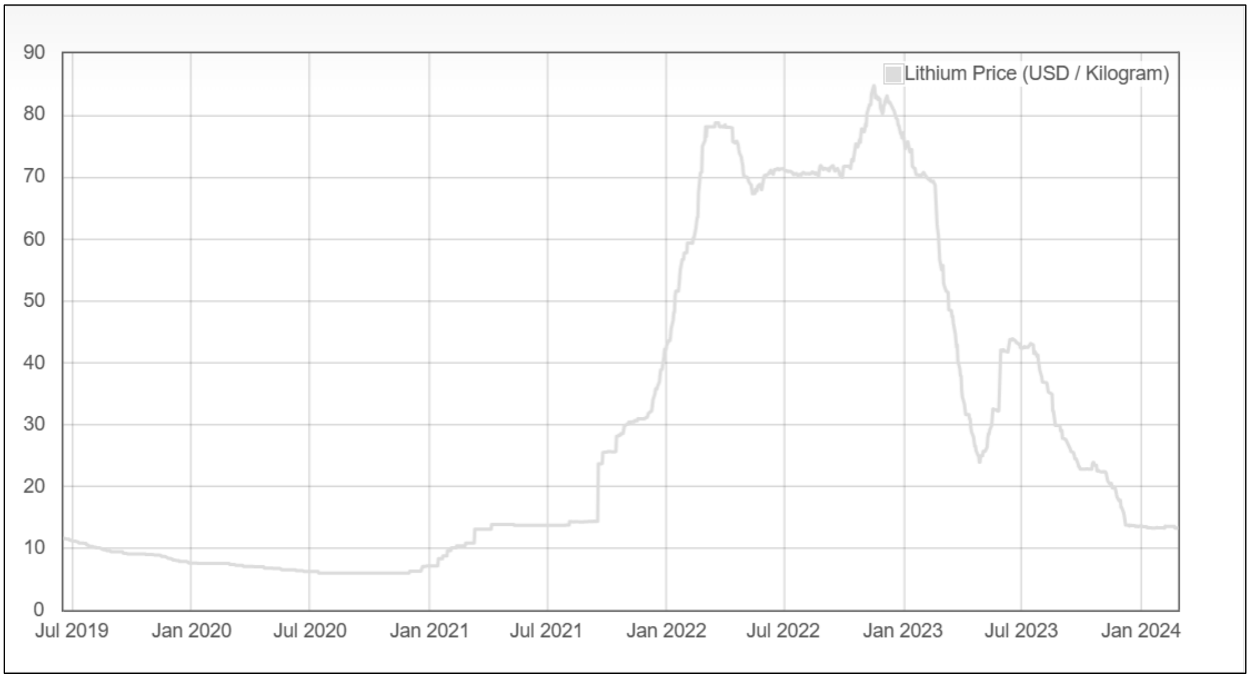
Lithium is produced from both brine and hard rock mining. Lithium carbonate currently sells at a slightly higher price than lithium hydroxide.

The predicted outlook for lithium pricing is varied:

- Fastmarkets and Benchmark both predict that the price of lithium will remain stable for 2024 at current levels (US$13,000/t);
- CRU Group anticipates a 2024 price of between US$10,000 and US$15,000/t for lithium carbonate;
- Morningstar is more optimistic, predicting a rise in prices through 2024 and an average price of $30,000 from 2024 to 2030; and
- Goldman Sachs predicts the following forward price projections:
  - 2024: US$12,847/t;
  - 2025: US$11,000/t;

- 2026: US$13,323/t; and
- 2027: US$15,646/t.

Figure 19-1: 5-Year Lithium Price Chart ($US/t)

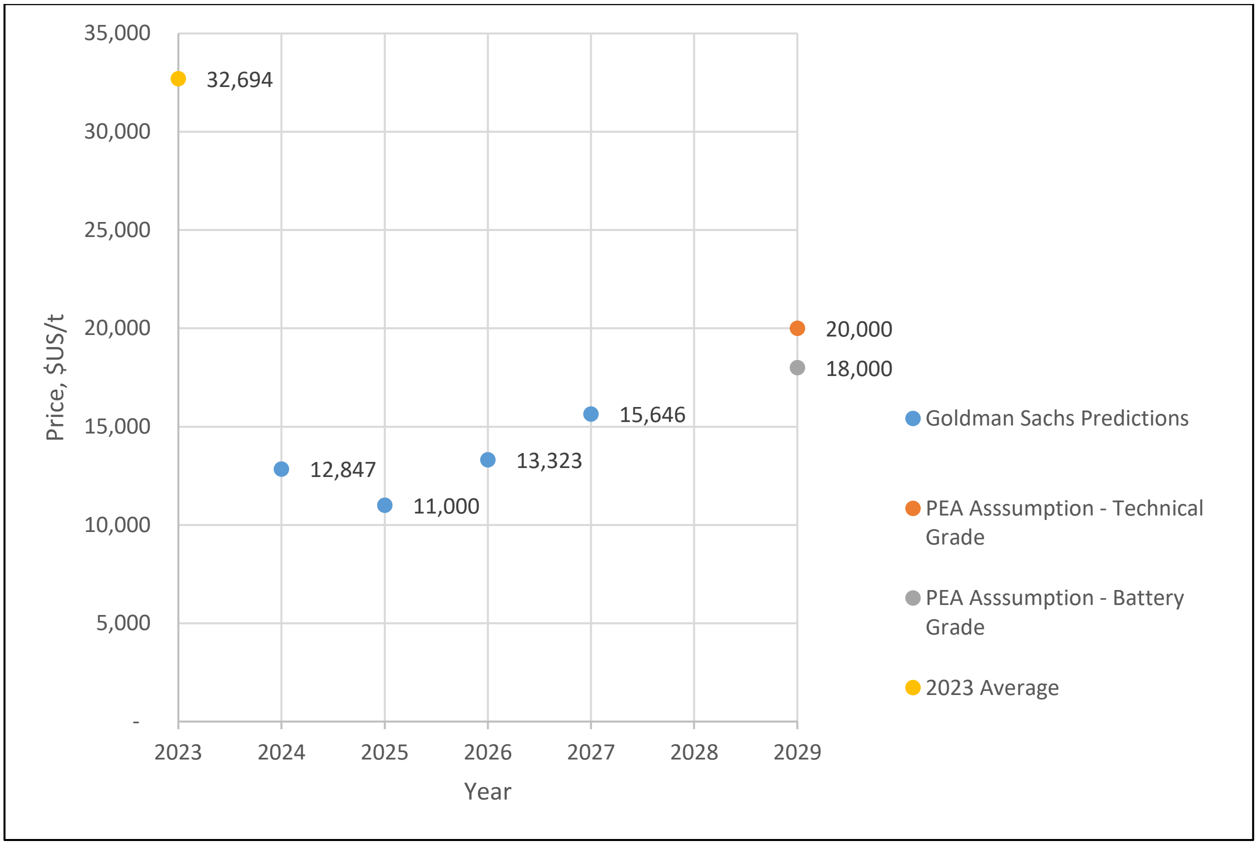


Source: DailyMetalPrice.com

Various reporting agencies can provide a forward look at lithium pricing and several large banks publish their own reports on the future of lithium production and pricing. For this Preliminary Economic Assessment (PEA), a price of US$20,000/t was assumed over the duration of the Project (25 years) for the production of technical grade lithium.

Revenue for the Project is anticipated to begin in 2029. Figure 19-2 shows the average price of lithium in 2023 with the Goldman Sachs predicted prices and the price assumed for this Study. As can be seen, a 2029 price of US$20,000/t is in line with the predicted pricing trend of Goldman Sachs.

Figure 19-2: Goldman Sachs Predicted Lithium Price with PEA Assumption



The assumed lithium price of $US20,000/t is also comparable to the pricing assumptions of similar recent technical studies. Seven recent and similar brine projects were reviewed by the author, where assumed prices of between US$20,000 and US$25,000/t for battery grade lithium carbonate were used. The average price assumed by the seven projects was US$22,400/t.

The assumption of US$20,000/t is deemed to be reasonable by the author, particularly given the higher value technical grade product that is anticipated to be produced.

19.2 Contracts

LIS currently has an offtake agreement with Chemphys Chengdu (Chemphys), a lithium manufacturer based in Chengdu, China, for all production from the Project. The offtake is conditional and allows Chemphys to purchase all lithium products produced at a nominal discount to market.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACTS

20.1 Environmental Baseline Study

20.1.1 Overview

The Environmental Baseline Study (EBS) for the HMN Project was completed by E&C Consultores (ECA) of Salta in March 2022 and filed with the Mining Authority in May 2022 (ECA, 2022). The study covers the Alba Sabrina, Natalia Maria, Tramo, Gaston Enrique, Norma Edith, and Viamonte properties and includes the documentation of flora, fauna, climate, air quality, hydrogeology, soils, a socio-demographic survey, and ecosystem characterization. A weather station was also established on site for environmental monitoring during the study period.

The results were prepared under the General Environmental Law of the Mining Code 24.585. The report provides an early indication of potential impacts associated with future development at the HMN Project, so that effective mitigation can be achieved through appropriate pro-active management techniques. Sections 20.1.2 through 20.1.4 summarize the flora, fauna, and archeological heritage findings presented in the EBS reports compiled by ECA (2022).

20.1.2 Flora

Two flora surveys were conducted, one in the dry season (August 2021) and in one the wet season (February 2022). Alba Sabrina, Natalia Maria, Tramo, and Viamonte were surveyed, while the other properties were excluded from the study because they are characterized by a salt crust devoid of vegetation. The purpose of the flora survey was to identify plant communities within the study area, and to characterize the conservation status of the species observed. The results of the surveys include the following:

- One plant species with a “least concern” conservation status was found in the study area, the copana cactus (Maihueniopsis glomerata);
- 28 grass and shrub species belonging to 12 families, including Ephedraceae, Asteracea, Cactaceae, Chenopodiaceae, Euphorbiaceae, Fabaceae, Frankeniaceae, Malvaceae, Poaceae, Solanaceae, and Verbenaceae were recorded;
- The wet season (February) exhibits higher species diversity and plant density in comparison to the dry season (August); and
- The highest diversity of species was observed on the alluvial fans and hillsides in Alba Sabrina, followed by certain areas within Natalia Maria, Tramo, and Viamonte.

20.1.3 Fauna

ECA (2022) also completed a faunal biodiversity survey during two field campaigns, in August 2021 and February 2022, on each of the HMN Project properties, the immediate surroundings in the northern part of the Hombre Muerto basin, and the Río de Los Patos delta. The objectives of the biodiversity survey were to create a baseline from which to compare future monitoring results, and to support the development of an effective environmental management plan.

The results of the two surveys are summarised in Table 20-1, and species observations include the following:

- 15 vertebrate species were recorded within the HMN Project properties during the August 2021 survey, and 23 during the February 2022 survey. In comparison, a total of 52 vertebrate species (five native mammals, four domestic mammals, 42 birds, and one reptile) were observed outside of the HMN Project properties, in the Río de los Patos delta and freshwater marshes in the northwestern basin during the February 2022 survey;

- The camelid vicuña (Vicugna vicugna) accounts for the highest species density of mammals observed within the HMN Project properties, followed by the semi-wild donkey (Equus asinus), the culpeo or Andean fox (Lycalopex culpaeus), as well as the tuco-tuco (Ctenomys opimus), and viscacha (Lagidium viscacia) from the rodent family;

- The 15 bird species recorded during the February 2022 survey include, in order of abundance, ash-breasted Sierra finch (Geospizopsis plebejus), bright-rumped yellow finch (Sicalis uropygialis), golden-spotted ground dove (Metriopeliaeep c), black-hooded Sierra finch (Phrygilus atriceps), puna miner (Geositta punensis), black siskin (Spinus atratus), plain-mantled tit-spinetail (Leptasthenura aegithaloides), straight-billed earthcreeper (Ochetorhynchus ruficaudus), Cordilleran canastero (Asthenes modesta), rufous-naped ground tyrant (Muscisaxicola rufivertex), common miner (Geositta cunicularia), cinereous harrier (Circus cinereus), mountain caracara (Phalcoboenus megalopterus), scale-throated earthcreeper (Upucerthia dumetaria), and cinereous ground tyrant (Muscisaxicola cinereus). None of the bird species recorded are considered vulnerable or threatened species;

- One species of herpetofauna (reptiles and amphibians), the lizard Liolaemus poecilochromus, was recorded in the northwestern part of the Alba Sabrina property during the February 2022 survey; and

- One individual butterfly (Papilionoidea) was observed in a small cave on the eastern slope of the Cordon del Gallego range in Alba Sabrina during the February 2022 survey.

Table 20-1: Number of species recorded during the faunal biodiversity surveys within the HMN Project Properties (ECA, 2022)

Property	August 2021				February 2022			
	Mammal	Bird	Herpetofauna	Butterfly	Mammal	Bird	Herpetofauna	Butterfly
Alba Sabrina	8	4	1	0	6	10	1	1
Natalia Maria	5	1	0	0	3	9	0	0
Tramo	4	2	0	0	3	1	0	0
Gaston Enrique	0	-	0	0	0	0	0	0
Norma Edith	0	0	0	0	0	0	0	0
Viamonte	1	-	0	0	2	2	0	0
Total Species [1]	9 [2]	5	1	0	6 [3]	15	1	1

Notes:
1. Total Species represents species count across all properties, not a sum of species recorded at each property.
2. Eight of which are native species, includes domestic animals.
3. Five of which are native species, includes domestic animals.

Source: GWI (2023)

According to ECA (2022), the results of the fauna survey indicate:

- Species richness and density are higher in the summer, due to increased availability of surface (fresh) water during the wetter summer months;
- The HMN Project properties do not constitute habitat areas with high biodiversity value in the context of the Hombre Muerto basin;
- The salar surface has virtually no habitual use by wildlife, and it is only used for transit by a few species;
- No threatened species were detected in any of the HMN Project areas; and
- Any future development of the HMN Project should protect freshwater sources within the area, and should include strategies to minimize interference with animals, such as vicuña, which transit the HMN Project properties.

20.1.4 Archaeology

An archaeological survey was conducted in October 2021 by Arqueo Ambiental Archaeological Consultants at the request of ECA. The resulting report is included in the EBS (ECA, 2022). The objectives of the study were to determine locations and characteristics of archaeological heritage sites in the area, and to build the foundations of a cordial relationship between the archaeological heritage and any future development of the HMN Project.

A total of 32 heritage sites, including isolated finds, assemblages of archaeological material (lithic flakes and tools), and single isolated structures, were identified during the field survey. One is located within the HMN Project properties at Alba Sabrina and 31 are located outside the properties. Based on these findings, two areas of Medium Sensitivity were identified outside of the current HMN Project Properties, on the southeastern and southwestern sides of Alba Sabrina.

The following measures were recommended, to minimize risk to the archeological heritage of the area:

- Information from the archaeological report in the EBS should be used to inform HMN Project development, to ensure that knowledge of archaeological sites and potential for chance discoveries are considered during planning and development;
- Collection and/or handling of archaeological material, which is considered one of the most severe impacts, should be prohibited in and around the HMN Project;
- Foot and vehicular traffic should be restricted around the heritage sites identified during the survey;
- Vehicular traffic should be restricted to authorized tracks and/or roads, avoiding non-approved, cross-country, or off-road roads;
- As a protective measure, a precautionary perimeter of not less than 50 m in diameter should be established around the findings, which may be modified at a later date, as determined by the relevant enforcement authority;
- A training course regarding archeological heritage protocol should be provided to staff, particularly those directly involved in field activities;
- Communication should be maintained with the archaeology team for consultation in the event of doubts and concerns that may arise during planning and development; and
- It is suggested to observe the provisions established in the National Law on Indigenous Affairs Nº 23.302 (Ley Nacional del Indígena, 1985).

An Archaeological Contingency Plan (ACP) is also recommended, to outline the appropriate actionable steps in the event a new archaeological site is discovered. The proposed ACP suggests that in the event of a discovery, all work in the area of discovery should stop, the discovery should be reported to the site archaeologist or appropriate provincial enforcement agency, the archaeological material should be safeguarded, a proposal should be written to recover all archaeological information related to area of discovery, and a report detailing the discovery and action plan should be submitted to the enforcement authority.

20.2 Permits and Authorities

The Argentina National Constitution of 1994 established the right of all inhabitants to enjoy a healthy, balanced environment, suitable for human development and for productive activities to meet present needs without compromising those of future generations.

The primary legal framework for mine development in Argentina consists of:

- National Law No. 24.585 on Mining Environmental Protection and its Regulations;
- Provincial Laws and Decrees designating the Application Authority and regulatory procedures; and
- Several national, provincial, and local Resolutions.

An approved Environmental Impact Report (EIR) is required to initiate construction and operations. This contains a description of the environment, description of the Project, analysis of the environmental impacts, environmental management plan, contingency planning, methodology used, and relevant standards consulted. Upon approval of the EIR, the Mining Authority issues an Environmental Impact Statement (EIS), which is the Project Authorization.

LIS, through its wholly owned Argentine subsidiary NRG Metals Argentina S.A., submitted an updated exploration EIR to the Mining Authority in February 2020. An addendum to the drilling program component of the exploration EIR was submitted in July 2021.

On March 25, 2022, LIS obtained the EIS through Resolution 054 issued by the Mining Authority. This EIS grants authorization for ongoing exploration activities within the HMN Project.

20.3 Mine Closure

A conceptual closure plan and cost was developed for the Project and presented by KPC (2019). There are no specific laws in Argentina that specify mine closure requirements, and there is no bonding requirement. The closure plan for the Project was developed in consideration of best industry practices. The closure plan was designed to accommodate the following objectives:

- Protection of the health and safety of the public;
- Protection of the environment;
- Assurance of physical and chemical stability of post-closure structures;
- Assurance of unrestricted and unimpacted natural surface water flow;
- Prevention of erosion of post-closure structures from wind or water; and
- Safe removal of impacted surface structures and buildings.

Buildings and surface structures will be cleaned of residual fuels, lubricants, reagents, and wastes prior to being deconstructed and dismantled. Recyclable wastes will be reused wherever possible. All structures will be removed to ground level, with concrete slabs or other inert foundations covered with native material. Salt residues will be placed and contoured on the salar.

Closure costs were estimated at $110.6M. These costs were apportioned as a remediation allowance of $4.3 M/a over the course of steady-state production with a final closure cost of $3 M in Year 26.

20.4 Social Development and Community Impact

20.4.1 Corporate Social Responsibility

LIS (NRG Metals Argentina S.A.) has developed a comprehensive Corporate Social Responsibility (CSR) policy. This policy articulates a set of action-oriented strategies aligned with international standards of best mining practices. These strategies are designed to ensure that the HMN Project generates positive and beneficial outcomes for the surrounding communities by supporting:

- Transparency in communication, empathy, integration, and respect for local culture and customs;
- Community participation in Project development, through support to local suppliers and training and hiring of local labour; and
- Development and management of sustainable community projects.

LIS has been actively engaged in outreach programs with the two neighbouring communities of Estación de Salar de Pocitos and Santa Rosa de los Pastos Grandes since the inception of exploration activities at the HMN Project. Both communities fall within the designated area of direct influence of the Project, as delineated in the exploration permit issued by the Salta province Secretary of Mining and Energy. Notably, both populations hold official recognition as Indigenous peoples of the local area. LIS is also committed to its role within the “Mesa Social”, a forum that comprises representatives from the community, mining companies operating in the region, and provincial government authorities.

In 2022, LIS commissioned the services of ECA to conduct an Environmental and Social Baseline Study to generate a comprehensive and accurate depiction of all aspects influencing the Project. The study encompassed an examination of:

- The physical environment (e.g., Section 20.1), and
- Socio-economic systems (e.g., Sections 20.1.4 and 20.4.2).

20.4.2 Socio-Economic Systems

LIS submitted the first Social Performance Report to the Mining Authority in February 2023. The Social Performance Report discloses all activities related to the local communities, for example:

- Communication with local communities about development of the HMN Project;
- Company participation in community events;

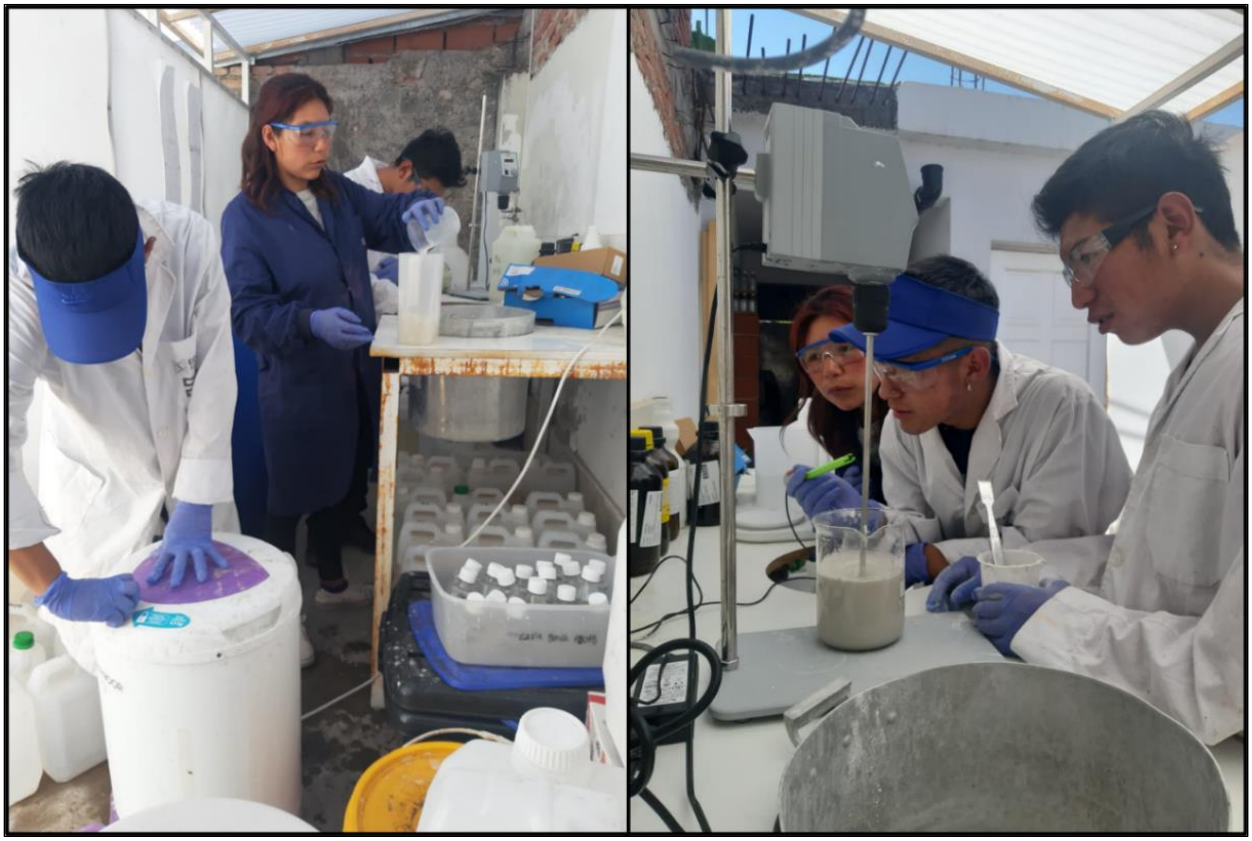
- Hiring of local services;
- Contributions made to the community (Figure 20-1);
- Training of community members (Figure 20-2); and
- The Mining Sial Roundtable (Section 20.4.3).

Figure 20-1: Example of Contributions Made by LIS to the Local Communities

Note:
Donation and blessing of the bell for the church of Santa Rosa de los Pastos Grandes.

Source: GWI (2023)

Figure 20-2: Training Community Members of Santa Rosa de Los Pastos Grandes as Lithium Processing Assistants



Source: GWI (2023)

LIS adheres to the general guidelines outlined in the Mining Promotion (Promoción Minera) Law 8164 and its associated Regulatory Decree 534 of 2020 of the province of Salta. This includes a strong emphasis on the preferential engagement of local services and labour. Notably, LIS prioritized hiring local labour for the initial exploration phase, achieving 94% of personnel from the province of Salta. Furthermore, the requisites for mining services and suppliers also indicate a clear predominance of local businesses in the year 2022, reaching approximately 52% (over 234 local suppliers used, out of 454 required), during the year.

LIS is also investing in the training and development of its workforce with a focus on the implementation of the Sustainable Development Goals (SDGs). The company is actively integrating target SDGs as the Project progresses. The approach used by LIS is rooted in the United Nations (UN) post-2015 sustainable development agenda (UN DESA, 2023), comprising 17 goals and 169 targets to be achieved by 2030. Within the context of the SDGs, the progressive incorporation is specifically geared towards the priority goals relevant to the mining sector, as endorsed by the Argentine Chamber of Mining Entrepreneurs (Cámara Argentina de Empresarios Mineros), including:

- SDGs applicable at Environmental Sustainability: SDGs 6, 15, 7, and 13;
- Applicable SDGs on Social Inclusion: SDGs 1, 5, 6, and 16; and
- Applicable SDGs in Economic Development: SDGs 8, 9, and 12.

20.4.3 Mining Social Roundtable

LIS participated in the Mining Social Roundtable held in Santa Rosa de los Pastos Grandes on March 14, 2023, along with government authorities and other mining companies. During this collaborative forum, LIS expressed its commitment to actively analyze, seek solutions, and contribute to addressing various concerns and challenges raised by the local community. Noteworthy among the proposed initiatives were:

- Implementation of programs for secondary school graduates;
- Construction of a fenced enclosure to establish a protected planting area;
- Installation of a community radio;
- Intensive use and commercialisation of vicuña wool;
- Construction of a sewage network and effluent treatment plant for Santa Rosa de los Pastos Grandes;
- Extension of the power grid to areas outside of Santa Rosa de los Pastos Grandes; and
- Repair broken drinking water distribution pipes within Santa Rosa de los Pastos Grandes.

21 CAPITAL AND OPERATING COSTS

21.1 Capital Cost Estimate (CAPEX)

The capital cost estimate for an annual production capacity of 15,600 t of technical grade lithium carbonate is based on data sourced from both an internal database and requested budgetary quotes. These estimates are presented in US dollars for consistency and clarity. Key points regarding the cost estimations include:

- Quotations in US dollars have been updated to reflect the most recent pricing; and
- Quotations in Argentine pesos were adjusted based on the latest inflation rates and converted to US dollars using the “Banco de la Nación Argentina (BNA)” exchange rate, with January 2024 as a baseline date (860 ARS/USD).

The proposal for staffing and the estimated time commitments required by personnel for constructing the facilities are based on recent local experience. Salaries for staff members were sourced in pesos and subsequently converted to US dollars in alignment with the project-standard exchange rate.

The capital cost includes direct and indirect costs for:

- Lithium carbonate plant;
- Salar brine extraction wells;
- Evaporation and concentration ponds;
- Roads and warehouses;
- Fresh water extraction wells;
- Supporting services such as air and water premises, power plant, maintenance shops and laboratory;
- Construction camp; and
- Mobile equipment.

The capital cost for the HMN Project, including equipment, materials, indirect costs, and contingency during the construction period is estimated to be US$366.1M.

Total capital expenditures are summarized in Table 21-1.

Table 21-1: Capital Cost Summary

Description	Total Cost $M
Lithium Carbonate Plant	127.4
Brine Production Wells	22.1
Evaporation and Concentration Ponds	101.0
Infrastructure	22.5
Mobile Equipment	4.9
Owners Cost	4.5
Subtotal	**282.4**
Contingency	83.7
Total CAPEX	**366.1**

Source: KPC (2024)

21.1.1 Lithium Carbonate Plant

The capital cost estimate for the lithium carbonate production facility is based on a projected annual production of 15,600 t of lithium carbonate. The cost estimate, detailed in Table 21-2, is based on recent experiences with similar facilities and specific quotes obtained for the principal plant equipment.

This estimate incorporates the selection of equipment outlined in the process flow diagram, with costs assessed according to mass flow rates and required residence times. Key financial considerations include:

- The procurement costs for the process plant equipment are quoted in US dollars;
- Labor costs, initially estimated in Argentine pesos, have been converted into US dollars. This conversion process adheres to the methodologies outlined previously; and
- The cost of the warehouse, provided in Argentine pesos, has been converted to US dollars.

The “mark-up factor” is a percentage applied to the direct labor costs of the project to cover indirect costs and generate profit, determining the final price. In this context, it affects only labor, as the inputs are provided by the Client.

Table 21-2: Lithium Carbonate Plant Capital Cost Estimate

Description	Supply $M	Labor $M	Total $M
Direct Costs			
Lithium Carbonate Plant	61.2	22.2	83.4
Spare Parts	4.9		4.9
Freight and Customs Expenses	8.8		8.8
Subtotal Costs			**97.1**
Indirect Costs			
Engineering and Services		2.6	2.6
LAC Cost		1.1	1.1
ITO Costs		1.5	1.5
Mobilization and Demobilization		4.4	4.4
Environmental Impact		0.1	0.1
Vendor Advisory		0.6	0.6
Commissioning		1.0	1.0
Subtotal Costs			**11.3**
Total Costs			
Total (D.C. + I.C.)	**74.9**	**33.5**	**108.4**
Total Price			
Final price without contingencies (Mark Up factor = 1.57 only over labor cost)		19.0	
Subtotal Price	**74.9**	**52.5**	**127.4**
Contingencies			
Contingencies (35%)	**26.2**	**18.4**	**44.6**
Total			**172.0**

Source: KPC (2024)

21.1.2 Brine Production Wells

According to the flow diagram and pumping tests, 14 brine extraction wells will be installed, with an average flow rate of 750 m^3/h (208 l/sec) total. These will pump the brine into the evaporation ponds.

The construction of the service roads and the piping installations are included in the estimate.

An average well depth of 280 m has been assumed for costing estimation.

Table 21-3 shows the breakdown of the CAPEX for the construction of the 14 brine extraction wells, including labor, materials, and indirect costs associated with administrative management and subcontracting.

Table 21-3: Brine Production Wells Capital Cost Estimate

Description	Total Cost $M
Direct Cost	
Drilling and Completion of Brine Production Wells (14 units)	9.2
Special Drilling Fluids and Replacement of Tools (10% Wells Value)	0.9
Construction - Service Roads	1.1
Piping (Pipes; Fittings)	2.9
Manpower	3.1
Subtotal Direct Cost	**17.2**
Indirect Cost	
Administrative management and subcontracting	4.9
Subtotal Indirect Cost	**4.9**
Total	**22.1**

Source: KPC (2024)

21.1.3 Evaporation and Concentration Ponds

The capital cost estimate for the evaporation ponds has been calculated based on a production rate of 15,600 t/a of lithium carbonate. This estimate accounts for the lithium recovery rate during the evaporation process and the operational efficiency of the processing plant, requiring a total pond surface area of 5,580,000 m^2. The costs include earthmoving activities, the supply and installation of geomembranes, and the construction of platforms for both the process plant and the storage of waste salt deposits.

Table 21-4 shows the total area of geomembrane needed for the construction of evaporation and concentration ponds for Groups 1 and 2. It is important to note that the calculated area exceeds the necessary evaporation area, that is due to the side slopes of these ponds that also require impermeabilization.

The price for the supply and installation of the geomembrane has been sourced in US dollars from contractors actively operating in Salta, Argentina.

Table 21-4: Geomembrane - Concentration and Evaporation Ponds Geomembrane

Zone	Area (m^2)
Concentration and Evaporation Ponds – Group 1	2,088,000
Concentration and Evaporation Ponds – Group 2	4,351,000
Total	**6,439,000**

Source: KPC (2024)

Table 21-5 outlines the direct and indirect costs associated with constructing the evaporation and concentration ponds. These costs include excavation and filling activities, geomembrane lining, and leveling of the natural ground for the placement of the salt deposit and processing plant.

Table 21-5: Evaporation and Concentration Ponds Capital Cost Estimate

Description	Total Cost $M
Direct Cost	
Construction of evaporation and concentration ponds. Earthworks for ponds Groups 1 and 2. Earthworks for platforms.	93.5
Indirect Cost	**7.5**
Total	**101.0**

Source: KPC (2024)

21.1.4 Infrastructure

The capital cost estimate for the project's infrastructure includes the essential facilities for power and heating supply, water supply, and the mining camp. This comprehensive estimate includes:

- The construction cost of the camps, calculated in US dollars, derived from the average quotes of five contractors specialized in modular housing modules designed for rapid assembly;

- The expenditure for drilling freshwater well incorporates not only the drilling costs, priced in US dollars, but also the construction of service roads and the installation of the pipeline; and

- The estimate for the cost of power and heating supply infrastructure is based on comparative analysis with similar projects in the extractive industry scaled for load requirements.

Details of these capital expenditures are outlined in Table 21-6.

Table 21-6: Infrastructure Capital Cost Estimate

Description	Total Cost $M
Fresh Water Supply	2.6
Heat and Power	17.5
Mining and Construction Camp	2.4
Total	**22.5**

Source: KPC (2024)

21.1.5 Mobile Equipment

The acquisition of essential mobile equipment required for maintenance and operational activities within the mine, is detailed in Table 21-7. The cost estimate for purchasing this mobile equipment has been sourced and is presented in US dollars.

Table 21-7: Mobile Equipment Capital Cost Estimate

Description	Total Cost $M
Direct Cost	
Front-end Loader 22t	0.7
Bulldozer	1.6
Motor Grader	0.4
Front Excavator	0.5
Front-end Loader 8 t	0.3
Soil Compactor	0.3
6x4 Dump Truck	0.5

Description	Total Cost $M
Subtotal Direct Cost	**4.3**
Indirect Cost	
Administrative Management	0.6
Subtotal Indirect Cost	**0.6**
Total	**4.9**

Source: KPC (2024)

21.1.6 Contingency

The contingency value is set at 35% for general economic estimate in accordance with AACE Standards for a level 4 engineering detail. The contingency for earthworks for the evaporation and pre-concentration ponds was reduced to 20% reflecting a higher level of detail and precision.

21.1.7 Exclusions

The following items were not included in this estimate:

- Sunk costs and legal expenses;
- Special incentives and allowances;
- Cost escalation;
- Interest and financing charges; and
- Additional exploration expenditures.

21.2 Sustaining Capital (SUSEX)

Sustaining Capital, as shown in Table 21-8, represents the investment required to maintain a company's operations at their current level. This capital covers all necessary expenses to sustain productivity and operational efficiency over time, including equipment upgrades, investments in new technologies to optimize processes, costs related to safety and environmental protection, and any other investment required to ensure ongoing viability and competitiveness of operations into the future. Additionally, the financial model includes a budget of $2.6M for mine closure.

Table 21-8: Sustaining Capital Estimate

	Total Unit Cost	Replacements	Replacement	SUSEX
	$ M	Over LOM	%	$ M
Production Wells and Pumps	29.9	2	75%	44.9
Replacement of Power Units	17.5	2	50%	17.5
Camp Renewal	2.4	1	50%	1.2
Pickup Truck Fleet Replacement	4.9	2	80%	7.8
Other Equipment Replacement	35.5	2	60%	42.6
Total SUSEX				114.0

Source: KPC (2024)

21.3 Operating Cost Estimate (OPEX)

The operating cost estimate has been developed for 15,600 t/a (Design capacity) of lithium carbonate facilities. Preliminary vendor quotations have been used for reagent costs. Salaries and wages have been estimated based on experience in the mining area.

Total operating expenses are summarized in Table 21-9.

Table 21-9: Operating Cost Estimate Summary

Description	$ M/a	$/t Li_2CO_3
Direct Costs		
Chemical Reagents Consumption	32.3	2,070
Energy	7.5	481
Manpower	6.7	427
Catering and Camp Services	7.8	501
Maintenance	9.4	606
Truck Haulage to Port	3.4	220
Equipment Operation - Mine Maintenance	0.5	30
Equipment Operation - Accumulation of Waste Salts	0.8	51
Subtotal Direct Cost	**68.4**	**4,385**

Description	\$ M/a	\$/t Li_2CO_3
Indirect Cost		
General and Administration - LO	0.6	38
Subtotal Indirect Cost	**0.6**	**38**
Production Li_2CO_3 Total Costs	**69.0**	**4,423**

Source: KPC (2024)

Details for each of the main cost centers are provided below.

21.3.1 Chemical Reagents Consumption

Due to the significant consumption of lime required for the project, a search for suppliers able to satisfy the demand was initiated, which led to the selection of a supplier in the province of San Juan. Transportation costs have been included assuming this source.

The chemical usage at the lithium carbonate plant primarily involves Na_2CO_3 for carbonating the brine, supplemented by minor quantities of hydrochloric acid for occasional cleaning processes. Chemical and reagent consumption was estimated by the processing QP.

Recent quotations were used for all reagents which incorporate transportation costs from the supplier.

Table 21-10 shows the consumption of the main chemical reagents, determined by the consumption ratios defined by process specialists based on the annual lithium carbonate production rate. Additionally, it outlines the cost of reagents per tonne of lithium carbonate produced, based on the annual consumption of these reagents.

Table 21-10: Chemical Reagents Consumption

Description	Formula	Consumption (t/a)	Unit Price (\$/t)	Transport (\$/t)	\$M / a	t reagents / t Li_2CO_3	\$ / t Li_2CO_3
Calcium Oxide (80%)	CaO	40,560	175	110	11.6	2.60	741
Sodium Carbonate (Dry Soda Ash 99.8%)	Na_2CO_3	38,220	280	220	19.1	2.45	1,225
Hydrochloric Acid (32%)	HCl	1,560	358	incl	0.6	0.10	36

Description	Formula	Consumption (t/a)	Unit Price ($/t)	Transport ($/t)	$M / a	t reagents / t Li_2CO_3	$ / t Li_2CO_3
Sodium Hydroxide (Dry Caustic Soda) (32%)	NaOH	1,560	460	220	1.0	0.10	68
Chemical Consumption Total		**81,900**			**32.3**	**5.25**	**2,070**

Source: KPC (2024)

21.3.2 Energy

The project's total estimated energy consumption is 24,120 MW per year, based on the power requirements for operational needs of wells, evaporation ponds, the lithium carbonate plant, residential camp, and offices.

The energy requirements for the camp were calculated considering the number of personnel on-site and applying a per capita consumption factor.

Power consumption for the lithium carbonate processing plant, along with brine and freshwater extraction wells, was assessed based on the specifications of the anticipated processing equipment.

The energy demand for heating was estimated to account for 30% of the total electricity consumption of the processing plant.

The cost per unit of electricity was derived from the average fuel usage of a suitably sized diesel-generated power plant, factoring in the depreciation of the equipment over a seven-year period.

Table 21-11 provides a summary of the energy consumption required for mine operations. It includes the energy needed for the processing plant, mining camp, and extraction wells. By multiplying these energy requirements by the cost of producing electricity, the annualized cost of electricity supply is obtained.

Table 21-11: Energy Cost Estimate Summary

Description	Unit	Total
Production Requirement	MW/a	24,120
Electricity Cost	$/MW	311
Total Energy	**$M/a**	**7.5**

Source: KPC (2024)

21.3.3 Manpower

The workforce was estimated based on the size of the project and the proposed work shifts for each specific function. The total payroll is 383 individuals, of which 210 will be on site at any given time.

For managerial positions a work scheme of 4 consecutive days followed by a 3-day rest period has been established. The operational staff will follow a shift pattern of 15 continuous workdays, followed by 15 days of rest.

In line with the above, Table 21-12 presents the monthly cost allocated to the permanent mine staff, broken down by assigned area, and the annual maintenance cost for those personnel. Each area includes a range of positions, from area managers and supervisors to specialists and operators, including their corresponding counter shifts where applicable.

Table 21-12: Manpower Cost Estimates Summary

Description	$/month
Operations Management	5,108
Well Operators	19,736
Administration	77,137
Carbonate Plant	385,659
Laboratory	34,158
Engineering and maintenance	32,989
Total US$/month	**554,787**
Total Manpower	**$6.7 M/a**

Source: KPC (2024)

21.3.4 Catering and Camp Services

Table 21-13 outlines the costs related to camp services, which include personnel dedicated to managing and carrying out cleaning, cooking, and camp maintenance activities. It also covers the use of supplies and food, along with transportation and heating expenses, addressing the needs of all individuals on-site.

Table 21-13: Catering and Camp Services Cost Estimate

Description	Total $M/a
Camp Services	0.7
Catering: Insurance (0.1% Annual of CAPEX) Transportation Clothing and PPE Food Accommodation services, heating, and provisions	7.1
Total Catering and Camp Services	**7.8**

Source: KPC (2024)

21.3.5 Maintenance

The maintenance cost was scaled as a percentage of the direct costs of the wells, plant and infrastructure as shown in Table 21-14.

Table 21-14: Maintenance Cost Estimate Summary

Description	Direct Cost ($M)	Maintenance (%/a)	Maintenance $M/a
Brine Production Wells	29.9	2.0	0.6
Lithium Carbonate Plant	172.0	3.0	5.1
Infrastructure	30.3	2.0	0.6
Mobile Equipment	6.6	10.0	0.7
Evaporation and Concentration Ponds	121.2	2.0	2.4
Total			**9.4**

Source: KPC (2024)

21.3.6 Truck Haulage to Port

This refers to the cost of transport of the lithium carbonate in "Big Bags" on trucks from the project to the port.

21.3.7 Equipment Operation - Mine Maintenance

The costs associated with machinery operation used in maintenance tasks for roads and mining facilities.

21.3.8 Equipment Operation – Accumulation of Waste Salts

The costs associated with machinery operation used in the collection, handling, and final disposal of waste salts.

21.3.9 Indirect Costs

Indirect costs are the personnel associated with the administration and management of the project and are detailed in Table 21-15.

Table 21-15: Administration Cost Estimate Summary

Description	Shifts / Day	Work Shift	Total Payroll	Unit Cost $/mo	Total $/mo
Position					
Management (G&A)					
General Manager	1	4d x 3d	1	21,659	21,659
Finance and Acct. Manager	1	4d x 3d	1	8,950	8,950
Commercial Manager	1	4d x 3d	1	3,203	3,203
Secretaries	1	4d x 3d	1	1,621	1,621
Accountant	1	4d x 3d	1	2,398	2,398
Treasurer	1	4d x 3d	1	2,398	2,398
Clerks	1	4d x 3d	6	1,621	9,725
Total Management (G&A)					**49,953**
Total G&A					**$0.6 M/a**

Source: KPC (2024)

21.3.10 Exclusions

The estimate omits costs for water and land use permits and royalties, which are included in the financial model.

22 ECONOMIC ANALYSIS

An engineering economic model was developed to estimate annual cash flows and sensitivities of the Project. Pre-tax estimates of Project values were prepared for comparative purposes, while after-tax estimates were developed and are likely to approximate the true investment value. It must be noted, however, that tax estimates involve many complex variables that can only be accurately calculated during operations and, as such, the after-tax results are only approximations.

Univariate sensitivity analyses were performed for variations in selling price, operating costs, capital costs, and discount rates to determine their relative importance as Project value drivers.

This technical report contains forward-looking information regarding projected production rates, construction schedules and forecasts of resulting cash flows as part of this study. Factors such as the ability to obtain permits to construct and operate a mine, or to obtain major equipment or skilled labour on a timely basis, to achieve the assumed mine production rates at the assumed grades, may cause actual results to differ materially from those presented in this economic analysis.

The economic analysis has been run with no inflation (constant dollar basis).

22.1 Summary of Results

It must be noted that this PEA is preliminary in nature and includes the use of inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the results of the preliminary economic assessment will be realized.

The project is projected to generate a post-tax $NPV_{8\%}$ of $934M and an IRR of 31.6% with a pay-back period of 2.5 years. The pre-tax and post-tax economic indicators are shown in Table 22-1.

Table 22-1: Summary of Economic Results

	Unit	Pre-Tax	Post-Tax
NPV @ 0%	$M	4,999	3,292
NPV @ 8%	$M	1,451	934
IRR	%	37.2%	31.6%
Payback	Years	2.4	2.5

22.2 Basis of Analysis

The economic analysis was based on the following factors:

- Discount rate of 8%;
- Nominal Q1 2024 US dollars;
- Revenues, costs, taxes are calculated for each period in which they occur rather than actual outgoing / incoming payment;
- Working capital calculated as two months of operating costs;
- Results are based on 100% ownership;
- No management fees or financing costs (equity fund-raising was assumed); and
- The model excludes all pre-development and sunk costs up to the start of detailed engineering (i.e., exploration and resource definition costs, engineering fieldwork and studies costs, environmental baseline studies costs, financing costs, etc.).

Table 22-2 outlines the metal prices and exchange rate assumptions used in the economic analysis. The Li_2CO_3 price selected was based on long-term forecasts that correspond to the timing of production for this project and is discussed in detail in Section 19. The exchange rate used for cost estimating were taken from "Banco de la Nación Argentina (BNA)", with a baseline date of January 2024.

The reader is cautioned that prices and exchange rates used in this study are only estimates based on recent historical performance and there is absolutely no guarantee that they will be realized if the Project is taken into production. The prices are based on many complex factors and there are no reliable long-term predictive tools.

Table 22-2: Prices and Exchange Rates

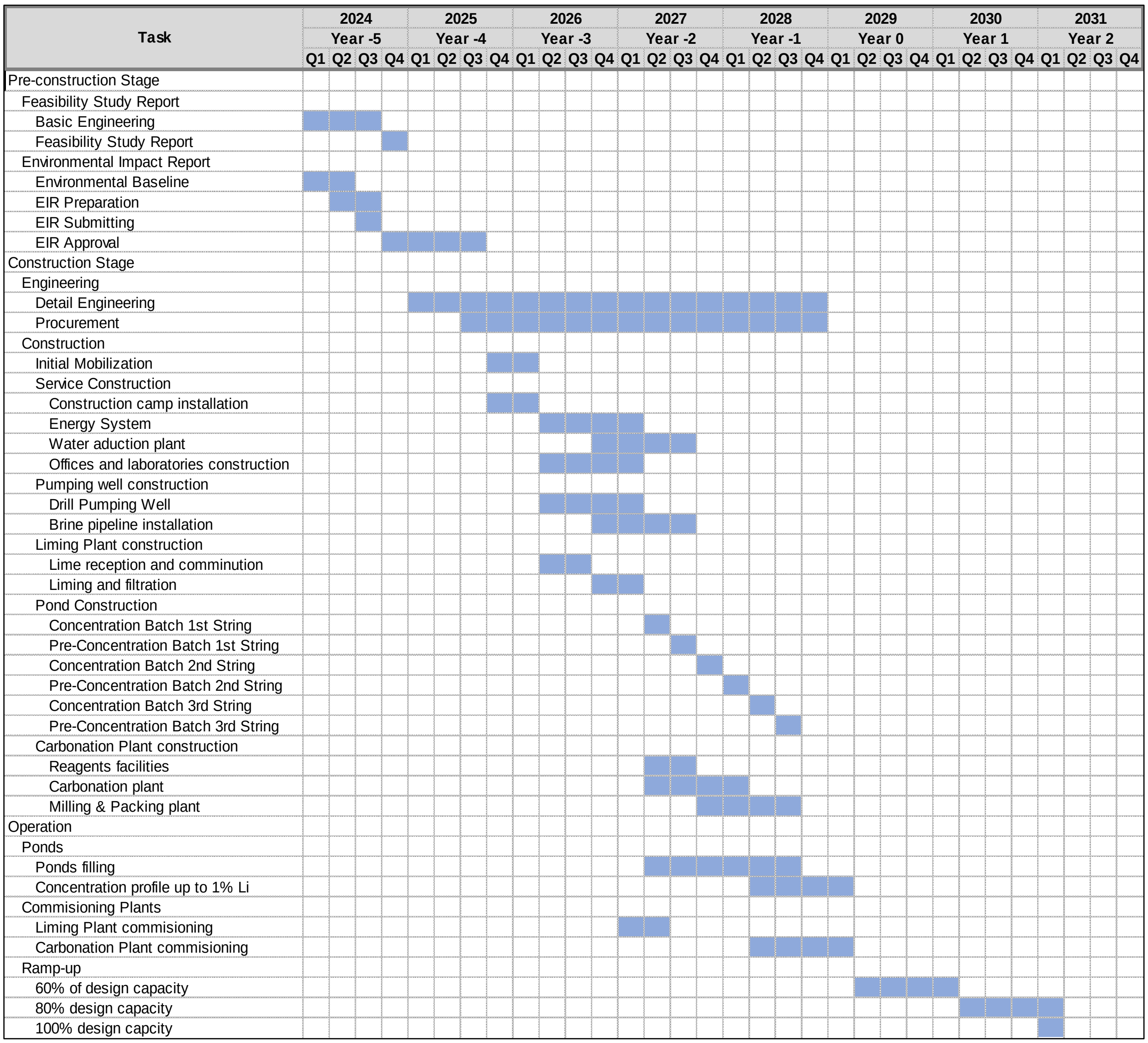
Parameter	Unit	Value
Li_2CO_3 Price	$/t	20,000
FX Rate	ARS$:US$	860

22.3 Project Schedule

The Project schedule assumed by the financial model is shown as Figure 22-1. As can be seen, it shows the period of evaluation and permitting in 2024/2025 through construction to commissioning in 2028. The production ramp up begins in 2029 and full production at 100% capacity is achieved in 2031.

This schedule is considered to be conservative, and the company is evaluating ways of compressing the timelines.

Figure 22-1: Project Schedule



22.4 Assumptions

The summary of the production plan and payables produced is outlined in Table 22-3.

Table 22-3: Annual Production Summary

Parameter	Unit	Value
Project Life	Years	25
Lithium (Li) Grade	mg/l	736
Annual Brine Production	M l/a	5,632
Annual Li_2CO_3 Produced	t/a	15,600

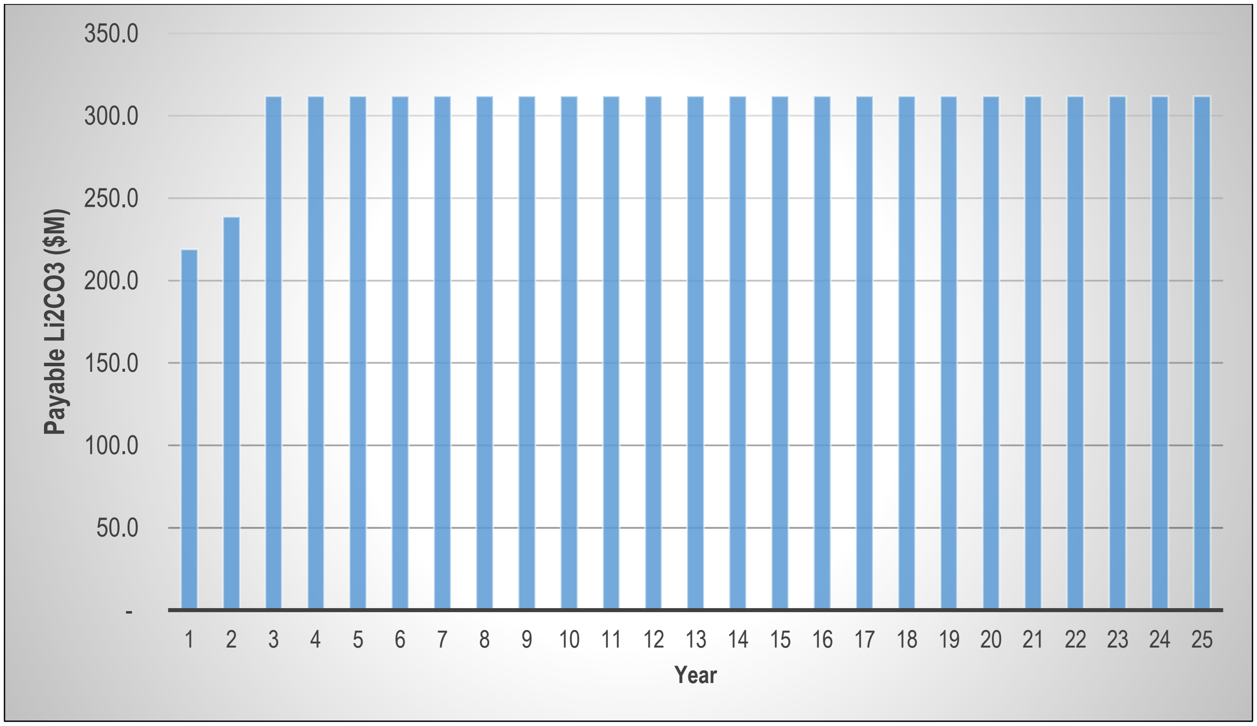
Revenue is derived from the sale of Li_2CO_3 into the international marketplace. No contractual arrangements currently exist. Table 22-4 indicates the NSR parameters that were used in the economic analysis.

Table 22-4: NSR Parameters

Parameter	Unit	Value
Process Recovery	%	70.7
Selling Costs	%	0.96
Provincial Royalty (NSR less production costs)	%	3.0
JM Royalty (NSR less all operating costs)	%	3.0

Figure 22-2 shows the value of the payable Li_2CO_3 on an annual basis. A total of 382 kt is projected to be produced over the life of mine. The economic results include an allowance for a two-year production ramp-up period.

Figure 22-2: LOM Payable Li_2CO_3



22.5 Taxes

The Project has been evaluated on an after-tax basis to provide a more indicative, but still approximate, value of the potential Project economics. A simplistic tax model was prepared using estimated depreciation allowances in the analysis. The tax model contains the following assumptions:

- Corporate Income Tax rate of 35%;
- Capital cost allowance applied with accelerated depreciation allowed for Mining projects;
- Remediation allowance of 5%; and
- VAT is considered recoverable and has not been modelled.

Total taxes for the Project amount to $1,706 M.

22.6 Royalties

The property is subject two royalties:

1. A 3% net production royalty payable to the province (net smelter return less direct production operating costs); and
2. A 3% net production royalty (net smelter return less all operating costs) payable to Mr. Jorge Moreno of Salta, Argentina, as part of the purchase agreement, as described in Section 4.2.

22.7 Results

The Project is projected to have a post-tax IRR of 31.6% and a net present value using an 8% discount rate ($NPV_{8\%}$) of $934 M. Figure 22-3 shows the projected cash flows, and Table 22-5 summarizes the economic results of the Project.

Figure 22-3: Annual After-Tax Cash Flow

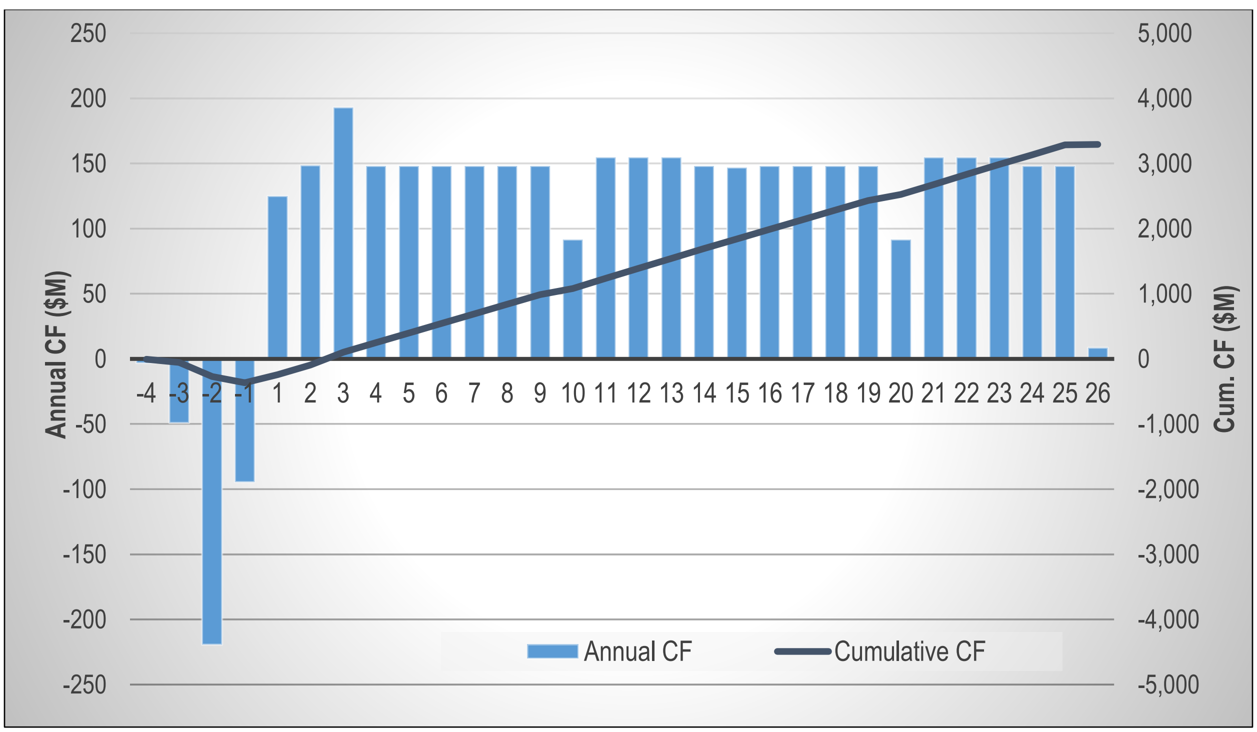


Table 22-5: Summary of Economic Results

Production	Unit	
Li_2CO_3 Produced	tonnes	381,686
Operating Revenues and Costs		
Total Payable Metal	US$M	7,634
	$/t product	20,000
Total Selling Costs and Royalties	US$M	427
	$/t product	1,118
Total Operating Expenses	US$M	1,725
	$/t product	4,520
Pre-Tax Operating Income	US$M	5,482
	USD/t product	14,362
Capital Costs		
Initial Capital	US$M	366
Sustaining and Closure Capital	US$M	117
Total Capital Costs	US$M	483
Taxes		
Total Income Taxes	US$M	1,706
Pre-Tax Economics		
NPV @ 0%	US$M	4,999
NPV @ 8%	US$M	1,451
IRR	%	37.2%
Payback	Years	2.4
After-Tax Economics		
NPV @ 0%	US$M	3,292
NPV @ 8%	US$M	934
IRR	%	31.6%
Payback	Years	2.5

The economic cash flow model for the Project is illustrated in Table 22-6.

Table 22-6: Cash Flow Model

	Input	Units	Total	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
PRICES AND EXCHANGE RATE																																	
Li_2CO_3 Price	*$20,000*	*US$/t*	*20,000*																														
PRODUCTION SCHEDULE																																	
Pumping Rate		L/s						179	179	183	184	186	188	189	191	192	194	196	198	199	201	203	205	207	209	211	213	215	217	219	221	223	
Pumped Grade		mg/L Li						730	724	718	712	707	701	695	689	683	677	671	665	659	654	648	642	636	630	624	618	612	606	601	595	589	
LCE Contained		t	551,097					21,889	21,712	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	22,065	
Process Recovery		%	69.3%					50.0%	55.0%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	
Li_2CO_3 Produced		**t**	**381,686**					**10,944**	**11,942**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**15,600**	**-**
REVENUE																																	
Gross Value		US$M	7,633.7					218.9	238.8	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	-
Selling Costs (Transaction Tax)	0.96%	US$M	73.3					2.1	2.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	-
Royalties - Provincial	3.0%	US$M	183.9					4.8	5.4	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	-
Royalties - JM	3.0%	US$M	169.5					4.3	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	-
Net Revenue		**US$M**	**7,207.0**					**207.7**	**226.3**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**294.5**	**-**
OPERATING COSTS																																	
Reagents	2,115	US$M	807.2					32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	-
Energy	492	US$M	187.6					7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	-
Manpower	436	US$M	166.4					6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	-
Equipment	83	US$M	31.5					1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	-
Maintenance	619	US$M	236.2					9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	-
Product Transport to Port	225	US$M	85.8					3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	-
General & Administrative	551	US$M	210.3					8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	-
Total OPEX	**4,520**	**US$M**	**1,725.1**					**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**69.0**	**-**
Net Operating Income		**US$M**	**5,482.0**					**138.7**	**157.3**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**-**
CAPITAL COSTS																																	
Lithium Carbonate Plant		US$M	127.4	-	-	95.6	31.9																										
Brine Production Wells		US$M	22.1	-	17.6	4.6	-																										
Evaporation and Concentration Ponds		US$M	101.0	-	-	67.7	33.3																										
Infrastructure		US$M	22.5	2.4	18.8	1.3	-																										
Mobile Equipment		US$M	4.9	-	-	-	4.9																										
Owner Costs		US$M	4.5	-	-	0.8	3.7																										
Sustaining/Replacements		US$M	113.9					-	-	-	-	-	-	-	-	-	56.4	-	-	-	-	1.2	-	-	-	-	56.4	-	-	-	-	-	-
Closure		US$M	3.0					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0
Contingency		US$M	83.7	0.8	12.7	49.3	20.8																										
Total CAPEX		**US$M**	**483.0**	**3.2**	**49.1**	**219.3**	**94.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**56.4**	**-**	**-**	**-**	**-**	**1.2**	**-**	**-**	**-**	**-**	**56.4**	**-**	**-**	**-**	**-**	**-**	**3.0**
Working Capital	2.0	US$M	-					11.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-11.5
Pre-Tax Cash Flow		**US$M**	**4,999.0**	**-3.2**	**-49.1**	**-219.3**	**-94.5**	**127.2**	**157.3**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**169.1**	**225.5**	**225.5**	**225.5**	**225.5**	**224.3**	**225.5**	**225.5**	**225.5**	**225.5**	**169.1**	**225.5**	**225.5**	**225.5**	**225.5**	**225.5**	**8.5**
Cumulative		***US$M***	***4,999.0***	***-3.2***	***-52.3***	***-271.5***	***-366.1***	***-238.9***	***-81.6***	***143.9***	***369.4***	***594.8***	***820.3***	***1,045.8***	***1,271.3***	***1,496.7***	***1,665.9***	***1,891.3***	***2,116.8***	***2,342.3***	***2,567.8***	***2,792.1***	***3,017.5***	***3,243.0***	***3,468.5***	***3,694.0***	***3,863.1***	***4,088.6***	***4,314.0***	***4,539.5***	***4,765.0***	***4,990.5***	***4,999.0***

	Input	Units	Total	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Taxes	35%	US$M	**1,706.5**					2.3	8.7	32.5	77.4	77.4	77.4	77.4	77.4	77.4	77.4	70.8	70.8	70.8	77.4	77.4	77.3	77.3	77.3	77.4	77.4	70.8	70.8	70.8	77.4	77.4	-
After-Tax Cash Flow		**US$M**	**3,292.5**	**-3.2**	**-49.1**	**-219.3**	**-94.5**	**125.0**	**148.6**	**193.0**	**148.1**	**148.1**	**148.1**	**148.1**	**148.1**	**148.1**	**91.7**	**154.6**	**154.6**	**154.6**	**148.1**	**146.9**	**148.2**	**148.2**	**148.2**	**148.1**	**91.7**	**154.6**	**154.6**	**154.6**	**148.1**	**148.1**	**8.5**
Cumulative		***US$M***	***3,292.5***	***-3.2***	***-52.3***	***-271.5***	***-366.1***	***-241.1***	***-92.6***	***100.4***	***248.5***	***396.5***	***544.6***	***692.7***	***840.8***	***988.8***	***1,080.5***	***1,235.2***	***1,389.8***	***1,544.5***	***1,692.6***	***1,839.5***	***1,987.7***	***2,135.9***	***2,284.1***	***2,432.2***	***2,523.9***	***2,678.5***	***2,833.2***	***2,987.8***	***3,135.9***	***3,284.0***	***3,292.5***

22.8 Sensitivities

A univariate sensitivity analysis was performed to examine which factors most affect the Project economics when acting independently of all other cost and revenue factors. Each variable evaluated was tested using the same percentage range of variation, from -25% to +25%, although some variables may experience significantly larger or smaller percentage fluctuations over the LOM. For instance, the product prices were evaluated at a ±25% range to the base case, while the capex and all other variables remained constant. This may not be truly representative of market scenarios, as product prices may not fluctuate in a similar trend. The variables examined in this analysis are those commonly considered in similar studies – their selection for examination does not reflect any particular uncertainty.

Notwithstanding the above noted limitations to the sensitivity analysis, which are common to studies of this sort, the analysis revealed that the Project is most sensitive to selling price. The Project showed the least sensitivity to capital costs. Figure 22-4 show the results of the sensitivity tests, while Table 22-7 shows the NPV at various discount rates.

Figure 22-4: Post-Tax $NPV_{5\%}$ Sensitivity

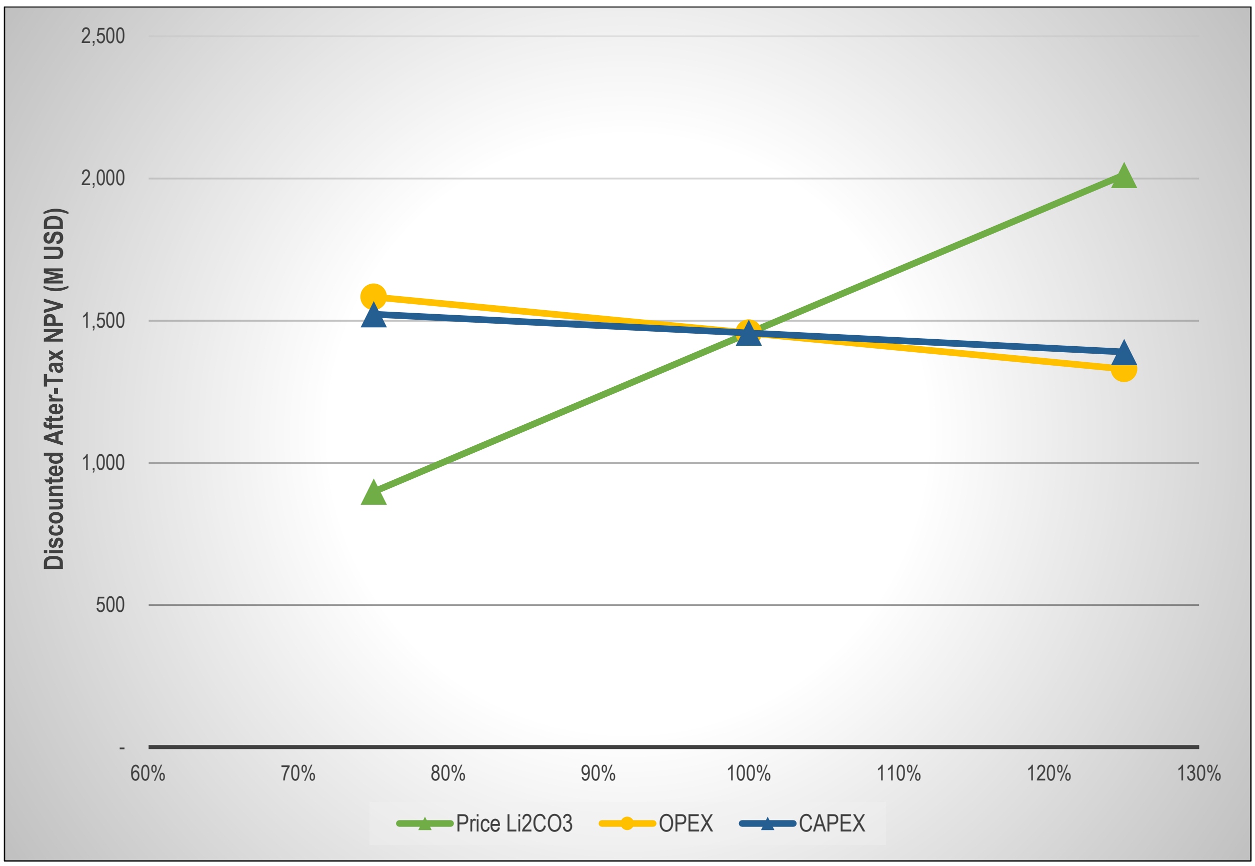


Table 22-7: Project NPV at Various Discount Rates

Discount Rate (%)	Pre-Tax NPV (M$)	Post-Tax NPV (M$)
0	4,999	3,294
5	2,234	1,456
8	1,451	934
10	1,106	704

23 ADJACENT PROPERTIES

Projects within the SHM and adjacent to the HMN Project are shown on Figure 23-1. Lithium brine projects within the SHM include, in order of development stage:

- Livent (Minera del Altiplano S.A.): The Fénix Project is currently the only commercial lithium producer in the SHM and has been operational since 1997. It encompasses the southwestern subbasin of the SHM and its northern margin is located four km S of Alba Sabrina, adjacent to Viamonte. Recent Proven and Probable Reserve Estimates for the project are 3.9 Mt LCE over 40 years at an average grade of 523 mg/L Li, based on a cut-off grade of 218 mg/L Li, and a 76.6% time-weighted average process efficiency (Integral, 2023);

- Allkem: The Sal de Vida Project is under construction in the southeastern subbasin of the SHM. Estimated Proven and Probable Reserves for the project are 1.7 Mt LCE over 40 years with a projected average grade of 778 mg/L Li after 40 years of pumping, based on a cut-off grade of 500 mg/L, and assuming 70% process efficiency (Montgomery et al., 2022);

- POSCO: The Sal de Oro Project surrounds the Gaston Enrique, Natalia Maria, Tramo, and Viamonte properties in the northeastern subbasin of the salar. Construction began in 2021 and is scheduled to be complete in 2024. The project will produce lithium hydroxide using conventional evaporation (POSCO, 2022);

- Minera Santa Rita S.R.L.:

  - The Virgen del Valle Litio Project is an advanced stage project located in the southeastern subbasin of the SHM and is surrounded by the Allkem claims and Livent claims. Reserve estimates indicate 1.13 Mt of LCE with a 40-year projected life of mine (MSR, 2023). Direct Lithium Extraction (DLE) is proposed for the project, and a pilot plant is pending regulatory approval; and

  - The Providencia Project is on the northern border of the Alba Sabrina property. It is a small-scale, privately owned lithium brine operation. No public data is available for this project.

- Galan Lithium:

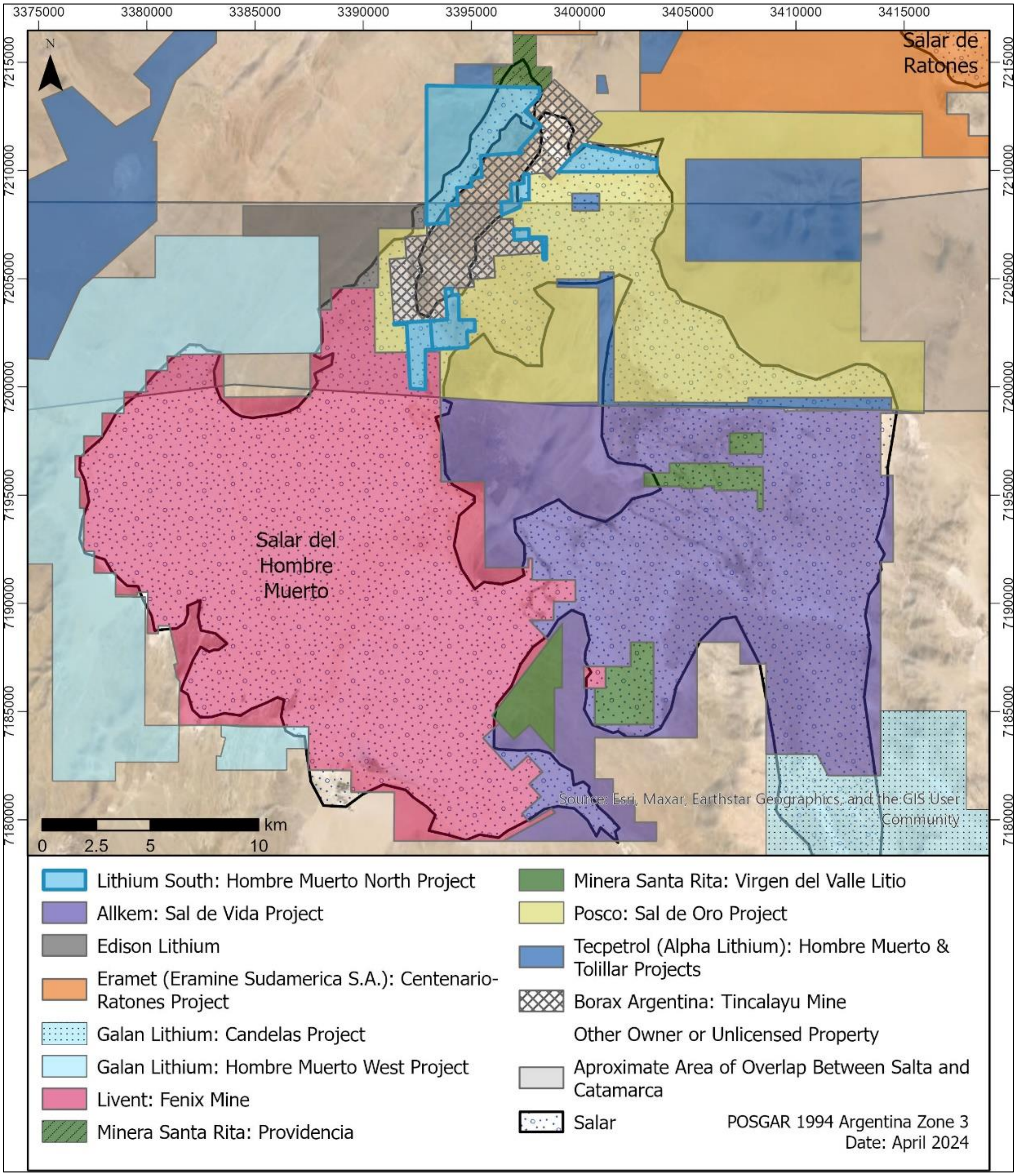
  - The Hombre Muerto West Project is a construction stage project located on the alluvium at the western margin of the salar, adjacent to the Fénix Project. The total Mineral Resource Estimate for the project is 6.6 Mt of LCE at an average grade of 880 mg/L Li (Galan, 2023); and

  - The Candelas Project is south of the Sal de Vida project and extends further south along Río de Los Patos. The project hosts a total (Indicated) Resource of 685,000 tonnes of LCE at an average grade of 672 mg/L Li (Galan, 2019).

- Tecpetrol (Alpha Lithium): The HMN Project is an early-stage exploration project located in the northeastern subbasin of the SHM. The project includes several non-contiguous properties within five km of the HMN Project properties; and one of the properties is located adjacent to the northern border of Alba Sabrina; and

- Edison Lithium Corp: The Edison Lithium claim area is located on the southwestern border of Alba Sabrina. No known exploration has been completed on the property as of the date of this report.

Figure 23-1: Location and Owners of Claims within the SHM and Adjacent to the LIS Properties



Source: GWI (2024)

The Tincalayu Mine and associated claims, operated by Borax Argentina, are located on the Tincalayu Peninsula between and adjacent to all the HMN Project properties within the SHM (Figure 23-1). Tincal ore is currently mined at a rate of 60,000 tonnes per year and has been extracted from an open pit within the Sijes Formation since the mine first became operational in 1964. The upgraded historical Indicated and Inferred Resource Estimate for the Tincalayu deposit is 17.8 Mt of 11.0% boric oxide at a marginal cut-off grade of 2.8% boric oxide (Orocobre Ltd., 2014).

Several other lithium brine projects are in basins adjacent to the SHM and near the HMN Project (Figure 23-1), including:

- Eramine Sudamérica S.A.: The Centenario-Ratones Project is a construction-stage lithium brine project in Salar de Ratones and Salar de Centenario. The southern margin of the project area is approximately two km NE of Tramo;
- Tibet Summit: The Sal de Los Angeles Project is a construction-stage lithium brine project located in Salar de Diablillos, approximately 20 km E of Tramo; and
- Tecpetrol (Alpha Lithium): The Tolillar Project, located five km NW of Alba Sabrina, is an advanced-stage lithium brine exploration project in the Salar de Tolillar.

The current resources and information on the adjacent properties are reported on the corporate websites and SEDAR filings of the holding companies. These data have not been verified by the author and are not reported herein. The information presented may not necessarily be indicative of the geology or mineralization on the HMN Project that is the subject of this Technical Report.

Investors are cautioned that this information is taken from the publicly available sources, has not been independently verified by LIS and it is not known if it conforms to the standards of NI 43-101. Furthermore, proximity to a discovery, mine, or mineral resource, does not indicate that mineralization will occur at the HMN Project, and if mineralization does occur, that it will occur in sufficient quantity or grade that would result in an economic extraction scenario.

24 OTHER RELEVANT DATA AND INFORMATION

The QPs are not aware of any relevant information that has been excluded from this report, or any information that, if included, would affect the outcome and conclusions.

25 INTERPRETATIONS AND CONCLUSIONS

The PEA demonstrates that the HMN Project has the potential to be profitable in the generation, processing, and sale of lithium with the production scenario modelled. However, this PEA is preliminary in nature and there is no certainty that the results of this PEA will be realized. These results, while encouraging, should not be considered adequate for the purpose of making a production decision. Further investigation is required to advance the understanding of the project economics to a feasibility level of detail.

25.1 Resource Estimate

The updated Mineral Resource Estimate documented in this report, with an effective date of September 5, 2023, was supervised by Mark King, Ph.D., P.Geo., F.G.C. The mineral deposits that are the focus of this estimate are related to lithium brine contained within the salar deposits of SHM.

The updated Mineral Resource Estimate conforms with National Instrument 43-101 (NI 43-101) and the Canadian Institute of Mining, Metallurgy, and Petroleum Definition Standards for Resources and Reserves (CIM Standards). The following interpretations and conclusions are supported by the HMN Project data collected to date:

- Conditions in the SHM, and specifically in the Alba Sabrina, Natalia Maria, and Tramo properties, have led to the accumulation of brine with potentially economic grades of lithium;
- Drilling results demonstrate regional variability in the SHM salar infill materials, and shows that:
  - The channel occupied by the Alba Sabrina property is clastic sediment-dominated;
  - The salar in and around Natalia Maria, along the eastern margin of Tincalayu Peninsula, is halite-dominated; and
  - The northeastern corner of the Eastern Subbasin, in and around Tramo, is clastic sediment-dominated. Halite content of the salar deposits increases to the west, towards the Tincalayu Peninsula, indicating a transition zone between the clastic-dominated salar intersected on the eastern side of Tramo and the halite-dominated salar intersected at Natalia Maria.
- Brine sampling data indicate that lithium grade is highest in the Natalia Maria property, and lowest in the Alba Sabrina property. Lithium grade increases to the east within the Tramo property;
- Brine impurities, including potassium, calcium, magnesium, and sulphate are low in the HMN Project brines. Interpolated ratios of these constituents relative the lithium resource are:
  - Calcium to lithium ratio of 0.93;

   - Potassium to lithium ratio of 9.79;
   - Sodium to lithium ratio of 138.45;
   - Magnesium to lithium ratio of 3.27; and
   - Sulphate to lithium ratio of 16.62.

- The updated Mineral Resource Estimate was calculated for the Interlayered Fine and Coarse Sediments, Interbedded Halite and Sediments, Halite, Basalt, Upper Middle Sediments, Conglomerate, and Brecciated Quartzite. The Compact Halite unit, intersected below 190 mbgs at Natalia Maria, is not currently considered in the resource. Follow-up testing of the Compact Halite could indicate that it has a low, but potentially significant permeability; and
- The Alba Sabrina, Natalia Maria, and Tramo properties contain an estimated 297,400 tonnes of Measured and Indicated lithium Resources, relative to a 500 mg/L cut-off grade, which equates to 1,583,200 tonnes of LCE.

25.2 Processing

Initial pumping rates from the brine wells are anticipated to meet the LCE production target. Based on experience on other projects, the QP expects that grade may decrease by as much as 20% over the 25-year production period. Consequently, average pumping rates would need to increase to 223 L/s, over the production period, to maintain consistent LCE wellhead recovery and Project production. This expectation is applied on a provisional basis, and the QP recognizes that grade decline is ultimately site-specific.

There has been process testwork performed to-date, nevertheless, the testwork is representative mainly for brine with a significative lower SO_4/Mg ratio. Therefore, most assumptions used in the preparation of this PEA are based upon commercially applied unit operations and equipment and industrial experience of in similar projects.

Overall, the process represented in this PEA does not carry uncommon technical risks and it does not contain fatal flaws on its own when referenced against existing or proposed comparable projects. Conceptually, the process-flowsheet includes slight differences compared to other comparable projects. These differences are attributable in part to the composition of the well-brine, and its response to the concentration-purification sequence based on the test results to date, and in conjunction with derived assumptions and predictions.

In general, the preliminary process model and subsequent design criteria have been adequately established and applied in order to establish reasonably detailed capital, operating and sustaining cost estimates as basis for the Preliminary Economic Assessment.

However, additional testwork is required to confirm the assumptions used for the preparation of this PEA and to confirm the reasonableness of the current economic model.

The concentration area preliminary process model and subsequent design criteria were based on a blend of simulated output and actual test data that need further validation.

The hydrometallurgical area preliminary process model and subsequent design criteria were based upon experience-derived assumptions which also need confirmation through testwork.

25.3 Risk

25.3.1 Lithium Prices

As demonstrated in Section 22.7 and demonstrated in Figure 22-4, the Project is most sensitive to the price of lithium. As such, this poses the greatest risk to the Project.

25.3.2 Permitting

No significant risks have been identified for permitting this Project.

25.4 Opportunities

25.4.1 Lithium Grade

Based on industrial experience it is recommended to generate technical grade products and generated battery grade at industrial sites. The extreme conditions make the qualification period for battery grade period extremely long, increasing process and commercialization costs, and delay in cash flow.

As alternative, the production of lithium chloride, feedstock for lithium metal and lithium hydroxide applying causticization with potassium hydroxide is feasible an attractive option. This alternative route will have less environmental impact and lower investment cost and avoid the intensive reagent transport to the remote sites.

25.4.2 Recovery and Sale of Other Minerals

It may be possible at marginal incremental capital and operating cost increases to recover and sell other mineral products from the salar, notably potassium chloride (KCl) and Boron compounds. This option should be considered in future studies.

26 RECOMMENDATIONS

The next phase of exploration at the HMN Project is designed to support future Reserve Estimates and to potentially expand the Resource Estimate at depth in Tramo, plus into the Gaston Enrique, Norma Edith, and Viamonte properties. The following program components are proposed for this next phase of exploration.

Economics performed thus far have been done to a PEA level. These should be advanced to a Prefeasibility or Feasibility level of detail prior to a production decision. As the single greatest risk to the Project is lithium pricing, an expert in that field should be engaged to support the pricing assumptions used in the Feasibility Study.

26.1 Mineral Reserves

To support future Reserve Estimates:

- Three rotary exploration boreholes should be drilled and completed as pumping wells. Long-term (72-hr) pumping tests should be conducted at each pumping well to evaluate brine chemistry and subsurface hydraulic properties. The rotary holes should be drilled on selected platforms used in the 2022-2023 drilling program at Alba Sabrina and Natalia Maria:
  - Alba Sabrina: Two rotary boreholes drilled to approximately 250 and 400 m depth; and
  - Natalia Maria: One rotary borehole drilled to approximately 250 m.
- Slug tests should be performed on the 11 observation wells installed at Alba Sabrina and Natalia Maria during the 2022-2023 Program, to evaluative subsurface hydraulic properties;
- The water balance should be updated to reflect site-specific baseline water level, hydrogeological, and meteorological data; and
- A numerical flow should be developed to support reserve estimation, by representing brine processes in the HMN Project area and any significant freshwater inputs in the boundary zones.

26.2 Mineral Resources

To update Mineral Resource Estimates:

- Two diamond exploration coreholes should be drilled and completed as observation wells, to test for lithium brine and to evaluate subsurface lithology and porosity in the Norma Edith and Viamonte properties. These exploration coreholes are designed to support expansion of the Resource Zone into these two previously undrilled HMN Project properties. Proposed borehole locations are based on TEM results and include:

  - Norma Edith: One diamond corehole drilled to at least 300 m depth; and
  - Viamonte: One diamond corehole drilled to at least 250 m depth.

- Two additional diamond exploration coreholes should be drilled and completed as observation wells, to test for lithium brine at depth below the current Resource Zone and to determine depth to basement in the Natalia Maria and Tramo properties. Proposed borehole locations include:

  - Natalia Maria: One diamond corehole should be drilled east of the existing boreholes, to at least 500 mbgs or until the Compact Halite unit is fully intersected, to test for permeability within the Compact Halite unit and for presence of deeper brine aquifers; and
  - Tramo: One diamond corehole should be drilled between the two existing drill platforms to at least 450 mbgs or until basement is intersected.

- The Geological and Resource Models should be updated based on diamond drilling results, to potentially increase the size of the Resource Zone.

26.3 Ongoing Monitoring

For the ongoing monitoring program:

- Dataloggers should be installed at selected wells in Alba Sabrina, Natalia Maria, and Tramo, to continuously monitor water level responses to weather events and pumping at adjacent wells;
- Collection of meteorological data should continue from the Santa Rita weather station; and
- Survey collection should continue to support environmental studies required to sustain permitting.

Proposed exploration activities and estimated costs are summarized in Table 26-1. It is considered feasible to complete all field activities and reporting related to Reserve Estimates within one year (2023-24 field season). Activities related to an Updated Resource Estimate could be completed in conjunction with the Reserve activities or in the following 2024-2025 field season.

Some activities, including meteorological, water level, and other environmental monitoring, would be ongoing.

26.4 Process Testwork

As a result of the drilling program at the HMN Project, the brine tested to date was only sourced from the Tramo claim block so far. Hence it is not representative of the updated resource which contains brine from the Alba Sabrina and Natalia Maria claim blocks. Therefore, it is not sufficiently representative for commercial operation. Since several months, a brine adjustment program has been initiated to provide a mixture of the complete resource.

The implication of the above is that the SO_4/Mg molar ratio will be more than 1, and therefore after liming free sulphate will still be present in the brine. In the industrial process, lithium will be concentrated until lithium sulphate saturation before being directed to the lithium carbonate plant.

The production of lithium chloride, feedstock for lithium metal and lithium hydroxide applying causticization with potassium hydroxide, is feasible as the remaining SO_4 can be easily removed with a calcium chloride solution. The generated lithium chloride is then concentrated in ponds and finally evaporated in an evaporated and crystallizer. This alternative route will have less environmental impact and low investment cost.

26.5 Fresh Water Supply

Further investigation is required to confirm or replace the processing water supply assumptions of this Study. Test drilling should be done on site to determine the most likely location of such a well and work should begin on securing those rights and/or permits.

26.6 Feasibility Study

It is recommended that LIS focus on the further assessment and development of the Tramo concession. Data collected from the testwork and the numerical model should be used to inform a pre-feasibility (PFS) or feasibility study (FS) that includes a more detailed estimation of capital and operating costs as well as more definition on the marketing of the final product.

26.7 Geotechnical Drilling and Analysis

In support of the Pre-feasibility or Feasibility Study, geotechnical drilling and analyses should be performed to confirm the foundation requirements for all surface structures.

26.8 Permitting

The company should continue to advance its baseline environmental testwork and studies as well as social impact investigations to support future permit applications.

26.9 Estimated Cost of Recommendations

The estimated cost of the work programs recommended to support the proposed exploration program and prepare a Feasibility Study are shown in Table 26-1.

Table 26-1: Estimated Costs of Report Recommendations

Item	Estimated Cost (US$ x 1000)
Reserve Estimate	2,170
Updated Resource Estimate	2,848
Field Logistics, Support, and Reporting	1,450
Process Testwork	2,000
Fresh Water Supply Drilling	115
Feasibility Study	2,300
Geotechnical Drilling and Analyses	345
Permitting	1,150
Ongoing Monitoring	700
Subtotal	**13,078**
Contingency 10%	1,308
Total	**14,386**

Source: GWI (2024)

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28 UNITS OF MEASURE, ABBREVIATIONS AND ACRONYMS

Symbol / Abbreviation	Description
Ω/m	Ohms per meter resistivity
°C	degrees Celsius
a	annum (year)
APVC	Altiplano-Puna magmatic volcanic
BTU	British thermal unit
CHP	combined heat and power plant
cm	centimetre
CSAMT	Controlled Source Audio-frequency Magnetotelluric
EIA	environmental impact assessment
FS	Feasibility Study
g	gram
G&A	general and administrative
g/ml	grams per milliliter (density)
h	hour
ha	hectare (10,000 m^2)
INBEMI	Instituto de Beneficio de Minerales at Universidad Nacional de Salta
IRR	internal rate of return
JDS	JDS Energy & Mining Inc.
K	potassium
k	kilo (thousand)
kg	kilogram
km	kilometre
km^2	square kilometre
kWh	kilowatt hour
Kh	Hydraulic conductivity (horizontal)
Kz	Hydraulic conductivity (vertical)
L	litre
Li	lithium
Li_2CO_3	lithium carbonate
L/S	liters per second flow rate
m	metre
M	million
masl	Elevation, expressed in meters above sea level

Symbol / Abbreviation	Description
mbls	Meters below land surface
m^2	square metre
m^3	cubic metre
Ma	million years
mg	milligram
mg/L	milligrams per litre
mL	millilitre
mS	milliseconds
Mt	million metric tonnes
MW	megawatt
NI 43-101	National Instrument 43-101
p.	page number
P.Eng.	Professional Engineer
PFS	Pre-feasibility Study
P.Geo.	Professional Geoscientist
PEA	preliminary economic assessment
POSGAR 94	geocentric coordinate system for Argentina
QP	Qualified Person
SO_4	sulphate
t	metric tonne (1,000 kg)
t/a	tonnes per annum
US	United States
$USD or $US	United States dollars
WGS84	world geodetic system 1984