Executive Summary

Environmental Impact Report

Rincón Project – Expte. N° 23.515

Salar del Rincón Dept. The Andes- Province of Salta.

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consultora
jurídico ambiental
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1. Introduction

The Rincón Project, in charge of the company Rincon Mining PTY Limited (RMPL), is located in the Salar del Rincón, Los Andes Department - Province of Salta, at an altitude of 3,725 meters above sea level. It is located at a distance from the city of Salta, of approximately 270 km, accessing from this city to the project by National Route No. 51.

The objective of the Rincón Project is the exploitation of the natural brine of the Salar del Rincón to produce battery-grade Lithium Carbonate, through the use of membrane adsorption technology, more efficient in recovery than the traditional production method (evaporation).

Currently, initial construction activities are being carried out for the construction of already authorized camps, and auxiliary infrastructure necessary for the development of the R 3000 Project (authorized by the Environmental Impact Statement (EIS) of Resolution No. 009/2023, file No. 0090302-163144/2023).

The Rincón 50ktpa Project, referred to in the Environmental Impact Report – IIA – foresees the production of 50 thousand tons of Lithium Carbonate per year. Rio Tinto acquired the Rincón Project in 2022, having a long history with respect to former owners and presentations. These first presentations were made by the companies ADY Resources Limited in 2007 and 2015 and Rincon Mining PTY Limited (RMPL) in 2018, therefore, the file numbers and Legal Company Name are under the figure of the company RMPL.

In line with the above, this IIA includes the compilation of environmental and social data from the aforementioned IIAs, as well as new data obtained by Rio Tinto in its baseline campaigns between 2022 and 2023, resulting in a data history of more than a decade.

As a result of this work, it was possible to propose the optimization of resources, of the reagents used in the processes, of the generation of waste (of different categories), with which it was possible to carry out a detailed impact analysis, including an analysis of cumulative impacts, and an analysis of ecosystem services.

The impact of a project or activity on the environmental and social environment is the difference between the situation of the environment modified by anthropic development and the situation of the environment as it would have evolved normally. In other words, the environmental and social impact of a project is the net alteration, positive or negative, in the quality of the different factors of the environment and in the quality of life of the human being, in the short, medium and long term, before it is decided to execute it.

The Environmental Impact Report (EIR) presented here is an environmental management instrument established by Law No. 24,585. It is a technical and interdisciplinary document, which is intended to predict, identify, interpret, assess, reduce and correct the consequences that the expected impacts that a project may cause on the quality of the environmental and social environment in which it is located.

In particular, this IIA was carried out by an interdisciplinary team made up of professionals from environmental sciences, geologists, hydrogeologists, biologists, sociologists, lawyers, archaeologists and engineers who worked on its development and elaboration for more than 20 months.

In the study and evaluation of the environmental and social impacts of the Rincón Project, the guidelines established by Law No. 24,585, General Environmental Law No. 25,675, provincial regulatory framework (*e.g.* Law 7070) and with an impact assessment methodology adapted to the proposal by Vicente Conesa Fernandez Vitora in his 2010 Methodological Guide and under the technical guidelines of the Guide for the preparation of environmental impact studies of the Ministry of Environment and Sustainable Development.

The methodological steps to proceed with the development of the IIA chapters are summarized below:

A) Data collection, study development and identification of preliminary effects.
B) Project Analysis
C) Preliminary definition of Areas of Influence
D) Identification of Impacting Factors and Actions
E) Cartographic and Geographic Information System Development
F) Environmental Modelling
G) Matrix of Cause-Effect Interactions
H) Environmental and Social Impact Assessment
I) Description and classification of the Impacts
J) Management Plans

As a summary of this study, the potential environmental and social impacts and risks (whether positive or negative) of the project can be framed in three major areas: biodiversity, water resources and the socioeconomic aspects of the surrounding population.

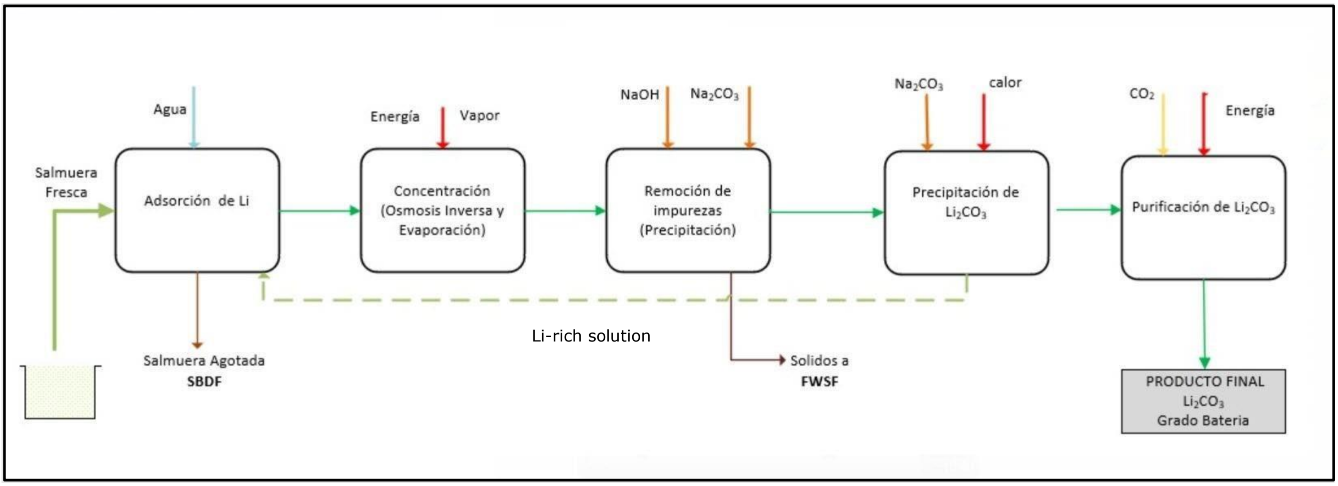
2. Project Description

The Rincón 50ktpa Project is a project for the production of lithium carbonate by adsorption methodology, which has a useful life of 40 years, through the installation of 2 production plants (trains) of 25ktpa each, adding, in the end, the production capacity of 50ktpa in a single manufacturing complex. It is important to underline that the project has, in parallel, a pilot plant with a production capacity of 3 ktpa, linked to a specific permitting process.

The proposed production process, called the Adsorption process, considers, in a simplified way, the parts presented in Figure 1, and listed below:

1. Lithium Adsorption Phase – Interaction of natural brine with resins;
2. Concentration Phase – Reverse Osmosis and Evaporation;
3. Removal of impurities – Chemical precipitation;
4. Lithium Carbonate (Li_2CO_3) precipitation – chemical precipitation; and
5. Purification of (Li_2CO_3) – in a CO_2-rich environment and agitation.

Figure 1: Simplified 50ktpa plant process flowchart



In short, the process begins with the extraction of natural brine rich in lithium, from the core of the salt flat, which will be transported through pipes to the industrial plant. At the plant, the brine begins the process in the "Direct Lithium Extraction" (DLE) phase, where the lithium passes through selective adsorption columns and is retained in a resin specially developed for this purpose. The Li-enriched resin is then washed with demineralized water, resulting in a solution rich in lithium chloride (LiCl).

This solution goes through the Concentration phase, where the LiCl is further concentrated by another membrane system, this one known as reverse osmosis, and then by forced evaporation. With the solution properly concentrated, the Purification stage begins, with the use of specific salts, to precipitate elements that are not useful to the process, such as sodium, calcium and magnesium. When these minerals and salts are precipitated, a fine precipitate is generated, which is called "Filtered Waste", and which will be sent for final disposal at the FWSF (*Filtered Waste Storage Facility*).

The concentrated lithium chloride is then chemically converted by the carbonation system into lithium carbonate (Li2CO3), in a solid state. This solid is refined to the appropriate degree of purity (battery grade) and then dried, reduced to a controlled grain size powder and stored for shipment.

Prior to arriving at a consolidated footprint for the Project, there was a process that took approximately 20 months, where a myriad of process alternatives, technologies, locations, environmental and social issues were evaluated, resulting in extensive engineering development work for the Project from a multivariate and multidisciplinary point of view.

The chosen option in terms **of the location of the process plant,** whose chosen configuration is 8 Has, is based on a comprehensive approach that addresses logistical efficiency considerations (relative distances to raw water and brine wells, power line, camp, Spent Brine Disposal Facility (SBDF), *etc.*), but also environmental and sustainability considerations (e.g. depth of the water table and geotechnical conditions) ensuring the best option under the assessment of these aspects.

The Rincón 50ktpa Project, in its initial stages, evaluated the extraction method known as the Enirgi process, which consists of the precipitation of Li with reagents generated *in-situ,* and subsequent regeneration of these. The Project conducted an analysis of specific alternatives for extraction methodologies, resulting in the presentation of a specific addendum on the subject, and the subsequent approval of a new type of extraction, called Direct Lithium Extraction (DE), by Resolution No. 71/2020 (DIA).

The Direct Extraction DLE allows the use of adsorption resins, similar to what is done in osmosis processes, to concentrate lithium. This new technology has the following advantages over the Enirgi process: greater efficiency in lithium recovery capacity, which implies the optimization of the resource and the extension of the mine's useful life; Lower energy consumption, as it does not require the production of reagents on site – significantly reducing the project footprint and direct impacts of a nearby rock material extraction.

As for the disposal of the depleted brine (final effluent), the chosen strategy is to deposit it superficially using the **SBDF**. For this election, feasibility studies were completed, including technological and site alternatives, considering environmental aspects (lower infiltration rate, absence of relevant environmental areas, sites of restricted use by the Andes Reserve, earthquake resistance), community, legal/permits, and economic aspects. The approved design of the SBDF has a footprint of approximately 2,500 hectares.

Reinforcing Rio Tinto's commitment to environmental and social standards, a reshape of the SBDF was made at the beginning of 2024, as a matter of urgency, in response to the identification of relevant environmental structures – water holes – with potential microbial activity. The change, made to the west portion of cell B, ensured the protection of these potentially unique and environmentally relevant environments for future study.

In relation to the FWSF, different waste treatment and site technologies were considered, always evaluating the productive effectiveness in relation to local environmental factors – groundwater level, distance from access and energy lines, energy efficiency, generation of hazardous waste, etc. The FWSF will be, at the end of its useful life, around 96Ha in size.

Likewise, one of the most detailed works in terms of evaluation of alternatives was done for the **location of the brine and raw water wells**, based on hydrogeological modeling, which was gradually updated as hydrogeological and project knowledge advanced. The variables evaluated were, among others, the depth of the brine wells, the potential flow of each well, the expected concentrations (both for brine and for raw process water), the formations of origin in which the lithium is found, geophysical data, distance to the plant, energy required for pumping, etc.

It is important to clarify that one of the variables that were changed on many occasions with the development of the project's engineering was the conductivity of the raw water, which was set at values of up to 4,000 µS/cm. Environmentally, this meant an important gain, since by allowing the use of water of inferior quality (more saline) in the Project, it was guaranteed that the flows necessary for the process would be extracted only within the area of the Catua aquifer, that is, in the alluvial fans, without the need to obtain water for the process in more distant areas. As a result, the project's footprint was diminished and several cumulative impacts were avoided.

Thus, it was determined that it was necessary to install 37 raw water extraction wells (which vary in diameter and depth depending on the location in which it is located) to be located on the Catua Formation, composed of sediments from the alluvial fan, north of the process plant area. In relation to brine wells, the construction of 74 wells was considered, and there is already one well installed and that it will be added to the future productive capacity. It is important to clarify that neither the raw water wells, nor those for brine extraction, will be installed in one go – the wells must follow an installation schedule linked to the progress of the project in relation to the installation and operation of the two 25ktpa trains, respecting the growth in operational demand.

In relation to brine extraction, the construction of the wells is similar, but they will be located in different lithium production formations, namely the Fractured Halita (16 wells) and the Black Sands, below, with another 58 wells. Drilling depths will be shallower in the Fractured Halites, reaching around 45m, while the holes in the Black Sands may reach 130m. This will require constructive adaptations depending on the context, such as the difference in drilling diameter and construction, the difference in the depth of the protection layers, etc.

Raw water and brine extraction processes will use electric pumps to drive liquids into the plant. Likewise, the process based on ionic adsorption will also consume a significant amount of energy. The necessary energy will be provided by different feeding stages:

- Construction of a 33KV overhead line from the Rincón 3000 Substation also belonging to the Rio Tinto company, which will be installed to the south of the processing plant; and
- Construction of a main voltage lowering substation.

A total requirement of 69.8 MW is estimated for the production process, the brine and raw water extraction pumps and the consumption associated with auxiliary facilities. An important aspect of this consumption, however, is the use of electric boilers, which are considered more sustainable than the traditional natural gas or diesel boilers, common in other mining companies.

The construction stage will have much lower energy consumption, which will allow the use of 500KVA generator sets to sustain the necessary energy.

Another issue observed was the logistics necessary for the construction and operational stages, since understanding the logistical options is key to consolidate construction costs, and allow an adequate impact assessment of this characteristic of the project.

During the Construction stage, the largest number of trips will be made by the transportation of construction materials and transportation of fuel. On the site, it is expected that the largest amount will be due to the movement of soil and aggregates for construction.

In the Operation stage, the largest number of trips will be due to the transport of reagents, and the shipment and export of lithium carbonate as a final product. The logistics currently under study for the project consider:

- Establishment of export and import supply chains through Atlantic and Pacific ports (approximately 50% each);

- Base supply chain ground transportation operations primarily on the use of trucks; and

- Transport sodium carbonate produced in two alternatives still under study – railroad or along National Route 34.

This will include exporting Lithium Carbonate through the port of Buenos Aires, and importing sodium carbonate through the port of Campana. In Chile, these same operations can be carried out through the ports of Angamos and Antofagasta.

Once the Project is operational, priority will be given to hiring local labor, in the first instance for Olacapato, Salar de Pocitos and Catua, and later for San Antonio de los Cobres and Salta Capital. During the period of operation, it is estimated that a total of 281 people will be employed and during the construction phase, it is estimated that up to 2500 people will work directly and indirectly.

3. Environment Description

3.1. Physical and biotic media

For the execution of the description of the environment in terms of biological and physical issues, a study area was defined as the Argentine extension of the hydrological basin of the Salar del Rincón. It should be noted that Rincón, as well as other salt flats in Puno, are located in the central portions of closed basins, which are technically called endorheic basins.

The Rincón Basin has an approximate area of 2,797 km2 (Conhidro 2013), and about 435 km2 and whose main bodies of water are the Catua, Huaytiquina, Pompón and Rincón rivers, to the exclusion of the latter, all located in the northern area of the basin.

One of the key activities that made it possible to compile historical baseline information and control environmental and social information throughout the study area was the development of the project's geographic information systems. The field information collection activities have included so far, survey and organization of existing information (historical IIAs), collection of information from public sources (IGN, SEGEMAR, IDESA, etc.), production of digital elevation model (DEM), application of spectral indices using satellite images, calculations of areas and distances between different elements, as well as the definition of areas of influence in conjunction with the respective teams.

Regarding groundwater, the fluvial deposits of the Huaytiquina, Ponpón, and Catua Rivers are the main water reservoirs since the priority source of aquifer recharge is the infiltration of the flows of these rivers, in their lower areas. These rivers and their river deposits make up the Catua Aquifer System. The volcanic Aquifer Complex system – supported by ignimbrites to the west – and, in the center of the account, the Salar de Rincón Aquifer System, where the brine is stored, also stand out.

The Project carried out a Numerical Groundwater Flow Modeling of the Rincón Basin, which was the basis for the project development discussions, allowing to observe, according to the advance of geological, hydrogeological, and engineering knowledge, the behavior of the aquifer units according to the proposed changes. The modelling considered the final operational footprint (except for the urgent change made in cell B of the SBDF[1]) and the time

[1] Water modeling is a complex product that takes weeks to update with new information, given the large amount of data and variables being evaluated. The change of cell B of the SBDF was considered simple compared to the original footprint of the SBDF, but very important because it guarantees the defense of potential points of high environmental relevance (water holes). In this sense, Rincón is committed to updating the water quality modeling with the new SBDF footprint to ensure that the evaluated context makes sense with the project as a whole.

40-year operation with a production of 50KTPA, in line with the project parameters.

Predictions of a drop in the groundwater table due to project operations over a 40-year period of time were less than 40 m in the central area of the salt flat, where the most intense exploitation will take place. In the raw water extraction area, the maximum expected descent is 16m. In the areas around the salt flat, more intense declines are expected in the southern and western regions, where after 40 years of operation, areas are identified in the modeling with decreases between 10 and 17m. However, no effects were identified on nearby communities, nor on the provinces or countries that are bordering the project, since the expected decrease mainly affects the brine area, and areas of brackish water, not usable for human consumption.

It is important to emphasize that the modeling considered the official data of the neighboring Puna Mining venture, in the Faldeo Ciénago area, which configures, in practice, the first numerical application of a cumulative impact modeling in the Province of Salta.

Also, sampling and measurements were carried out in the study area for the preparation of the Environmental Baseline of the physical environment, that is, to determine the parameters naturally occurring in surface water, groundwater, soils, air quality, and environmental noise.

In general, the results of the samplings have been compared with the applicable legislation, mainly with Annex IV of National Law No. 24,585/95 on Environmental Protection for Mining Activity.

The main observations, for each parameter, indicated:

- *Air Quality*: Air quality throughout the basin was considered naturally good, with low presence of particulate matter in most cases, and 100% aligned with reference guide levels.

- *Noise:* The environmental noise sampling points were evaluated, and compared with the guideline levels established by the World Health Organization (WHO). Points with slight shocks in the noise measurements were identified, mainly linked to the strong wind of the Puna and, eventually, to anthropic activities along the routes.

- *Water Quality*:
    - *Surface Water*: a hydrochemical and physicochemical characterization of the waters of the Salar was carried out, through which it can be concluded that, due to the characteristics of the rocks that are of volcanic origin, together with the natural dragging of sediments and salts by the action of rainfall, the levels of some metals and salts in the

surface water that exceed the guiding limits of said law, arsenic, barium, copper, manganese and nickel are of natural origin, which tend to have higher concentrations in the Huaytiquina River.

- *Groundwater*: the physicochemical characteristics of the water from the existing wells in the Rincón Project have been analyzed and evaluated, compared to limits for human drinking water. As for surface water, the values that exceed the guide levels of the law are due to the natural leachate of metals and salts, which can be observed, mainly, in the Catua, Pompón and Huaytiquina rivers. These rivers infiltrate as they approach the lower areas of the riverbeds. Important parameters observed are lithium, copper, nickel, complex ions such as carbonates as well as chlorides.

- *Soil:* physicochemical and bacteriological analyses were carried out at certain points such as: Plant, Camp and SBDF, as well as the evaluation of three points sampled through gradients to determine the vegetation units, geomorphology and geochemical conditions. Determining that the values are within the regulations but that there are certain values that exceed the guide levels because they are typical and natural values of the study area.

The works also considered a detailed collection of data from the biology of the study area, mainly considering the factors flora, fauna, and limnology, as well as, in line with the Management Plan of the Los Andes Reserve, the execution of surveys of extremophile microbial ecosystems.

The predominant vegetation in the area is grassy steppe and shrubby steppe. This was determined under the description of vegetation units in relation to the conditions that control the flora, such as the availability of water resources and the dominance of species. The list of flora species present and vegetation units was prepared, as well as a map of vegetation cover and a topographic profile of the vegetation in a geomorphological gradient.

Recent fieldwork included plots, transects, and flora observation points throughout the study area. The density, coverage and conservation status under national and international regulations were also calculated.

The meadows are systems of water vegetation, smaller than the steppes. In the latter, the rich rich species dominated, widely used as a medicinal plant by the communities. As for the conservation status of the species, most are not categorized by the IUCN (International Union for Conservation of Nature) red list. According to the Preliminary Red List of Endemic Plants of Argentina (Resolution 87/10), the species Festuca and Tolilla were common plants in the local context.

The same environmental factors that put pressure on the flora affect the fauna of the Puna, generating high levels of endemism and species that migrate. Some examples are endemic lizards and migratory species such as the Andean Flamingo

The most important habitats for fauna were Las Vegas (Catua, Rincón, Pompón and Huaytiquina), the Quebrada Bailabuena and the border area of the Barrancas de Ignimbritas. These environments provide sources of water in this arid area and refuge for especially those sites with structure such as the Barranca.

In relation to mammals, five domestic species were found, including the Goat and the Donkey. Of native mammals, the Tojo and the Vicuña, LC according to IUCN, dominated. Reptiles and amphibians were represented by the Toad (LC according to IUCN), and endemic lizards. Birds were the richest group, including aquatic migratory birds of great importance such as the Horned Coot – NT according to IUCN, Parina Grande – VU according to IUCN and Chica – NT according to IUCN.

Beyond the large animals of Puno, the baseline was able to identify the occurrence of the limnological and bacteriological fauna, seeking to understand these animals that often make up the base of the Puna food chain.

In relation to limnology (which studies the communities of organisms and their association with the aqueous environment), the Vega and Laguna Rincón, Vega Faldeo Ciénago, Vega Catua, Vega Huaytiquina and Vega Saladillo were visited, where the community attributes of phytoplankton, phytobenthos, zooplankton and benthic macroinvertebrates were analyzed. Physical-chemical parameters were measured and a qualitative characterization of the wetlands was carried out, including a photographic record. It was found that for macroinvertebrates, diversity values were higher in the Vega Catua, while for phytoplankton, a decrease in these metrics is observed in sites with higher running water velocity, such as in the meadows, and on the other hand, a greater richness in sites with still waters such as Laguna Rincón and Vega Catua.

Still maintaining the search for a better understanding of the environmental actors of the basin, and aligning with the requirements of the Management Plan of the Andes Reserve, a specific survey was also carried out for extremophile ecosystems. Eight sites in the Salar del Rincón were surveyed, where samples of water, sediments and microbial mats were extracted, the physical-chemical parameters of the sampled wetlands were recorded, the morphological and structural characterization of the microbial mats were carried out, a microbiological study of the water samples and microbial mats was carried out.

3.2. Socio-economic and cultural aspects

One of the bases of an Environmental Impact Report is to know the socioeconomic and cultural aspects of an area, in order to understand how the future project will interact with the existing populations in the region, and how it will contribute to local development. For the social sphere, the locations of Olacapato and Salar de Pocitos Station in the Province of Salta and Catua in the Province of Jujuy, including the places Cauchari, Laguna Seca and Las Lomitas and the dispersed population associated with these localities, were considered as study areas.

Spatial mobility has been a cultural characteristic of the Andean populations, and consists of the traditional caravan that connects and integrates different communities and ecological levels between the puna, the yungas and the valleys. This characteristic was influenced, in more modern times, by migration to agro-industrial complexes, where livestock transhumance has historically interacted with these communities.

In recent decades, the most notorious migratory processes are those that occur within the department of Los Andes, with families that are settling in urban and semi-urban agglomerations, progressively abandoning the rural environment. Given the need to send children and young people to educational institutions, many rural populations have opted for *double residence*: a home in urban agglomerations in addition to the rural post.

In this context, the mining development that occurs in the region has been resulting in **return migration**. In semi-rural towns such as Salar de Pocitos Station and Olacapato, the houses that had been abandoned are being reconditioned and expanded and the school and college are having more students, based on the return of some of the families who had migrated years ago, attracted by the offer of jobs related to mining or to the ventures aimed at providing them with services.

In the case of the department of Los Andes**, rurality** is a factor of social vulnerability, which is confirmed by the observation of the persistent decrease in the dispersed rural population. The distance between neighbours, and in relation to any population centre, configures a situation of geographical isolation that usually translates into difficulties in accessing all types of services. Added to this is the elderly condition of most of these inhabitants, as well as the absence of means of communication, which further imposes a vulnerability linked to difficulties typical of this age group in which more health care is required.

Some of these households receive income from pensions or social assistance and are occasionally visited by relatives from nearby towns or workers in mining companies and camps, which partially mitigates their sense of isolation.

In the case of the Rincón Project, **positions** that belong to the study area were identified and are grouped into three levels under geographical and land use criteria:

1. Those posts that are located in the Rincón Basin;
2. The posts associated with the localities of the study area but that are not located in the Rincón Basin; and
3. The dispersed population that does not correspond to the traditional use of posts, but to the use of the territory for extensive cattle ranching, artisanal salt extraction located in other mining concessions, onyx quarry camps and the posts used by other mining companies.

A large part of the population in the study area recognizes itself as indigenous or descendant of the indigenous population. The culture shared by its inhabitants reflects a rich social fabric, where common symbols, history, idioms and expressions form the essence of their collective identity. The physiognomic and behavioural characteristics are also indicative of a deep-rooted legacy. Likewise, some people identify themselves as belonging to specific ethnic groups such as the Kollas or the Atacamas.

Interests linked to the struggle for territorial reclamation stand out, as these communities seek legal and juridical recognition of their ancestral territories, sometimes supported by government programs. Despite these efforts, conflicts over territorial claims continue to exist.

Beyond ethnic and territorial issues, indigenous organizations also play a crucial role in community organizing, allowing their members to negotiate with the state and private entities in search of labor improvements, training, and economic development policies that directly benefit their communities.

The following indigenous communities **were identified in the study area**: in Salar de Pocitos Station there is the Kolla Aboriginal Community of the Salar de Pocitos (Legal Status Resolution 278/2009) and the Atacama Rural Community Andean Roots, in Olacapato the Kolla Quewar Community (Legal Status Resolution 281/09), and in Catua the "Coquena" Catua Aboriginal Community belonging to the Atacama ethnic group (Legal Status 001833-BS-02).

Since one of the most striking cultural characteristics of the traditional Puna peoples is the understanding of the environment under the traditional practices of cattle raising, it can be considered that this way of living is directly linked to the resources that the environment can provide to human beings. In this sense, an assessment of ecosystem services was developed, that is, precisely those benefits that people obtain from ecosystems (e.g., food, livelihoods, income; health – as a result of a clean environment for good hygiene and health; security against natural disasters and secure access to natural resources; as well as social cohesion either the absence of conflict and the sense of belonging).

In order to understand how the environment contributes to people's well-being, an identification and classification of Ecosystem Services (ES) is conducted, according to the Millennium Ecosystem Assessment (supply, regulation, cultural and support);

generating a map of important areas of the SE, which was validated with the communities in a workshop for this purpose.

31 positions belonging to approximately 17 pastoralist families have been identified in the study area. These positions generally include a main house and other auxiliary structures for livestock activity. The haciendas of the stallholders are sustained by the fodder of the local vegetation of steppes and meadows, and consist mainly of sheep, llamas and goats. Livestock production is mainly used for self-consumption, retail and barter.

In the localities, such as Catua, Olacapato and Salar de Pocitos Station, houses have access to the public water network. However, in the most isolated stalls, access to water is limited and stallholders often have to buy and transport it. The animals usually drink water directly from meadows. In addition, some stallholders drill artisanal water wells to provide themselves.

As a source of fuel for cooking and heating, the mostly rural population extracts firewood. This is mainly carried out in the surroundings of Laguna Rincón, where the tolares are located. Currently its use has been limited, due to greater access to fossil fuels, legal and police protection measures.

In the region studied, the predominant use of plants is medicinal. Infusions and ointments are prepared using stems, leaves and flowers of various species. Many of these plants are sold at local fairs and craft markets. Also, local vegetation is used in cultural practices, such as the Chacha used to smoke Pachamama in rituals and the Champa to decorate nativity scenes at Christmas.

4. Result of Environmental and Social Impacts

The application of the impact assessment methodology was used for each stage of the life cycle of the Rincón Litio Project.

The multidisciplinary evaluations conducted in the impact assessment process relied not only on the extensive environmental and social baseline compiled and updated, but also on computational modeling, which were key tools for understanding the impacts of the Project on various aspects of the physical environment.

Among them are:

i) Hydrogeological modelling, incorporates all the relevant information at the scale of the endorheic basin: climatological variables, flows of watercourses, geology, geomorphology, stratigraphy, phreameter wells,

water and brine catchment wells, physicochemical quality of the resource, simulating scenarios for the 40-year expected life cycle.
The main objective of groundwater modeling was a fundamental input for the understanding of the hydrogeological system and, with these results, to evaluate the possible combined impacts on groundwater levels associated with the production processes of Rincón Litio.

ii) Air quality modeling, with this development it was possible to estimate the emissions from the main sources both during the construction and operation stages and estimated the concentrations of particulate matter and flue gases in receivers.

iii) Environmental noise modeling, the main objective of this development was to evaluate the changes in the sound pressure level in the receivers of the area of influence from the planned construction and operation activities;

iv) Climate Risk Modeling, this development allowed the Project to be evaluated against a series of climate risks, in alignment with the recommendations of the *Task Force on Climate-related Disclosures* (TCFD). Physical and transition risks were assessed, providing strategic recommendations and mitigation measures for those identified;

v) Greenhouse Gas Inventory, the objective of this study was the accounting and reporting of GHG emissions from the Rincón Litio project in its stages. It was a study based on the "Greenhouse Gas Protocol: Corporate Standard of Accounting and Reporting" and the complementary document "Technical Guide for the Calculation of Scope 3 Emissions".

For the purposes of this IIA, the environmental Area of Influence (AID) was considered as the area where, under the evaluation of baseline data and considering the results of air, noise and groundwater quality modeling, impacts on the environment are expected. The process of identifying this scope consisted of using the impact footprints identified in the models to compose the area of influence of the project. By superimposing these footprints on a Geographic Information System software with all the environmental information of the project, it was possible to identify the total footprint of impacts, that is, the AID. As an integral part of the AID, the operational area was considered, i.e. the area directly affected by the operational footprint of the Project – lithium carbonate production plant, brine wells, raw water wells, SBDF, etc.

In order to delimit the area within which possible indirect impacts are expected, a safety margin was considered with which an area of indirect influence (environmental IIA) was determined for the Project, based on hydrogeological, geological and morphological criteria.

This study determined that the social AID corresponds to the territories of traditional use, formally recognized by the INAI (Resolution No. 132/2023 and No. 152/22), of the Kolla Aboriginal Community of Salar de Pocitos and the Quewar Community of the Kolla Ethnic Group of Olacapato. The town of Catua, which is close to the project, and an area to the north of it in which part of the dispersed community of the province of Jujuy (puesteros) live, which have social relations with the communities of Salta and with Rincón Mining PTY Limited, are also considered to be part of the AID.

The social IIA was defined as the town of San Antonio de los Cobres, which is 158 km from the project and where there would be indirect socioeconomic impacts caused by social ties with the AID communities, the purchase of goods and services during the construction and operation stages, and the payment of taxes by the Project and potential local contractors. It should be clarified that the delimited area of social influence represents the populated areas and the access roads, which overlap with the roads used by the Project.

In this IIA, the unit with the lowest classification of the environment was environmental and social factors. The environment was classified into 31 receptor factors. When proceeding with the methodology and evaluating the pressure that the actions of the Project will exert on these factors, it is observed that compatible and moderate impacts prevail, so that the project can be considered Compatible with the surrounding environment. The following is highlighted:

Previous Stage – Construction: of the 31 factors evaluated, 65% were Compatible Negative, 10% Moderate Negative, 13% Compatible Positive, 10% Severe Negative and 3% Moderate Positive. The factors with the highest rating were: physicochemical properties of the soil, alluvial fan, use and access to the territory and employment; followed by environmental noise, surface water resources and perceptions and expectations related to the project.

Operational Stage: in this stage, in 55% of the factors evaluated, the impact was classified as Negative Compatible. While there were 13% Moderate Negative, 16% Compatible Positive, 13% Severe Negative and another 3% Severe Positive. In this case, given the duration and the production process to be developed, it was expected that the highest impact rating would be obtained by factors such as groundwater resources, brine reservoir, physicochemical properties of the soil, employment and use and access to the territory; followed by air quality, environmental noise level, abundance and richness of species (fauna) and perceptions and expectations.

Closure Stage: here the impacts resulted in compatible. The moderate impacts are due to the reconditioning activities and the closure plan of the project, where naturally the receiving factors will be: physicochemical properties of the soil, salt flat, alluvial fan - drainage areas, employment and economy.

A Cumulative Impacts report is presented that follows the technical guidelines of the IFC-World Bank Guide for the Private Sector in Emerging Markets (IFC 2015) and Annex II of Resolution No. 19/2019.

This study, developed within the framework of IIA, was carried out taking into account the defined areas of influence and the Andes Reserve. It resulted in a first approach to the management of systemic risks associated with the execution of combined projects in the same space and time. The cumulative impact on the environmental and social components (VEC) of the socioeconomic fabric was worked on, such as: socioeconomic and demographic structure of the population, living conditions, educational and health conditions of the population, traditional productive activities, circulation and road infrastructure. While for the physical and biotic environment, work was done with the VECs: Groundwater Resources, Brine Reserve, Air Quality, Corridors and Migratory Pathways and Extremophile Microbial Ecosystems (EME).

For each of these, the status of the situation, projects that exert pressure and synergy, changes and expected risks were defined, and actions are proposed for the measurement, study and management of cumulative impacts.

As a result of the results obtained in the assessment of impacts on each factor of the environment, the Environmental and Social Management Plan (PMAyS) was developed. The IIA establishes and commits to the different measures and policies of protection, mitigation and/or compensation aimed at attenuating or minimizing the potential negative effects of the project and achieving the environmental and social sustainability of the Rincón Litio Project.

Likewise, a Monitoring Program is included through which not only compliance with the measures established above and the legal obligations of a project of these characteristics is ensured, but also an understanding of the environment, its quantification and measurement is proposed.

The compliance and monitoring of this PMAyS will allow evidence of how the impacts identified in this study are worked on and updated, strengthening the knowledge and development of the environmental and social environment.

5. Conclusions

As evidenced throughout this summary, the potential environmental and social impacts and risks (whether positive or negative) of the project focus on three major areas: biodiversity, water resources, and the socioeconomic aspects of the surrounding population.

In relation to biodiversity, considering that the project is located in the Andes Reserve and as described, there is evidence of an impact limited mainly to the decrease in the abundance and richness of fauna species (due to the displacement and scaring away of the work site due to increased environmental noise), always taking into account the strict application of the tasks included in the IIA and its Management Plan. as well as the management measures and restrictions included in the Management Plan of the aforementioned reserve.

The Project carried out a Numerical Groundwater Flow Modeling of the Rincón Basin, whose predictions of the decrease in the groundwater table due to the project's operations, in a period of 40 years, were less than 40 m in the central area of the salt flat, where there will be the most intense exploitation. In the raw water extraction area, the maximum expected descent is 16m. In the areas around the salt flat, more intense declines are expected in the southern and western regions, where after 40 years of operation, areas are identified in the modeling with decreases between 10 and 17m. However, no effects were identified on nearby communities, nor on the provinces or countries that are bordering the project, mainly due to the fact that this reduction is focused on areas with high salinity in the waters and therefore are not for human or animal use.

In turn, the implementation of certain project facilities will generate an alteration of temporary meadow channels (due to the development of platforms for construction), as well as a modification of surface runoff on the edges of the salt flat, around the operational area of the plant and the SBDF, mainly.

When considering the socioeconomic aspects of the surrounding population, positive impacts are observed from the increase in the local employment rate and the generation of local income. Meanwhile, negative impacts have been identified associated with the potential impact on traditional ways of life, livestock breeding practices and use of ecosystem services by certain stallholders. It is important to mention that Rio Tinto has developed a series of communication and joint work plans with the communities and population in the project area in order to work on their main concerns and the impacts identified.

In view of these impacts, an Environmental and Social Management Plan was determined that respects the classic mitigation hierarchy: prevention, mitigation, and ultimately, recovery – which will enable the installation and operation of the Project under high-level environmental and social practices.